RoadRunner 4K™

Ultra High Definition Mobile Recorder | Mobile Surveillance Systems

User Guide and Instruction Manual

LUMINATOR
TECHNOLOGY GROUP

WARNING

RISK OF ELECTRIC SHOCK
DO NOT OPEN

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

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.

COMPLIANCE NOTICE OF FCC:

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.

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 depending on whether or not the source is publicly available under a license policy. Go to System Setup - About page for more information. This product includes software developed by the University of California, Berkeley and its contributors, and software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.oepnssl.org/). Also, this product includes cryptographic software written by Eric Young (eay@cryptsoft.com), and software written by Tim Hudson (tjh@cryptsoft.com).

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 power source 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. 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.

6. Power Cords
Operator or installer must remove power and other connections before handling the equipment.

7. 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.

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

9. Damage requiring Service
Unplug this equipment from the power source and refer servicing to qualified service personnel under the following conditions:

A. When the power cabling has been damaged.
B. If liquid is spilled, or objects have fallen into the equipment.
C. If the electronic components have 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 may require extensive work by a qualified technician to restore the equipment to its normal operation.
E. If the equipment has been dropped or damaged.
F. When the equipment exhibits a distinct change in performance – this indicates a need for service.

10. Replacement Parts
When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer. Unauthorized substitutions may result in fire, electric shock or other hazards.

11. 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.

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

13. Elevated Operating Ambient Temperature
If installed in an enclosed space, the operating ambient temperature of the environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum rated ambient temperature.

14. Reduced Air Flow
Installation of the equipment should be such that the amount of airflow required for safe operation of the equipment is not compromised.

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

16. 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.

17. Reliable Grounding
Reliable grounding of equipment should be maintained.

18. Water/Moisture
Avoid installing in areas where water or moisture may accumulate (with the exception of exterior-mounted cameras as resistance to exterior moisture is part of its intended use).

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.

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Chapter 1 — Introduction

The RoadRunner™ 4K Ultra High Definition Mobile Recorder is designed for mobile applications and operates using 9 to 36 volts DC, which ensures compatibility with the typical 12 VDC and 24 VDC power systems found on vehicles. The Recorder provides viewing and recording capabilities for up to 16 cameras.

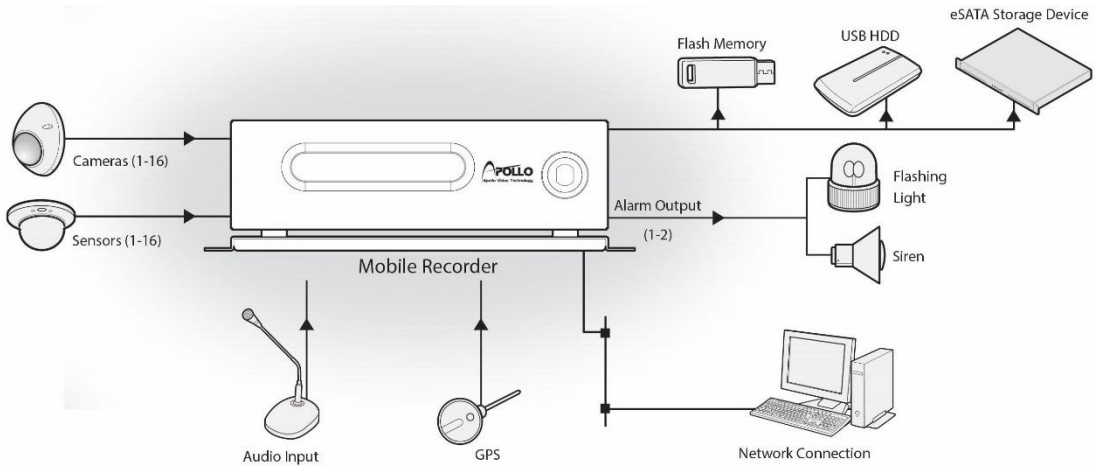


Figure 1: Typical 4K Mobile Recorder Installation

NOTE: This manual addresses both the 4-, 8- , 12- and 16-channel Recorders. The Recorders are identical except for the number of camera inputs that can be connected and the number of cameras that can be displayed. For simplicity, the illustrations and descriptions in this manual refer to the 16-camera model.

Chapter 2 — Installation

Rear Panel Connectors

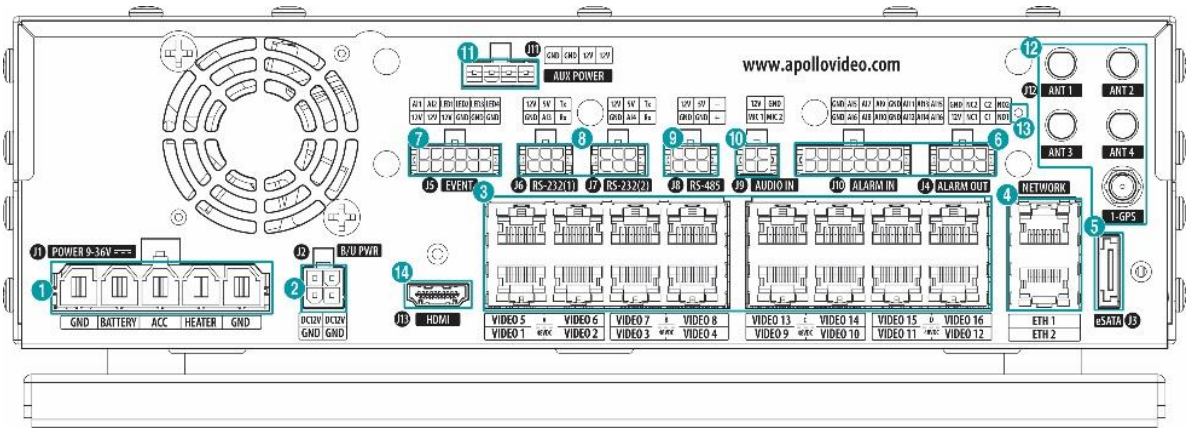


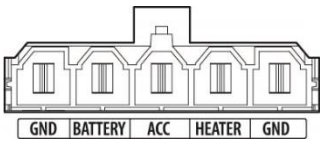
Figure 2: Rear Panel Connectors

① Power Port	② Super Cap Port	③ Video In Ports	④ Network Ports
⑤ eSATA Port	⑥ Alarm Ports	⑦ Event Port	⑧ RS232 Ports
⑨ RS485 Port	⑩ Audio In Port	⑪ AUX Power Port	⑫ WiFi/GPS Ports
⑬ Factory Reset Switch		⑭ HDMI Port	

Once all necessary connections have been made, attach the rear panel cover to the Recorder. This will prevent tampering by unauthorized persons.

WARNING: IT IS IMPORTANT THAT INSTALLATION BRACKETS AND CABLES DO NOT INTERFERE WITH ANY OF THE VEHICLE'S CONTROLS AND ALSO DO NOT BLOCK THE DRIVER'S VIEW OR REACH. FAILURE TO HEED THESE WARNINGS COULD LEAD TO AN ACCIDENT CAUSING SERIOUS INJURY OR DEATH.

① Power Connection – J1



CAUTION: Make sure the power supply meets the requirement (9 ~ 36VDC, 30A) during operation.

The Recorder operates on a wide range of vehicles. It accepts power inputs ranging from nine to 36 VDC. This allows it to operate on both 12- and 24-volt systems. The power connector has five pins.

- BATTERY: The BATTERY pin must be connected to a c that is connected directly to the positive (+) battery power terminal. (Refer to *Chapter 3 — Operation and Configuration, System Setup* for details)
- ACC: The ACC pin must be connected to a 15-amp automotive fuse that is connected to the positive (+) power terminal that is turned on when the ignition switch is in an active or on position. When this signal turns off the recorder will continue to record video during the ignition off timeout. (Refer to *Chapter 3 — Operation and Configuration, System Setup* for details)

CAUTION: Make sure ACC and BATT are the same input voltage. For example: Do not connect BATT to 24VDC and ACC to 12VDC or vice versa. The Recorder will recognize this as wiring fault and will not operate correctly.

- HEATER (if equipped): Connect the heater power connector to the Recorder. If the temperature inside the Recorder or the removable drive assembly is 32°F (0°C) or lower, the (optional) built-in heater will increase the temperature to 44.6°F (7°C). The Recorder will then boot up. After boot-up, the temperature sensor inside the Recorder continues monitoring the temperature to ensure the temperature remains adequate for operation.

CAUTION: When the heater power supply does not meet the requirement (9A@12VDC or 4.5A@24VDC) during operation, the Recorder and heater might be damaged.

WARNING: DO NOT TOUCH THE BOTTOM OR TOP OF THE REMOVABLE DRIVE WHEN REMOVING IT AFTER THE HEATER HAS BEEN OPERATING IN LOW TEMPERATURES. DURING OPERATION OF THE HEATER, THE TEMPERATURE OF THE DRIVE TRAY MAY CAUSE INJURY.

- GND: The GND (Ground) pin should be connected directly to ground (-). Although it is possible to connect only one of the two pins, it is recommended to use two wires to create a more stable current path.

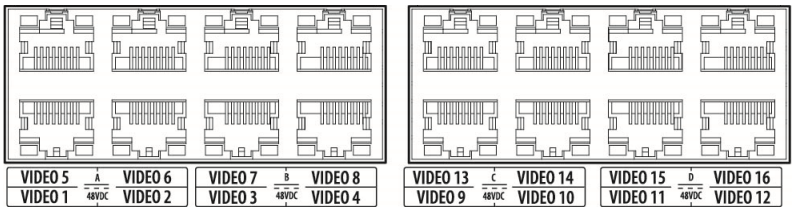
② B/U PWR Connection – J2

The B/U PWR connecter provides an input for an optional Power Loss Data Protection (PLDP) unit. The PLDP is charged to 12V in normal operating conditions. In the event of a power loss, the PLDP ensures the completion of the hard disk operation and the proper shutdown of the system. The PLDP is wired to J2 connector.

Connection

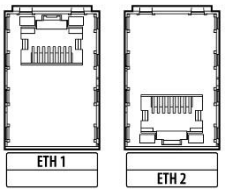
DC12V	VDC Output
GND	Chassis Ground

③ Video Connection



Connect network cameras to the Recorder using RJ-45 cable (Cat5e, or Cat6).

④ Network Connection

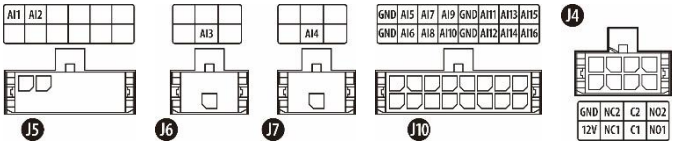


The Recorder can be connected to a network using the 1000Mb ETH 1 connector at the back of the Recorder. Connect a Cat5e cable with an RJ-45 jack to the Recorder connector (on the upper side of two Ethernet connectors). The Recorder can be networked with a computer for remote monitoring, searching, configuration and software upgrades.

⑤ eSATA Connection – J3

An eSATA port is provided to connect external storage devices for recording video.

⑥ Alarm Connection – J5, J6, J7, J10 and J4



AI 1 to 16 (Alarm-In): Use external devices to signal events to the Recorder. Mechanical or electrical switches can be wired to the AI (Alarm-In) and GND (Ground) connectors. The voltage range is from 0V to 50V. When the electrical switch is wired, the threshold voltage for NC (Normally Closed) is below 2.5V and for NO (Normally Open) is above 2.6V, and it should be stable for at least 0.5 seconds to be detected.

GND (Ground): Connect the ground side of the Alarm input and/or alarm output to the GND connector.

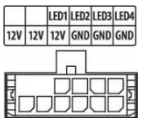
NOTE: All the connectors marked GND are common.

NC 1 to 2 /NO 1 to 2 (Relay Alarm Outputs): The Recorder can activate external devices such as buzzers or lights. Connect the device to the C (Common) and NC (Normally Closed) or C and NO (Normally Open) connectors. NC/NO is a relay output which sinks 0.5A@125VAC and 1A@30VDC. See *Chapter 3 – Configuration* for configuring alarm output.

Connection

AI (1 to 16)	Alarm Inputs 1 to 16
GND	Chassis Ground
NC (1 to 2)	Relay Alarm Outputs 1 to 2
NO (1 to 2)	Relay Alarm Outputs 1 to 2
C (1 to 2)	Relay Common 1 to 2
12V	VDC Output

⑦ Event Connection – J5



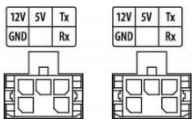
The Recorder can activate external LED devices. Heartbeat (LED 1), recording status (LED 2), alarm status (LED 3, LED 4) outputs are provided (50mA@12VDC).

- **LED 1**: The heartbeat LED blinks at a constant rate as long as the Recorder is operating and stops blinking if the Recorder stops operating
- **LED 2**: The recording status LED blinks when the Recorder is recording on the hard disk drive
- **LED 3**: The alarm status LED1 is lit when a configured alarm output is activated
- **LED 4**: The alarm status LED2 is lit when a configured alarm output is activated

Connection

LED 1	Heartbeat LED
LED 2	Recording Status LED
LED 3	Alarm Status LED1
LED 4	Alarm Status LED2
12V	VDC Output
GND	Chassis Ground

⑧ RS232 Connection – J6, J7



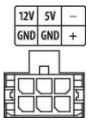
Two RS232 ports are provided to connect external devices such as GPS.

Connection

Master Unit			Slave Unit
Rx	→ To →		TX
Tx	→ To →		RX
GND	→ To →		GND

Rx	Receive Data
Tx	Transmit Data
GND	Chassis Ground
12V	VDC Output
5V	VDC Output

⑨ RS485 Connection – J8



The Recorder can be controlled remotely by an external device such as the GPS or control system using RS485 half-duplex serial communications signals.

Connection

Master Unit			Slave Unit
+	→ To →		TX+/ RX+
–	→ To →		TX-/ RX-
GND	→ To →		GND

–	RS485 − Data
+	RS485 + Data
GND	Chassis Ground
12V	VDC Output
5V	VDC Output

⑩ Audio Connection – J9

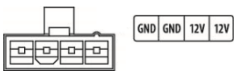
In addition to having audio channels with each camera connection, the recorder has two sources of external audio. Connect the audio sources (microphone) to MIC 1 and MIC 2 as needed.

Connection

MIC	Microphone Input
12V	VDC Output
GND	Chassis Ground

NOTE: The user is responsible for determining if local laws and regulations permit audio recording.

⑪ AUX Power Connection – J11

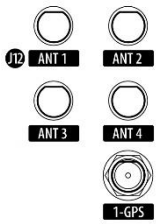


The Recorder has a 12 VDC output connector which provides power to external devices up to 2A.

Connection

12V	VDC Output
GND	Chassis Ground

⑫ WiFi/GPS Connection – J12



Each connector is provided to connect WiFi and GPS antennas. The GPS antenna will be connected to the Recorder for working with the Recorder internal GPS module

⑬ Factory Reset Switch

The Recorder has a Factory Reset switch to the left of the ANT 3 port on the rear panel. This switch will only be used on the rare occasions that original factory settings should be re-loaded.

CAUTION: When using the *Factory Reset*, saved settings will be lost.

To reset the unit, use a straightened paperclip:

1. Turn the Recorder off by inserting the key in the On/Off switch and rotating it clockwise to the Off position.
2. Poke the straightened paperclip into the unlabeled hole to the left of the ANT 3 port and hold it in.
3. Turn on the Recorder again by rotating the key counter-clockwise to the On position.
4. While the Recorder is initializing, continue to hold in the paperclip until the RECORD LED on the front panel blinks (after 30 seconds).
5. Release the reset switch by removing the paperclip. All of the Recorder's settings are now at the original settings it had when it left the factory.

Front Panel Controls

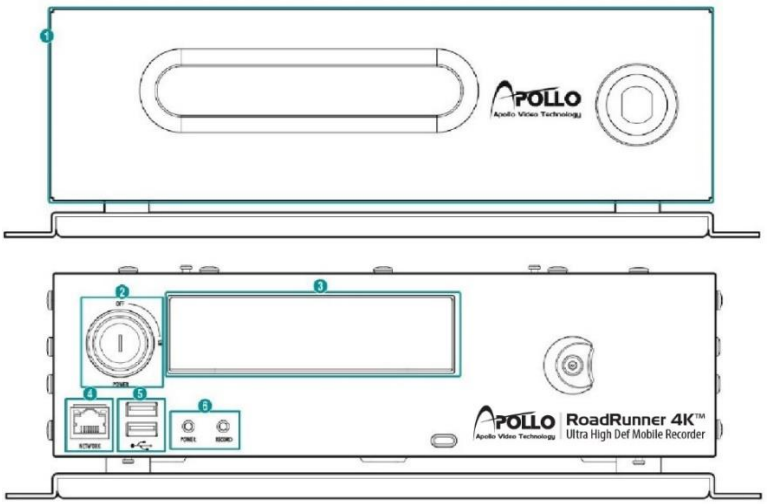


Figure 3: Front Panel Controls

① Front Cover	② Power Switch	③ Drive Assembly	④ Network Port
⑤ USB Port	⑥ LED		

Front Cover (sold separately)

Insert the front cover key into the keyhole and rotate it clockwise. Place the cover over the front of the recorder. Align the slots with the pins on the recorder and slide the front cover to the right. Rotate the key counterclockwise to lock it into place.

Power Switch

The unit can be turned on or off with the key provided with the unit.

Drive Assembly

A removable hard disk or solid-state drive is mounted in the Drive Assembly. The drive can be removed to view the video on a personal computer or be utilized in another Recorder with a network connected PC using RsM. The Power Switch must be in the Off position to remove the drive after the POWER LED on the recorder turns off.

Network Port

The Recorder can be networked using the 1000Mb Ethernet connector. Connect a Cat5e cable with an RJ-45 jack to the Recorder connector.

USB Port

A USB port is provided for updating firmware, configurations, and retrieving video files.

LED

POWER: The POWER LED is lit when the unit is On.

RECORD: The RECORD LED blinks when the Recorder is recording video on the drive.

Mounting the Recorder

WARNING: IT IS IMPORTANT THAT THE RECORDER IS MOUNTED IN A LOCATION WHERE IT CANNOT BREAK LOOSE AND CAUSE INJURY IN THE EVENT OF AN ACCIDENT.

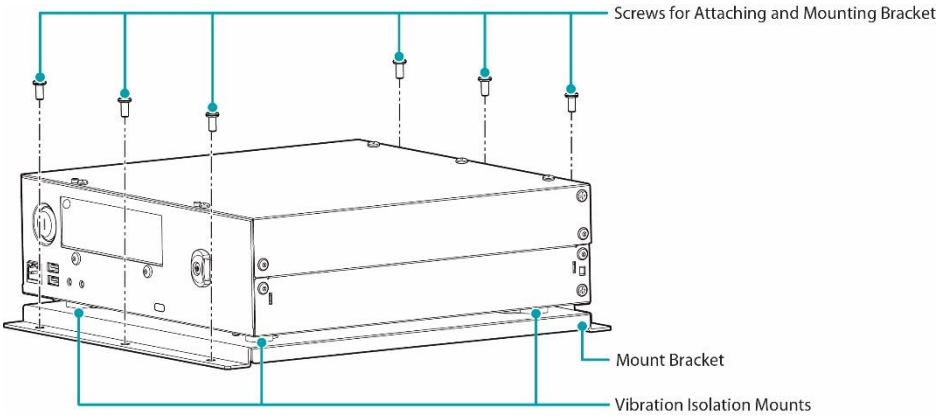


Figure 4: Mounting the Recorder

CAUTION: The rubber collars of the vibration isolation mounts are between the Recorder and the bracket as shown in the illustrations above. Attaching the bracket in any other manner can cause the isolation mounts to fail.

Chapter 3 — Operation and Configuration

NOTE: The Recorder should be completely installed before proceeding. Refer to *Chapter 2 — Installation*.

Turning on the Power

The Recorder can be turned on by inserting the key in the On/Off switch and rotating it clockwise. The switch can be in the On position and the key removed. This way the Recorder will power up when the ACC pin on the Power Connector – J1 is enabled. The Recorder is operational in approximately 60 seconds. The Recorder will take an additional 30 seconds to become operational if the "Use 30 seconds Delayed Start" feature is enabled (Path: System menu > Power Management). The Power LED on the front panel will illuminate and this action signifies the Recorder has been turned on properly.

NOTE: The Recorder will not power up in the following conditions:

- **If the temperature is 32°F (0°C) or lower. Refer to *Chapter 2 — Installation* for details.**
- **If the battery power voltage is out of the range set during *System Menu > Power Management*.**
- **If there is 2.5V or more voltage difference between the accessory and battery power.**
- **If the Recorder turns off due to an emergency shutdown or shutoff and the battery power voltage does not remain within the specified range for longer than the specified time (Path: *System Menu > Power Management)*. Refer to *Turning off the Power* for details about the emergency shutdown or shutoff.**

NOTE: If the 30 seconds Delayed Start feature is enabled and you turn on the vehicle ignition and then turn on the recorder using the HDD key, the recorder will have a delayed boot for 30 seconds.

WARNING: DO NOT TOUCH THE BOTTOM OR TOP OF THE REMOVABLE DRIVE WHEN REMOVING IT AFTER THE HEATER HAS BEEN OPERATING IN LOW TEMPERATURES. DURING OPERATION OF THE HEATER, THE TEMPERATURE OF THE DRIVE TRAY MAY INCREASE, CAUSING INJURY.

Turning off the Power

The Recorder can be turned off by rotating the key counter-clockwise to the Off position. The Recorder powers off in a maximum of 20 seconds when the key is turned to the Off position.

The Recorder can also be turned off by inactivating the ACC pin on the Power Connector – J1. When using the ACC pin, the Recorder will shut off after the ignition off timeout if the ignition off timeout feature is set to On *(Path: System Menu > Power Management)*.

NOTE: The Recorder will automatically turn off to prevent the system from being damaged in the following conditions:

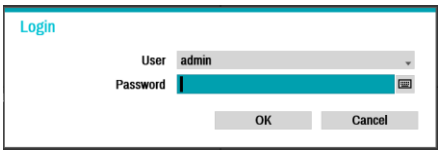
- **The battery power voltage registers between 7V to 9V or 36V to 38V for 10 seconds**
- **The battery power voltage is lower than 7V or higher than 38V for one second**
- **There is a 2.5V or more difference between the accessory input and battery power input on the J1 power connector**

Getting Started

Login

Configuring the Recorder's settings, and other functions, requires an authorized user login.

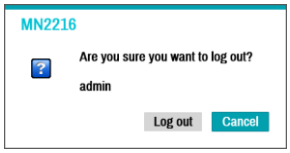
1. Bring up the Live menu and click on (Login) using the mouse.



2. Select a user, enter the password, and then select OK.
   - The default password for the admin account is AVT7100. Enter the password and then select OK.

NOTE:
- **Leaving the admin account password as default poses a security risk. Please assign a new password at your earliest convenience. A warning message will continue to be displayed until a password is assigned.**
- Click on the button next to the password field using the mouse. This will bring up a virtual keyboard you can use to assign a password.

3. To log out, bring up the Live menu and click on (Log out) using the mouse.



Live Mode

Live Menu

NOTE: Placing the mouse pointer near the top portion of the screen displays the Live menu.

① Login/Logout	② Layout	③ Previous Group, Next Group	④ Display
⑤ Freeze	⑥ Alarm	⑦ Panic Recording	⑧ Sequence
⑨ Select Camera	⑩ Setup	⑪ Status Indication	

① Login/Logout: Log into and out from accounts. If in the logged in state, the account ID is displayed. If in the logged out state, the login icon is displayed.

② Layout: Used to change the screen layout to single screen, corridor format, 2x2, 1+5, 1+7, 3x3, or 4x4.

Previous/Next Group: Loads the previous/next screen group.

③ Display
- OSD (On Screen Display): Enables/disables the OSD feature
- Full: Displays the video in full screen mode
- Aspect Ratio: Select whether to enable the original aspect ratio of video transmitted from the camera

④ Freeze: Freezes the screen. Select Freeze again to unfreeze.

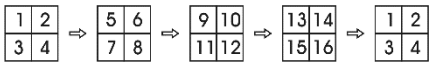
⑤ Alarm: Pressing this button while the alarm has been activated resets all recorder outputs, including the built-in buzzer.

⑥ Panic Recording: Activates/deactivates Panic Recording.

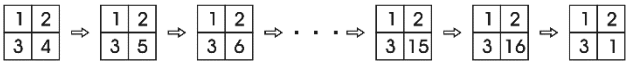
⑦ Sequence

Initiates Sequence in the same manner as pressing the SEQUENCE button while in Live mode. To exit, select Sequence once more or press the SEQUENCE button on the remote control. The icon is displayed on the upper right part of the screen while Sequence is in progress.

- Full Sequence
  Displays all channels in sequence while in Live mode (single and split screen settings). In order to use the Full Sequence feature, Full Sequence (Display Setup – Main Monitor > Sequence) must first be enabled.
  e.g. Full Sequence in 2x2 split screen mode



- Cameo Sequence
  In Cameo Sequence mode, only the bottom right screen in a split screen setup changes sequence. In order to use the Cameo Sequence feature, Cameo Sequence (Display Setup - Main Monitor > Sequence) must first be enabled.
  e.g. Cameo Sequence in 2x2 split screen mode



NOTE: If using the Full Sequence setting, page numbers appear on the system status area on the upper right part of the screen, next to the Sequence icon.

NOTE: Pages are skipped under the following circumstances:
- **If all cameras included in the page are deactivated.**
- **If there are no video signals.**
- **If the page contains "covert" cameras.**
- **If the user does not have permission to view feeds from the cameras.**

⑧ Select Camera: Displays the selected camera in a single screen format.

⑨ Setup: Used to access the Setup menu.

⑩ Status Indication: Displays system status icons.

- : Indicates connection to the Recorder from a remote program.
- : Indicates a zoomed in state.
- : Indicates Freeze is in use.
- : Indicates Sequence is in use.
- 1/4 : Indicates the current screen's group.
- : Indicates an event monitoring.
- : Indicates HDD use. The icon to the left is shown if using the overwrite setting. Otherwise, remaining HDD space is shown as a percentage value.

Zoom

1. Right-click on the mouse to select a channel you wish to zoom in on while in live mode or time-lapse mode.
2. When a zoom frame appears on the selected channel, right-click on the mouse to zoom in.
3. Use the arrow buttons to position the frame.
4. When zoom is activated, icon is on the status bar located on the upper right corner of the system.
5. To restore the channel to its normal size, right-click on the mouse again.

NOTE: In Full Screen mode, activating Zoom automatically selects the current channel.

Event Monitoring

When an event occurs, the Recorder automatically changes to the camera screen linking event monitoring and shows the icon on the system status area on the upper right portion of the screen. To use the Event Monitoring feature, navigate to Display Setup > Main Monitor and enable Event Monitoring. Event Monitoring remains in effect throughout the entire Linked Time. After that, the Recorder will return to the previous screen if a new event does not take place. Pressing the Layout or a Camera button before the end of the Linked Time reverts the system to Live mode.

Covert Camera

Use this feature to assign Covert Camera View permissions.
Navigate to Camera Setup > General and designate cameras as Covert 1 or Covert 2.

- **Covert 1:** Hides images from the camera in Live mode but does indicate the camera's title and status via icons
- **Covert 2:** The camera is indicated as being inactive. Images from the camera are not shown. Camera title and status icons are not shown

NOTE: Users that have a cover Covert Camera View are able to view both images from and status icons for all Covert 1 and Covert 2 cameras.

Context Menu Access

While in Live mode, right-click on the mouse to access the Context menu.
- **Zoom:** Zoom in
- **Audio:** Enable/disable audio. (This function is supported in single screen only)
- **Color Control:** Select a channel to display its Color Control window. Adjust the selected camera's brightness, contrast, saturation, and hue settings
- **Information:** Select a network channel to display information about the selected channel's device.
- **Edit Group:** Rearrange the split screen layout
- **Login/Logout:** Log into the account or log out of the account

Edit Group

Edit Group lets you customize split screen pages in both Live and Search modes.

1. While displaying a split screen page, select the Edit Group option from the context menu. A yellow border is drawn around the page. Use the arrow buttons on the front panel or the mouse to select a different page.
2. Press a Camera button or select a camera after pressing the Menu button. The selected camera is then loaded on to the selected page. Repeat to assign other channels to the page.
3. Press the Menu button and then select Exit Group Edit to exit.

NOTE: Edit Group will terminate automatically after 15 seconds of inactivity.

Video Recording

Video recording will only take place if all the connections are made correctly as per information contained in Chapter 3 of this operation manual.

For more information on video recording settings, refer to the *Record Setup* of this chapter.

Panic Recording

Select *Live* or *Search* menu's *Panic Recording* icon to commence panic recording on all registered cameras.

To stop Panic Recording, select the Panic Recording icon again. 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. For more information, refer to the Record Setup of this chapter.

NOTE:
- **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.**

CAUTION: 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. For more information, refer to the Audio and Record Setup of this chapter.

CAUTION: Check your local laws and regulations regarding audio recording.

Initial Unit Setup

Before using the Recorder for the first time, establish the initial settings. Install the RsM Software Program (RoadRunner Secure Management Software™) on a PC and connect to the Recorder remotely.

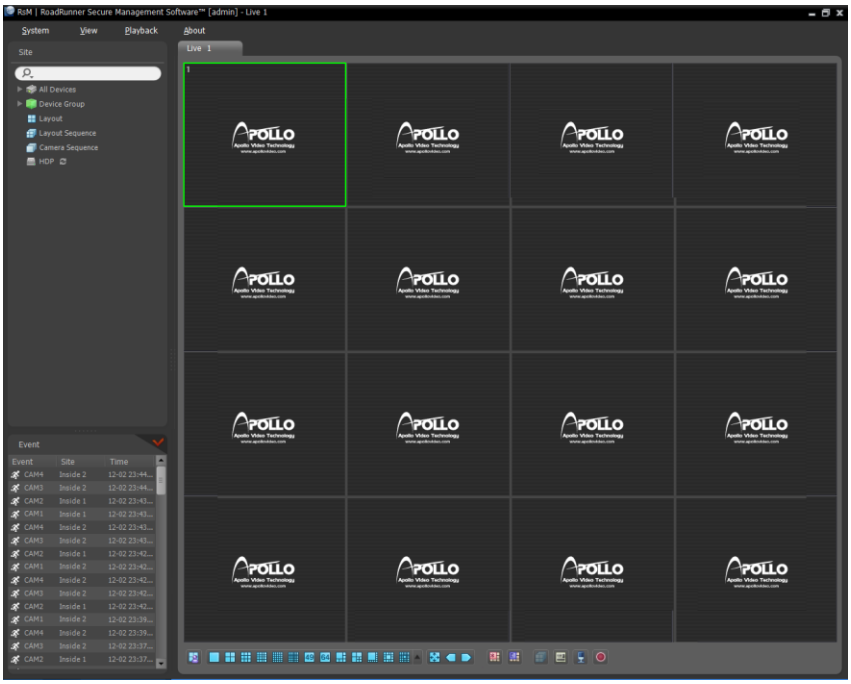
The RsM program is provided with the product for remote operation. The Recorder can be accessed, configured and managed by using RsM. The recording system is connected remotely via network connection.

- RsM Program: Allows set up of the Recorder, to monitor video of the Recorder and play back video recorded on the system.

NOTE: Refer to the RsM Software manual for instructions on how to install the program and connect the Recorder remotely.

The following description is for setting up the Recorder using the RsM program.

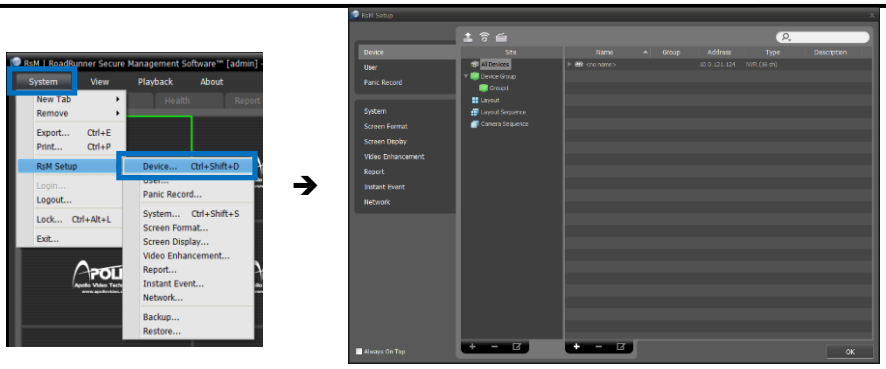
1. Run the RsM program, and log in
2. Enter a User and password
3. Enter the password (default: AVT7100) when logging in the admin user



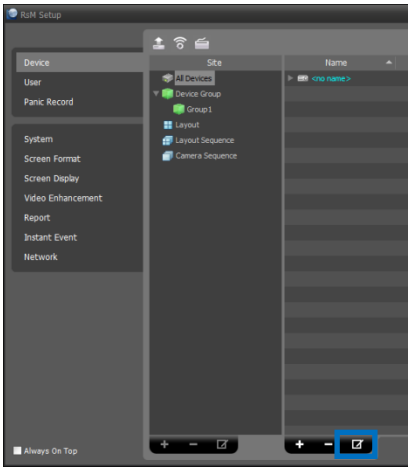
4. In order to register a Recorder, enter System > RsM setup > Device
5. Use the plus sign (+) to add a device
6. Once the Recorder is registered on the RsM program, select RsM Setup from the System menu, and then select Device

NOTE: Refer to the RsM Software manual for instructions on how to register the Recorder on the RsM system.

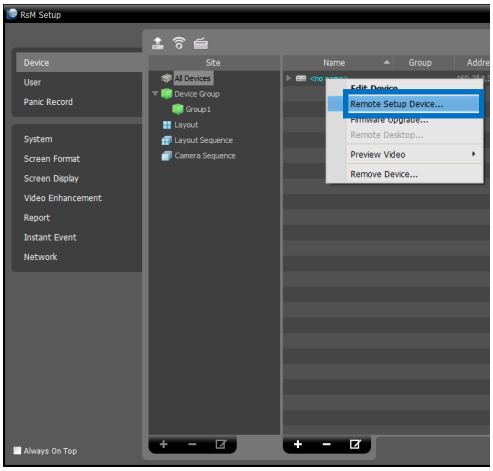
Monitoring video of the Recorder system and playing back video recorded on the Recorder will also be supported using RsM. Refer to the RsM manual for details.



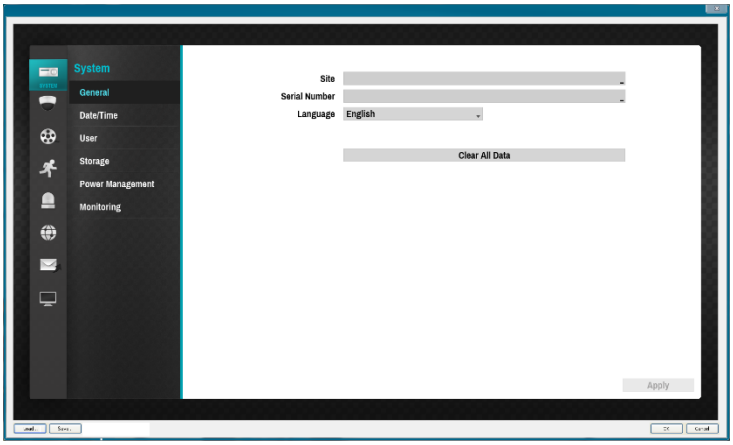
Select a device group in the **Site** panel and then select a device (registered Recorder) in the **Site List** panel.



OR

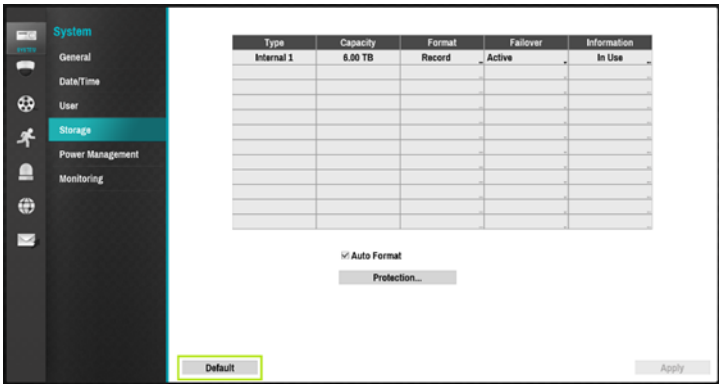


Change the recorder's settings remotely by selecting the button at the bottom of the Site List panel, or click your right mouse button on the Remote Setup Device.



While setting up the Recorder, there will be many opportunities to enter names and titles. When making these entries, use a keyboard connected to a PC running RsM.

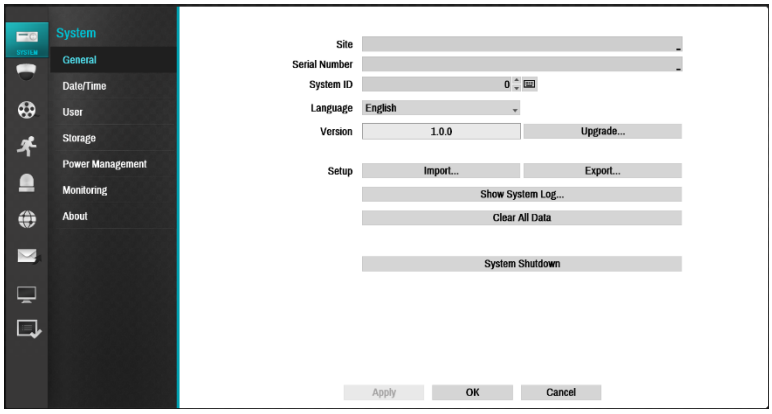
Throughout certain screens, you will notice a **Default** button located on the left bottom corner. Selecting **Default** provides the opportunity to reset the current screen to default settings. Select **Apply** or **OK** to apply the changes and exit the screen in any setup. Select **Cancel** to exit the screen and no changes are saved.



Menu Use

Information contained in this section (Menu Use) applies to all other instructions found throughout this chapter. Login with an ID that has permission to access the Setup Menu in order to access and make changes to the **Setup Menu**.

1. Select **Live** menu and click **Setup**



2. Click the option to input or change
3. Change the setting and then select **Apply** or **OK** to save the change

NOTE: To apply default settings, select the Default button located on the left bottom corner of the setup window.

Text Input via Virtual Keyboard

Use your mouse to click the keys.

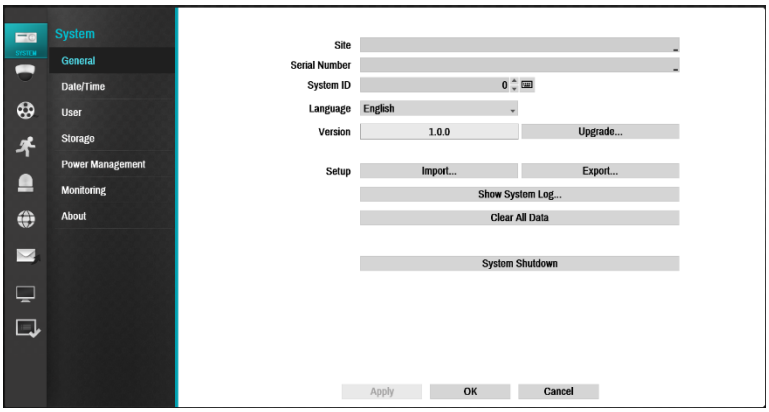
Batch Assignment

Certain table-format menus, such as the one shown in the **Camera Setup** section of this chapter, 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

PATH: System Menu > General



1. Select the box beside **Site** and enter a Site Name
2. Select the box beside **Serial Number** and enter the system serial number
3. Select the box beside **Language** and a drop-down menu displays the available languages. Select the desired language

Click **Upgrade** and select the USB Port. Selecting the USB port displays the USB search window. Select an upgrade package and upgrade the system. Once the upgrade is completed, the Recorder will reboot automatically.

Setup: Imports existing settings or exports current Recorder settings.

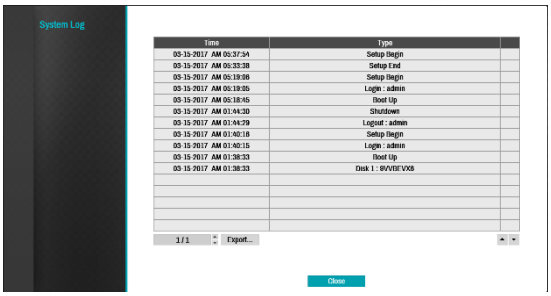
- **Import:** Decide whether to import network settings as well. If you do not wish to change the current network settings, **do not** select Include Network Setup.

NOTE: **Selecting Setup Import does not change the settings below.**
- **Site and Serial Number settings**
- **Time-related settings (Date/Time, Time Zone, and Use Daylight Saving Time)**
- **Camera-related Advanced Settings**
- **Camera-related Stream settings**
  (Only if the resolution is different from the camera in exporting)

- **Export:** Exports the current system settings to a storage device connected to the system's USB port. Designate a File Name for the export file.

CAUTION: **For USB flash memory devices, the Recorder supports the FAT32 file format only.**

Select **Show System Log** to display a searchable list of 5,000 most recent system log entries. For more information on types of system log entries, refer to the System Log Notices under the Appendix of this manual. The icon appears next to log entries originating from a remote source. To export the system log, select Export at the bottom of the screen and then designate a file name.



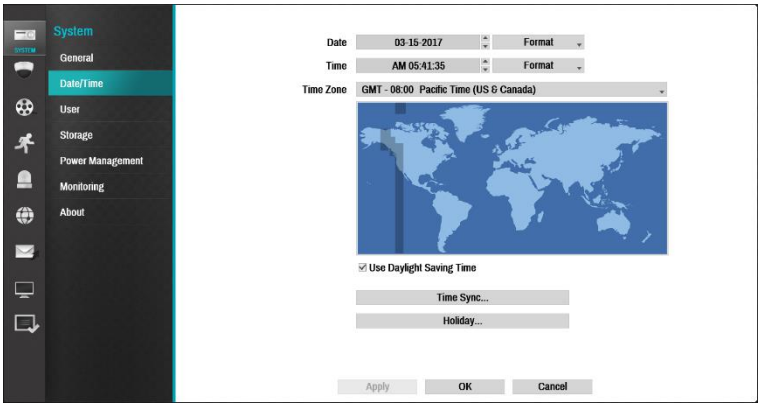
In order to display the system_log.txt file, you must use the correct character encoding settings and use a fixed-width font.

Selecting **Clear All Data** will clear all video data from the hard drive. A dialog box is provided to confirm or cancel this operation. Clear All Data will not clear the **System Log**.

Selecting **System Shutdown** shuts down the system. When prompted, select System Shutdown.

Date/Time

PATH: System Menu > Date/Time



1. Select the first box beside Date and the month, day, and year sections of the date will highlight
2. Use the Up and Down arrows to change the number
3. Select the Format box beside Date and select from the three available date formats to save selected format
4. Select the first box beside Time and the individual sections of the time will highlight
5. Use the Up and Down arrows to change the number
6. Select the Format box beside Time and select from the three available time formats to save selected format

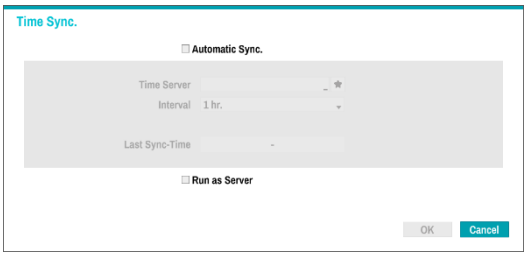
NOTE: The clock will not start running until the Apply button is selected.

Select the box beside Time Zone and select time zone from the list.

NOTE: The Time Zone can also be selected on the map below by pressing the Left and Right buttons or scrolling the mouse wheel up and down.

Selecting **Use Daylight Saving Time** toggles between On and Off.

Selecting the **Time Sync** box; time can be synchronized between the Recorder and standard time servers that are available in most time zones and countries, or between the Recorder and another Recorder.



Selecting the box beside **Automatic Sync** toggles between On and Off.

Select the box beside **Time Server** and enter the IP address or domain name of the time server. Or, select ★ and then a time server from the time server list.

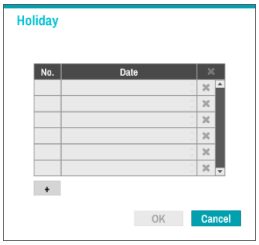
NOTE: Use the domain name instead of IP address if the domain name is set up the DNS Server.

Select the box beside **Interval** and set the time interval for synchronization from 30 minutes to 1 day.

Last Sync-Time displays the last time the Recorder was synchronized with the time server.

Selecting **Run as Server** toggles between On and Off. When it is On, the Recorder runs as a SNTP time server.

Select the **Holiday** box to set up holidays.



Set up holidays by selecting +. The current date appears.

Select the month and day and change them by using the Up and Down arrows. Dates can be deleted by selecting the ☒ beside the date.

NOTE: Holidays that do not fall on the same date each year should be updated once the current year's holiday has passed.

User

PATH: System Menu > User

The **User** screen displays the authorized groups and users which can be added, deleted and modified. When adding a group, authority levels can be assigned. The +/- column is used to collapse and expand user groups. If there is a + or – in this column, it indicates the item is a **Group Name**. If there is a – in front of the Group Name, it indicates that the group has been "expanded" and all of the User Names within that group are displayed below the Group Name. If there is a + in front of the Group Name, it indicates that the group has been "collapsed" and all of the User Names within that group are hidden.

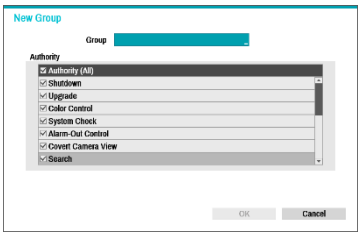
Selecting a **Group Name** allows changing the authority levels assigned to the group.

CAUTION: Write down the new password and save it in a secure place. If the password is forgotten, the unit must be reset using the *Factory Reset Button* and all data settings will be lost.

Selecting a **User Name** allows adding or changing the password assigned to that user. The group to which the user is assigned can also be changed.

The ☒ column can be used to delete a **User Name** or an entire **Group**. If the ☒ is grayed out, that Group or User cannot be deleted. Select the ☒, a confirmation to delete the User or Group is displayed. To delete the User currently logged into the Recorder on a local system or a PC running RsM, log the user out of the system first and then delete the user.

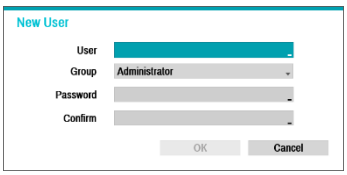
To add a **Group**, select the **+ Group** box and enter the Group Name. Up to 15 characters including spaces are allowed in the Group Name. Enter the name and assign authority levels to the group.



Selecting the **Authority** box will toggle between all authority levels being turned On and Off. Selecting the individual authority level boxes will toggle between that authority level being turned On and Off. The authority levels that can be turned On and Off are:

- Upgrade – The user can upgrade the software
- Color Control – The user can control brightness, contrast, hue and saturation for cameras
- System Check – The user can view the remote system status or check the remote system status as a batch process
- Alarm-Out Control – The user can reset the Recorder's outputs during an alarm by selecting the alarm-out control button on the RsM program

- Covert Camera View – The user can view video from cameras set as Covert while in the Live Monitoring or Search mode
- Search – The user can access the Search mode
- Clip-Copy – The user can copy video clips
- Setup – The user without Setup authority cannot establish any system settings excluding system shutdown and logout
- System Time Change – The user can change the system date and time
- Data Clear – The user can clear all video data or format disks
- Alarm-Out Setup – The user can establish all Alarm-Out settings
- Covert Camera Setup – The user can establish all Covert Camera settings
- Record Setup – The user can establish all Record settings
- Setup Import – The user can import saved Recorder settings
- Setup Export – The user can export the current Recorder settings
- Power Management – The user can establish the Power Management settings



To add a User, select the **+ User** box and enter the User Name. Enter the name and assign the User to a Group and password. The password can be up to 16 digits including characters, special characters and numbers. The password must be confirmed.

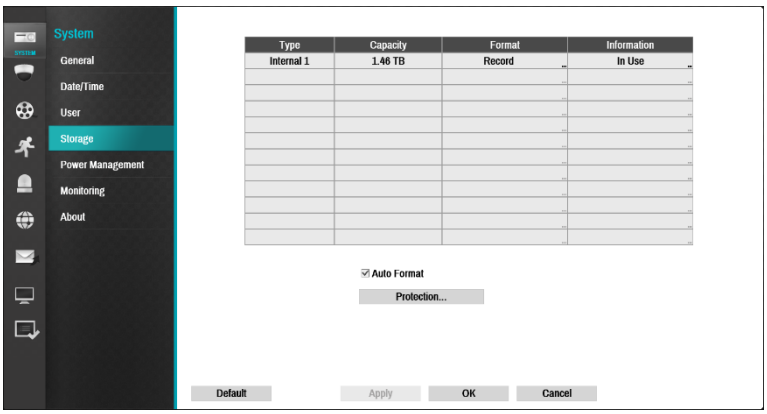
Configure **Auto Login** and **Auto Logout** settings.

When the system starts up, it will automatically log into the account designated under Auto Login.

The system will automatically log out of the account if the duration of inactivity specified under Auto Logout.

Storage

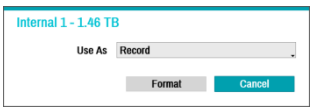
PATH: System Menu > Storage



The information in the **Type** column describes the storage device.

The capacity of the storage device is displayed in the **Capacity** column.

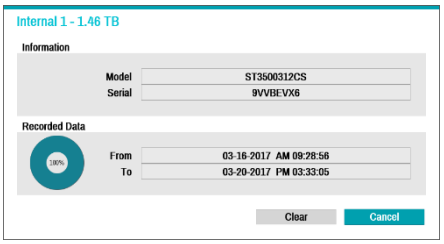
The **Format** column displays whether the device is used for recording (**Record**) or not (**Not Using**). Not formatted indicates the device is not formatted.



Select the box in the Format column for the desired storage device to format the device for recording. When selecting Not Using from Use As and selecting the Format button, the device is not used for recording.

The **Information** column displays whether the device is being used or not. **Other** indicates the device has been used for another Recorder.

Select the box in the Information column for the desired storage device to check the time information about recorded data.

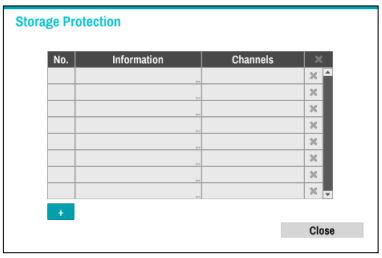


Information displays the model name and serial number of the selected device.

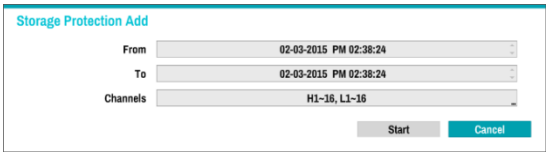
Recorded Data displays the time information about recorded data of the device.

Selecting **Auto Format** toggles between On and Off. When set to On, the internal hard disk drive will be formatted automatically when the system boots if the internal hard disk drive is not formatted or used for another Recorder.

Select the **Protection** box to protect a specific period of data.



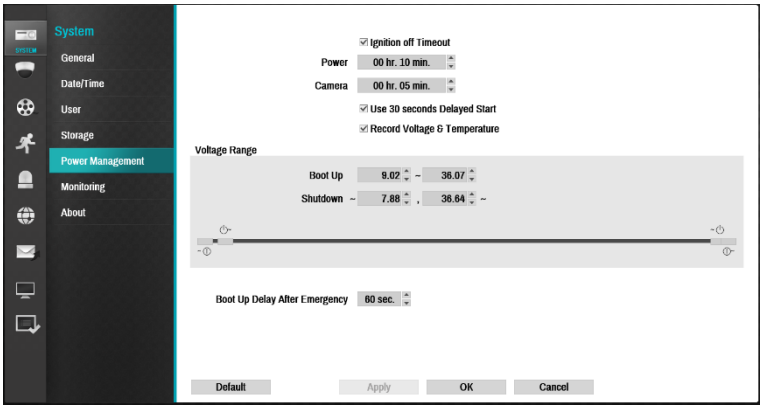
Select the + to add a schedule item. To delete a storage protection schedule, check the ☒.



Select the number to change and use the Up and Down arrows to increase or decrease.

Power Management

PATH: System Menu > Power Management



Selecting **Ignition off Timeout** toggles between On and Off. When set to On, the Recorder will delay to shut down the system or camera after the ignition switch is turned off. Set the delay time for **Power** to delay shutdown of the system, or for **Camera** to delay shutdown of the camera, by using the Up and Down arrows.

Selecting **Use 30 seconds Delayed Start** toggles between On and Off. When set to On, the Recorder will delay to start the system for 30 seconds after the ignition switch is turned on. This works only when the accessory power is applied while the power On/Off switch is left in the On position.

CAUTION: ***Use 30 seconds Delayed Start*** **will not work if you turn on the ignition switch first and then power On/Off switch while the power On/Off switch is in the Off position.**

Selecting **Record Voltage & Temperature** toggles between On and Off. When set to On, the Recorder saves its power voltage and temperature information on the hard disk drive every second. **V** indicates a power voltage and **T** indicates a temperature in the saved information.

Selecting the box beside **Boot Up** and changing the number by using the Up and Down arrows allows you to change the range of the battery power voltage for powering up the Recorder. When the battery power voltage is out of the **Boot Up** voltage range, the Recorder will not power up.

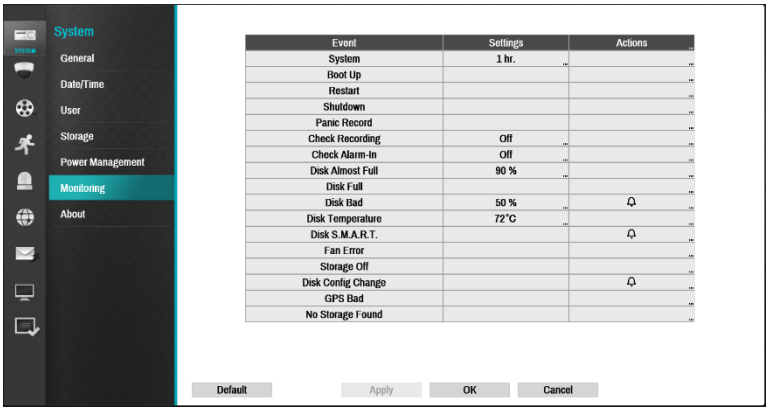
Selecting the box beside **Shutdown** and changing the number by using the Up and Down arrows allows changing the range of the battery power voltage for the emergency shutdown. When the battery power voltage is lower or higher than the Shutdown voltage and it lasts for 10 seconds, the Recorder will automatically shut down. Refer to **Turning off the Power** for details about the emergency shutdown.

The first white bars from the left and right end in the slide bar indicate the Shutdown voltages, and the second white bars from the left and right end in the slide bar indicate the Boot Up voltages. The black bar in the slide bar indicates the current battery power voltage. The interval between the Shutdown and Boot Up voltage bars each in the left and right of the current battery power voltage cannot be less than 1V.

Selecting the box beside **Boot Up Delay After Emergency** and changing the number by using the Up and Down arrows changes the Boot Up Delay time. The Recorder will not turn on after the emergency shutdown if the battery power voltage does not keep the range within the Boot Up voltages. In this case, turn on the Recorder by inserting the key in the power switch and rotating it counter-clockwise to the Off position and then rotating it clockwise to the On position. Refer to Turning off the Power for details about the emergency shutdown.

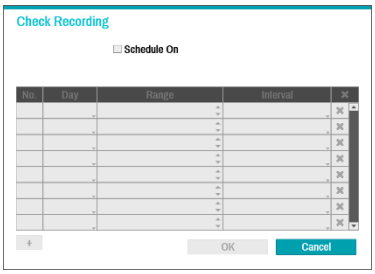
Monitoring

PATH: System Menu > Monitoring



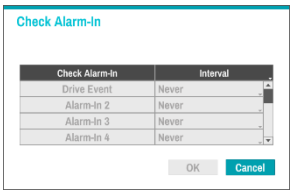
The Recorder can be configured to run self-diagnostics and report the results.

1. Select the Settings box beside the desired event (System, Check Recording, Check Alarm-In, Disk Almost Full, Disk Bad, or Disk Temperature)
2. Select the Settings box beside System and then select the interval required for the Recorder to run self-diagnostics.
3. Select from 1 min. to 30 days, or Never
4. Select the Settings box beside Check Recording



Selecting **Schedule On** toggles between On and Off. When set to On, select the day, time range and interval for the Recorder to run self-diagnostics. The Interval can be selectable from one min. to seven days, or Never. Select the + to add a schedule item. To delete a check recording schedule check the ☒.

5. Select the Settings box beside **Check Alarm-In**



Selecting the box under the Interval heading beside each alarm-in allows the user to change the interval for the Recorder to run self-diagnostics on Alarm Inputs. Select from 1 hr. to 30 days or Never.

6. Select the Settings box beside **Disk Almost Full** and select the percentage level of disk usage for the Recorder to trigger an alert. Percentage levels range from 80% to 99%.
7. Select the Settings box beside **Disk Bad** and select percentage level of bad disk sectors for the Recorder to trigger an alert. Percentage levels range from 10% to 90%.
8. Select the Settings box beside **Disk Temperature** and select the temperature of hard disk drive for the Recorder to trigger an alert if the temperature exceeds the defined threshold. Refer to the hard disk drive manufacturer's documentation for the correct temperature setting.

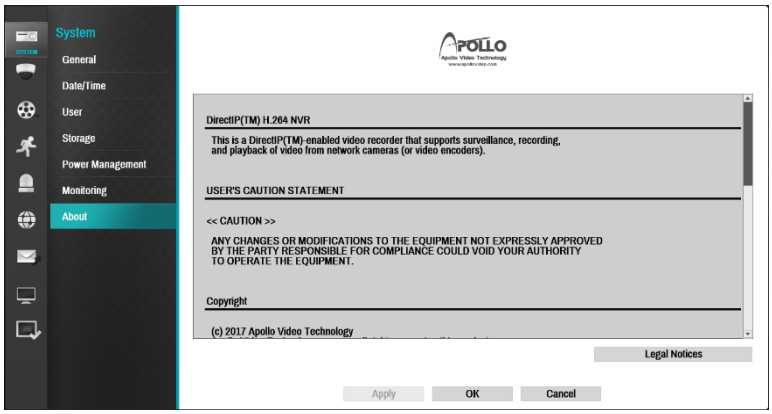
The Recorder can be set to react to system events. Select the **Actions** box beside the desired event. System events can be associated with an **Alarm-Out** and **Alarm LED**, and/or notify a number of different devices.

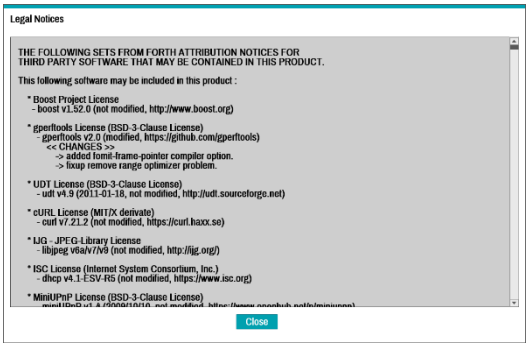
NOTE: ***Alarm-Out*** **action cannot be set to** ***System***, ***Boot Up***, ***Restart*** **and** ***Shutdown*** **events.**

For the Notify action to work, the Recorder should be registered in the RsM (RoadRunner Secure Management Software™).

About

PATH: System Menu > About

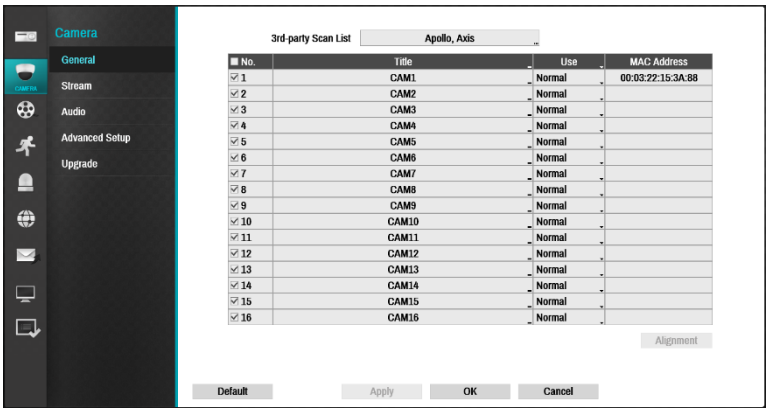




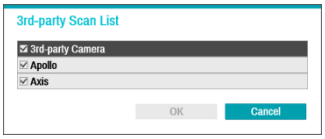
Camera Setup

General

PATH: Camera Menu > General



Select the box beside **3rd-Party Scan List** to select a **3rd-Party camera** for automatic search and registration.



Select a camera from **3rd-Party Camera**, **Apollo** and **Axis** to automatically search the cameras and register them.

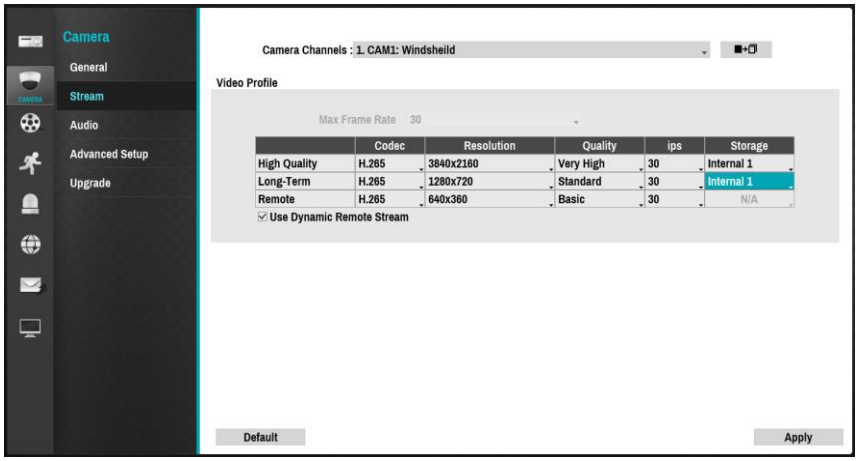
Turn the camera number On or Off by checking the box in the No. column. Select the title to rename the camera. The **Use** column determines which cameras will be displayed in RsM by selecting **Normal**, **Covert 1** or **Covert 2** from a drop-down list. The **MAC Address** column displays the MAC address of each camera.

NOTE: When selecting the *Covert 1*, the Recorder displays the camera title and status icons on the covert video. When selecting the *Covert 2*, the Recorder displays only camera title on the covert video.

A user who does not have *Covert Camera View* authority cannot view video from cameras set to *Covert 1* or *Covert 2* in both the live monitoring and playback modes.

Stream

PATH: Camera Menu > Stream



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

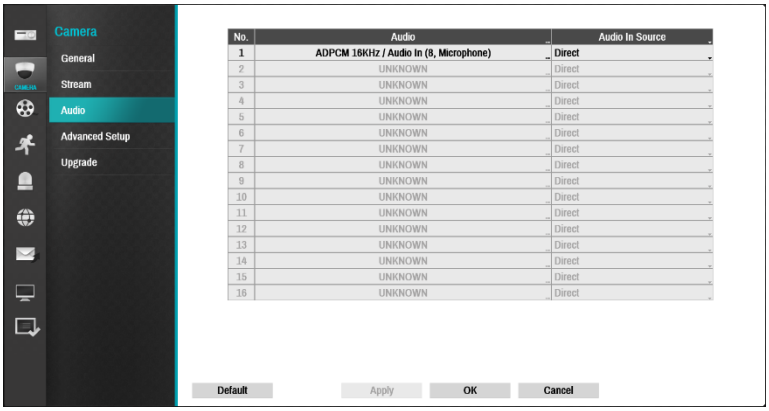
1. Select the box beside **Camera Channel** and select the camera number to configure a unique video profile. Selecting the box applies the video profile settings of the camera selected under Camera Channel to the selected camera.
2. Select the box beside **Max Frame Rate** and a drop-down menu displays the available maximum ips. Select the desired maximum ips. The available ips under the ips column below will change depending on this setting.
3. The Recorder will record or panic record video with both **High Quality** (1 to 16 channel) and **Long-Term** (17 to 32 channel) video profiles. The Remote video profile will be applied for monitoring.
4. Select the box under **Codec** and choose the compression method desired (H.265 is recommended).
5. Select the box under **Resolution** and select a resolution supported by the camera. Maximum available resolution is chosen automatically based on the selected video profile.
6. Select the box under **Quality** and select from **Very High**, **High**, **Standard**, or **Low**. Assign different Quality settings to different cameras.
7. Select the box under **Bitrate** and select between **CBR** (constant bitrate) and **VBR** (variable bitrate). Transmitted data size is fixed with CBR but varies depending on the amount of movement in the images with VBR.
8. Select the box under **IPS** (images per second) and select between 1 and 30. Maximum IPS available is determined automatically based on the selected video profile.
9. Select the box under **Storage** and select a storage to save High Quality and Long-Term stream for each camera.

NOTE: The stream is relocated to the selected Storage after the existing Bank is fully used, not immediately after saving.

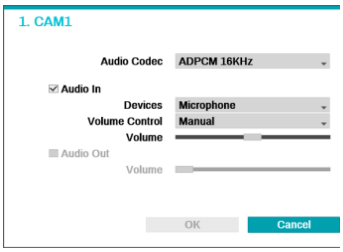
Selecting **Use Dynamic Live Stream** will automatically transmit the Live (Single, 2x2, 3x3 and 4x4 screen) stream, depending on the remote program's live screen layout.

Audio

PATH: Camera Menu > Audio



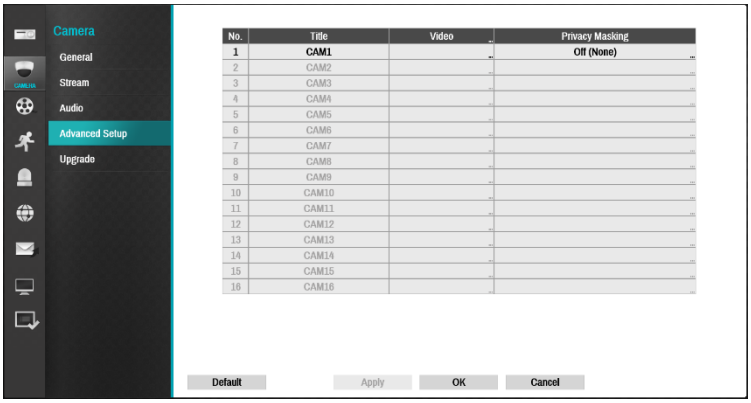
Selecting the box under Audio allows configuration of audio settings for each channel.



1. Select the box beside **Audio Codec** and select the audio codec between G.711 u-Law and ADPCM 16KHz
2. Select **Audio In** to enable or disable audio for that camera
3. Select the box beside **Volume Control** and select how to control the volume. Selecting Manual allows you to adjust the volume manually by using the slider. Selecting Auto sets the Recorder to adjust the volume automatically depending on the surrounding circumstances
4. Select **Audio Out** to adjust the volume
5. Selecting the box under **Audio In Source** allows you to select the audio input source between Direct (Camera) and MIC 1 or MIC 2 (MIC 1 or MIC 2 port on the rear panel of the Recorder)

Advanced Setup

PATH: Camera Menu > Advanced Setup

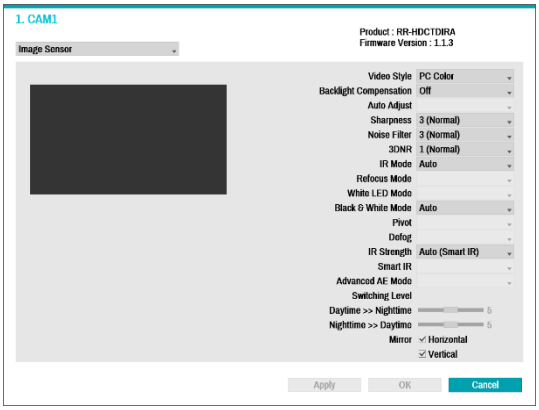


Configure the camera's general settings.

Select the box under **Video** to change video settings such as image sensor, white balance and exposure.

NOTE: Refer to the network camera manual for more detailed instructions on setting up the Video.

Image Sensor

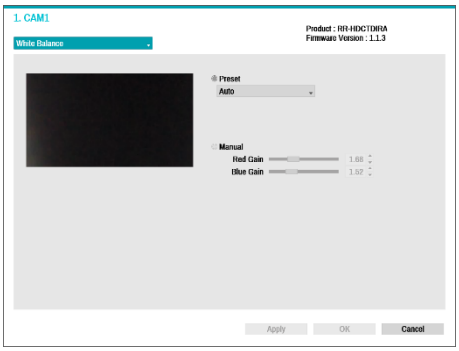


- **Video Style**: Select between TV Color and PC Color
- **Backlight Compensation**: Set whether to enable or disable the backlight compensation
- **Auto Adjust**: Select Auto to assess the lighting conditions and adjust the setting automatically. Select Manual to adjust the setting manually
- **Sharpness**: Set the sharpness of images
- **Noise Filter**: Set the degree of the noise filtration
- **3DNR**: Set whether to enable or disable the 3DNR (3D Noise Reduction)
- **IR Mode**: When the IR mode is set to Night Mode, IR is on all the time. When the IR mode is set to Day Mode, IR is off all the time. When the IR mode is set to Auto, IR mode adjusts based upon ambient light conditions
- **Refocus Mode**: When the refocus mode is ON, the focus of the camera is readjusted when changing daytime to nighttime or nighttime to daytime
  - DN Mode Shift: When image of the camera is switched to daytime or nighttime, the focus of the camera will be adjusted.
  - IR Adaptive Shift: Readjust the focus of the camera when IR is detected by the camera.

- **White LED Mode**: When the white LED mode is ON, white LED lighting is enabled when motion is detected by the PIR sensor. When the white LED mode is set to Auto, the system enables or disables the white LED mode automatically
- **Black & White Mode**: When the black & white mode is OFF, the camera is always in color. When ON, the camera is always in black and white. When in AUTO mode adjusts based upon ambient light conditions
  – Schedule: Set the black & white mode schedule. Black & white mode is disabled for all days and times that are designated as Daytime in the schedule and is enabled at all other times.
- **Pivot**: Set the direction of the pivot, and turn the image by 90 degrees in the clockwise or counterclockwise direction

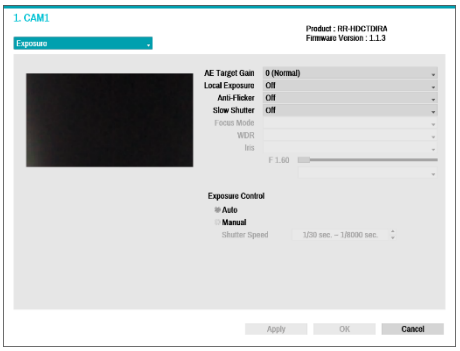
NOTE:
- **If vertical resolution is less than 600, this feature is not supported.**
- **This feature is particularly effective when monitoring hallways, passages and other confined spaces.**

- **Defog**: Set the defog option to adjust an image with a fog
- **IR Strength**: Select On for the camera to adjust the brightness level automatically (recommended setting). When Off, set the brightness of the IR LED from 0 to 100%
- **Smart IR**: Help solve the problem of infrared LEDs whiting out images, such as people's faces, when they are too close to the IR LEDs of a night vision camera. In this case, the image is adjusted through AE control
- **Advanced AE 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 plate). 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
- **Switching Level**: Controls the changing time of daytime/nighttime mode, depending on the Switching Level between 1 to 10. The higher the value the more sensitive the camera. When a higher value selected, the camera switches to night mode under brighter lighting conditions. When a lower value is selected, the camera switches to night mode under darker lighting conditions
- **Mirror**: Check the Horizontal or Vertical box to flip images horizontally or vertically



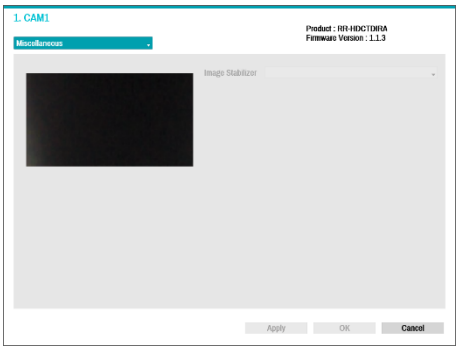
White Balance

- **Preset**: Select the preset white balance value based on the conditions
- **Manual**: Select to adjust the white balance manually. Adjust the Red and Blue gain



Exposure

- **AE Target Gain**: Set the target gain for the exposure compensation
- **Local Exposure**: Set the local exposure
- **Anti-Flicker**: Set to the same frequency as the lighting when the AC power is used for the lighting such as a fluorescent light
- **Slow Shutter**: Set the slow shutter mode
- **Focus mode**: Select the focus mode
  - WDR: Set the WDR option. When the very dark and very bright areas exist simultaneously on the screen, WDR allows you to recognize the both areas.
  - 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. Also, if a P-type auto IRIS lens is mounted, select P IRIS.
- **Shutter Speed Control**: Set the shutter speed. Select Auto to control the shutter speed automatically

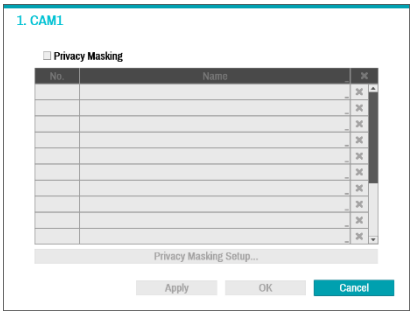


Miscellaneous

- **Image Stabilizer**: Reduces blurring caused by camera shake that results from external conditions such as the wind

NOTE: Select *Apply* after setting up a camera to see images from the selected camera in a preview window. Selecting *Apply* or *OK* displays a popup screen that indicates whether the camera has been set up successfully or not.

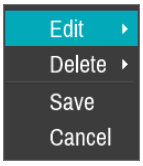
Selecting the box under **Privacy Masking** allows configuration privacy masking for the camera.



Selecting Privacy Masking toggles between On and Off. Select the Name box and enter the name of the registered privacy masking areas. Up to 15 characters are allowed, including spaces. The ☒ box deletes a privacy masking area.

Once the Privacy Masking is set to On, set up the privacy masking areas by selecting the Privacy Masking Setup. The Privacy Masking Area screen displays.

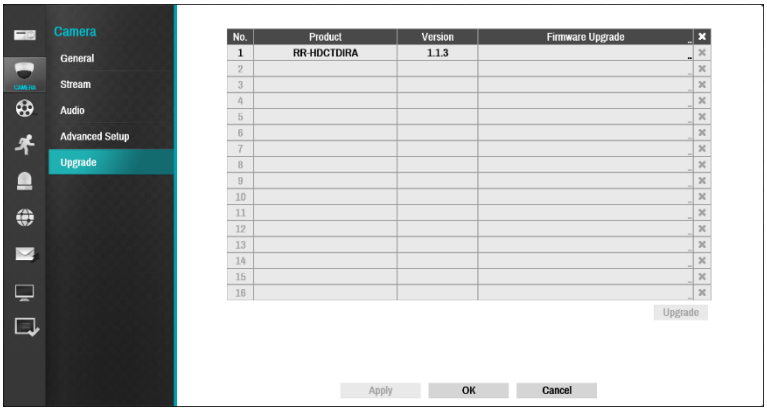
NOTE: Up to 16 different areas can be registered.



- **Edit**: Rename the selected privacy masking area
- **Delete**: Delete the selected privacy masking area
- **Save**: Save the changes and exit the privacy masking area options screen
- **Cancel**: Exit the privacy masking area options screen without saving the changes

Upgrade

PATH: Camera Menu > Upgrade



To upgrade the firmware of network cameras, select the box under the Firmware Upgrade and select the desired file. Selecting the Upgrade button will install the selected firmware package. Selecting the Cancel button will close the window without upgrading the firmware. If the upgrade package file is not installed on the Recorder properly, an error message will pop up.

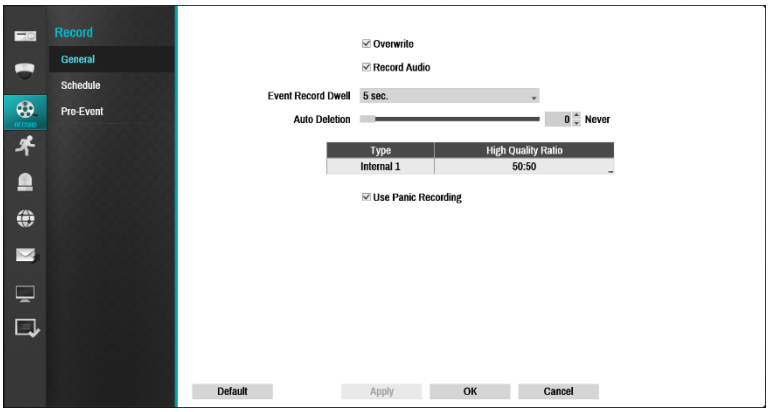
NOTE: The network camera reboots automatically after completing the upgrade.

The Recorder does not check the software version of the camera when upgrading.

Record Setup

General

PATH: Record Menu > General



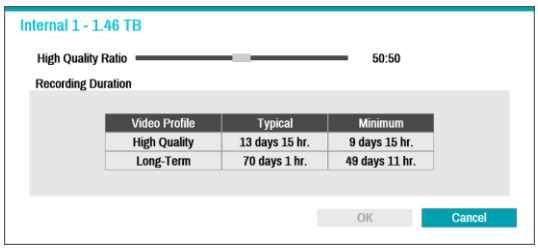
Selecting **Overwrite** toggles between On and Off. When this mode is enabled the Recorder records over the oldest video data (on a first-in, first-out basis) once all available storage space has been used. When Overwrite mode is off, the Recorder stops recording once all available storage space has been used.

Selecting **Record Audio** toggles disabling or enabling the recording of audio. The default mode for audio recording is Enabled.

Highlight the **Event Record Dwell** box and set the length of time you would like to record for the associated event. You can set the dwell from five seconds to 30 minutes.

Select the slide bar beside **Auto Deletion**, and adjust the length of time recorded data will be kept from one to 999 days. The Recorder automatically deletes video recorded earlier than the user-defined period under three conditions: at midnight, whenever the system reboots or whenever the user changes the Auto Deletion settings. Selecting **Never** will disable the Auto Deletion function.

Select the **High Quality Ratio** column to open the High Quality Ratio setup window. Adjust the ratio for each storage.



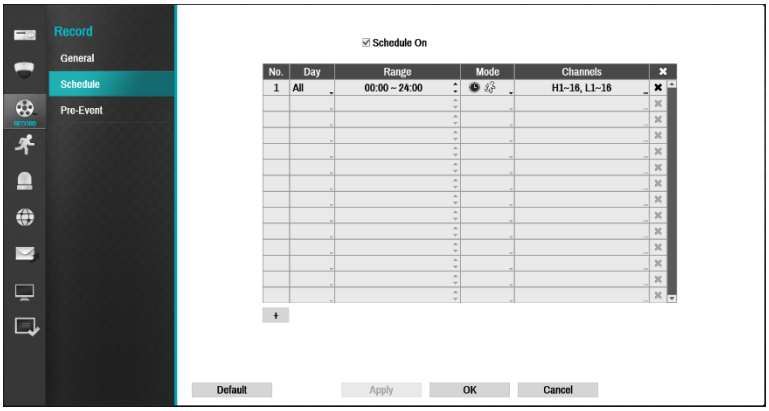
Select the slide bar beside High Quality Ratio, and adjust the ratio of High Quality storage. When adjusting 80% to High Quality, the remaining 20% is allocated to **Long-Term storage**, and each partitioned storage will be operated independently.

The **Recording Duration** table displays the estimated total recording duration of each partition. The recording depends on the camera settings (quality, resolution and ips) and audio recording settings. The table displays the Typical recording time for the most common recording conditions and the table displays the Minimum recording time under constantly changing recording conditions.

The Recorder can do panic record. Selecting **Use Panic Recording** toggles between On and Off. When Use Panic Recording is turned on, the Recorder will start panic recording when panic recording is initiated on a remote program.

Schedule

PATH: Record Menu > Schedule



Selecting **Schedule On** toggles between On and Off. In the Schedule On mode, the Recorder records video based on the schedule established in the Schedule screen. When turning Schedule recording Off, confirm the request.

Select the [+] to add a schedule item.

Select the box under the **Day** heading to change the days that the scheduled recording will take place. Choose from: Sun, Mon, Tue, Wed, Thu, Fri, Sat, M~F, Hol and All.

Select the box under the **Range** heading to change the time range that the scheduled recording will take place. 15 minutes is the smallest time segment available.

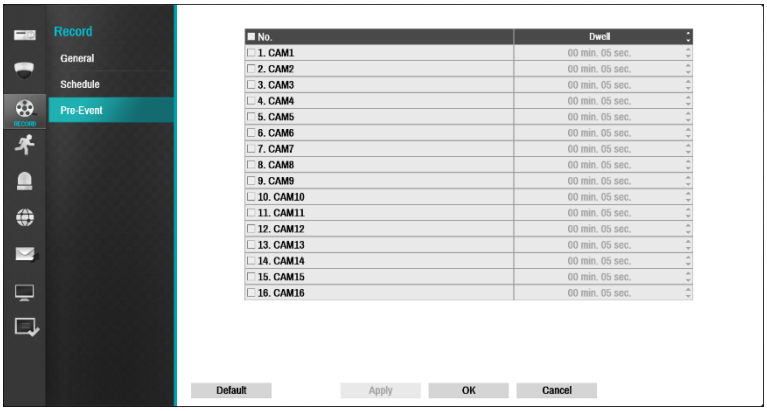
Select the box under the **Mode** heading to change the recording mode that will be used. Choose from: **No Record**, **Time**, **Event**, and **Time & Event**. When the Recorder is in the **No Record** mode, it will not record during the preset day and time range. Use the **No Record** mode when to disable recording during certain times. When the Recorder is in the **Event** mode, the Recorder will record when any event occurs.

Select the box under the **Channels** heading to select which cameras will be recorded. **High Quality** and **Long-Term** settings are selected as separate channels. In order to record both streams add both **High Quality** and **Long-Term** channels to the schedule.

Select the box under the ✖ heading to delete the recording settings. Please confirm to delete the settings.

Pre-Event

PATH: Record Menu > Pre-Event



When the Recorder is in the **Event Record** mode it is possible to have it record images before the event occurs. The **Pre-Event** screen allows you to define how to handle pre-event recording. If you do not have **Event** set up in the **Record Schedule**, a message will display alerting you to this fact.

You can turn individual cameras On or Off for pre-event recording.

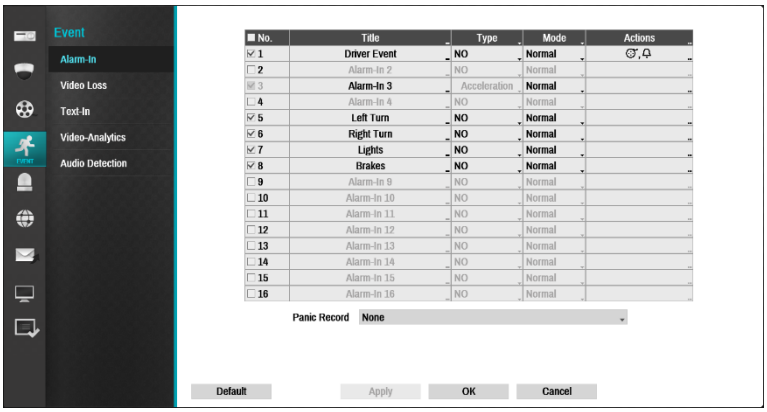
You can set the amount of time to record prior to the event by adjusting the **Dwell**.

NOTE: When the Recorder is in the Time or Time & Event mode, it ignores the pre-event settings and follows the time settings.

Event Setup

Alarm-In

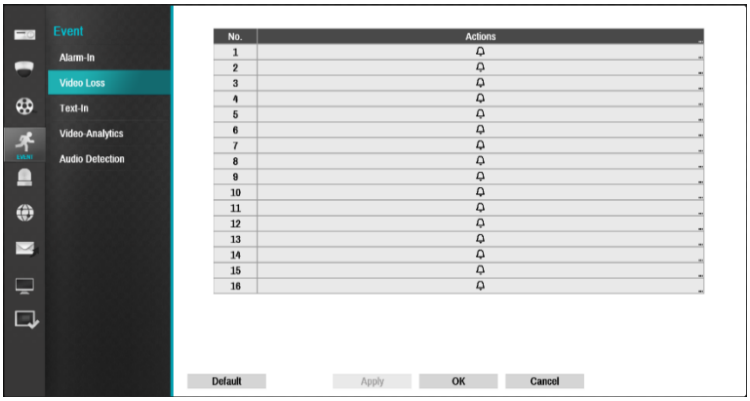
PATH: Event Menu > Alarm-In



1. Turn each input On or Off by selecting the alarm number.
2. Each input can be given a title. Select the desired **Title** box and enter a title name.
3. Each input can be set as **NO** (normally open) or **NC** (normally closed).
4. Select the box under **Mode**. Set the mode between **Normal** and **Signal**. Normal works the same as the original action, and Signal works without any connected channel.
5. Select the box under **Actions**. Set the actions the Recorder takes whenever it senses an input on one of its alarm inputs. Alarm input can be associated with cameras, trigger an **Alarm-Out** and **Alarm LED**, and/or notify a number of different devices.
6. Select the box beside **Panic Record** and a drop-down menu displays the alarm number. Select the desired alarm number. The Recorder will start panic recording when the corresponding alarm occurs and stops panic recording when the alarm is deactivated.

Video Loss

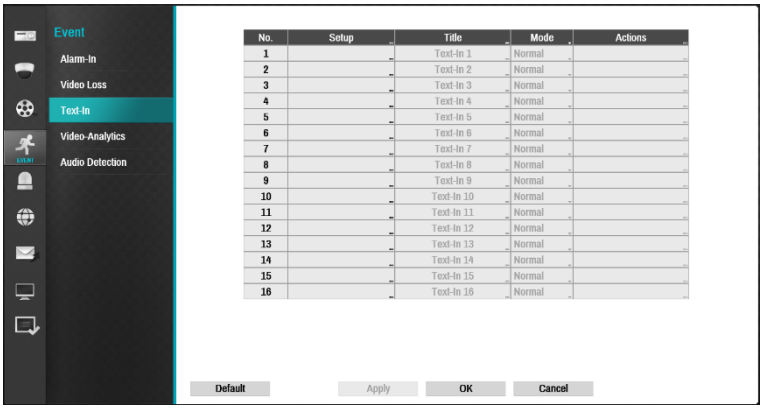
PATH: Event menu > Video Loss



Select the box under **Actions**. The Recorder can be set to react to video loss differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Text-In

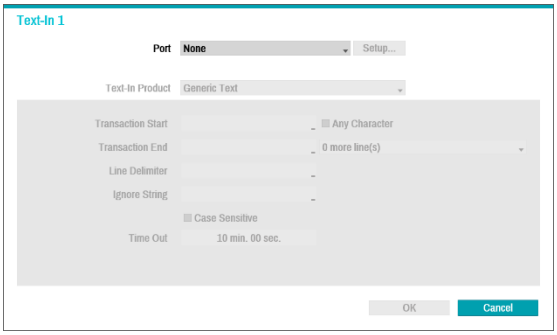
PATH: Event Menu > Text-In



The Recorder can be set to react to text input from devices such as accelerometer or other onboard systems. This screen allows configuration of the Recorder for each text-in device.

Select the box under **Setup**.

NOTE: The system performance might be affected when a large quantity of text inputs are detected from several channels at the same time.



Select the box beside **Port**, and select from None, RS232 (1~2), RS485, USB-Serial (1~8) and LAN (1~16).

NOTE: If the Port is set to None, no changes to the screen are possible.

NOTE: When using a USB to serial text-in device, do NOT remove the USB cable from the port while the system is running.

NOTE: Text-in data might be lost when the text-in buffer is filled by simultaneous text-in data from all 16 LAN channels.

Select Setup and configure RS232, RS485, USB-Serial or LAN ports by using the required settings.

Select the box beside **Transaction Start** and enter the Transaction Start string. Refer to the device manufacturer's documentation for the text string that the device first sends when a transaction starts.

Select Any Character to toggle between On and Off.

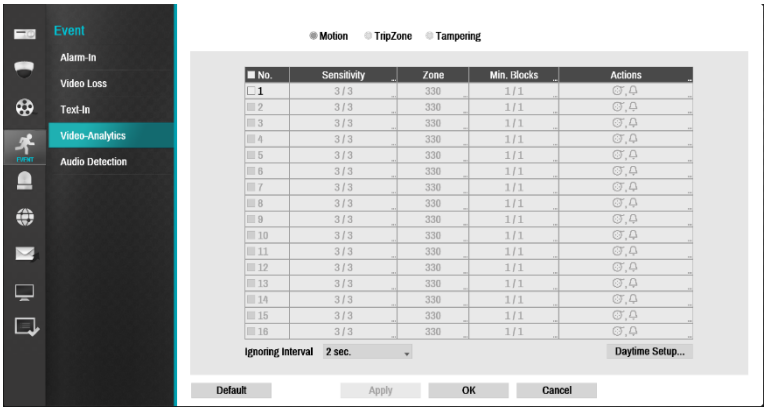
NOTE: If *Any Character* is turned On, text in the *Transaction Start* box cannot be entered.

1. Select the box beside **Transaction End** and enter the Transaction End string. Refer to the device manufacturer's documentation for the text string that the device sends when a transaction ends.
2. Select the **More Line(s)** box, and select the number of additional lines of text to record. Choose from 0 to 10.
3. Select the box beside **Line Delimiter** and enter the character(s) the device uses to indicate the end of a line. Special characters can be entered using ^ and a capital letter; e.g., ^J for NL (New Line), ^M for CR (Carriage Return). Refer to the device manufacturer's documentation for line delimiter character(s).
4. Select the box beside **Ignore String** and enter any strings of text to be ignored. Refer to the device manufacturer's documentation for text strings that the device sends during transactions that need to be ignored.
5. Select the **Case Sensitive** box to toggle between On and Off. Refer to the device manufacturer's documentation to determine if the text strings are Case Sensitive. If the device distinguishes between upper and lower case letters, make certain the Case Sensitive box is turned On.
6. Select the box beside **Time Out**, and set the length of time to wait for a new text string. The Recorder will consider a transaction complete if no new text strings are entered between the last text input and the dwell time out. Adjust the Time Out dwell from 5 seconds to 15 minutes.
7. Each input can be given a title. Select the desired **Title** box and enter the title.
8. Select the box under **Mode**. Set the mode between **Normal** and **Signal**. Normal works the same as the original action, and Signal works without any connected channel.
9. Select the box under **Actions**. The Recorder can be set to react to text input. Text input can be associated with cameras, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Video Analytics

PATH: Event Menu > Video Analytics

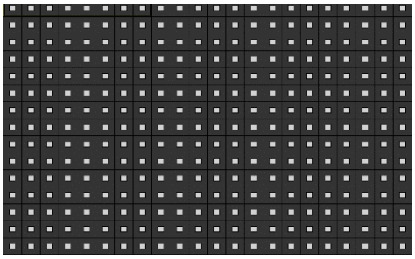
Motion



Video motion detection can be turned On or Off for each camera.

Selecting the box under the **Sensitivity** heading allows adjustment of the Recorder's sensitivity to motion for Daytime and Nighttime independently. There are five settings with one being the least sensitive and five being the most sensitive.

Selecting the box under the **Zone** heading displays the zone setup screen. Set up motion detection zones by selecting or clearing blocks. Select the tool to use and set motion detection zones by dragging the mouse.



- (Select) or (Clear): Click to select or clear a block for motion detection.
- 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.
- OK: Click to accept changes and closes Zone setup.
- Cancel: Click to exits Zone setup without saving changes.

Adjust the minimum number of detection blocks that must be activated to trigger a motion alarm. Selecting the box under the **Min. Blocks** heading allows adjustment of the minimum number of detection blocks for Daytime and Nighttime independently. Smaller numbers provide greater sensitivity because fewer detection blocks must be activated.

Right-click on the mouse open up the **Zone Setup** menu.

- **Select**: Confirm the block selection in the selection window
- **Clear**: Clear the block selection window
- **Reverse**: Clear the blocks selected within the selection window and select all unselected blocks within the selection window
- **Select All**: Select all blocks
- **Clear Al**l: Clear all block selections
- **Reverse All**: Clear all selected blocks within the screen and select all unselected blocks within the screen
- **OK**: Save the changes and exit the menu
- **Cancel**: Exit the menu without saving the changes

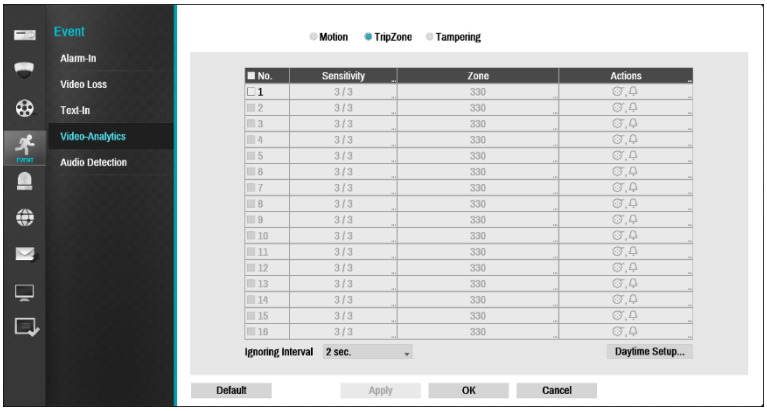
Select the box under **Actions**. The Recorder can be set to react to motion detection differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Control excessive event logging and remote notification of motion detected after the motion dwell time by adjusting the **motion ignoring dwell** interval. Select the box beside **Ignoring Interval**. A list of intervals ranging from one to five seconds or Never appears. The Recorder will not log and notify motion events occurred during the preset interval range.

NOTE: The record action for motion events is not affected by the Motion Ignoring function.

Selecting **Daytime Setup** allows set up of the Daytime range. Use the Up and Down arrow buttons to set the Daytime range. The Recorder will consider the remaining time range as **Nighttime**.

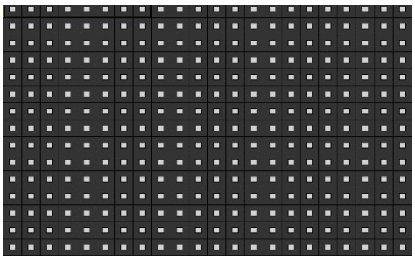
TripZone



Video TripZone detection can be turned On or Off for each camera. TripZone defines a boundary for motion detection (into or out of). Motion across the boundary will trigger an event. Motion inside or outside the area will not trigger an event.

Selecting the box under **Sensitivity** heading allows adjustment of the Recorder's sensitivity to TripZone for Daytime and Nighttime independently. There are five settings, with 1 being the least sensitive and 5 being the most sensitive.

Selecting the box under **Zone** heading displays the zone setup screen. Set up TripZone detection zones by selecting or clearing blocks. Select the tool to use and set TripZone detection zones by dragging the mouse.



- (Select) or (Clear): Click to select or clear a block for TripZone detection
- or (One or All blocks): 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 movement considered as an event. Selecting IN considers a movement as an event when motion into the selected area is detected, and selecting OUT when motion from the area is detected
- OK: Click to accept changes and close Zone setup
- Cancel: Click to exit Zone setup without saving changes

Right-click on the mouse open up the **Zone Setup** menu.

- **Select**: Confirm the block selection in the selection window
- **Clear**: Clear the block selection window
- **Reverse**: Clear the blocks selected within the selection window and select all unselected blocks within the selection window.
- **Select All**: Select all blocks
- **Clear All**: Clear all block selections
- **Reverse All**: Clear all selected blocks within the screen and select all unselected blocks within the screen
- **OK**: Save the changes and exit the menu
- **Cancel**: Exit the menu without saving the changes

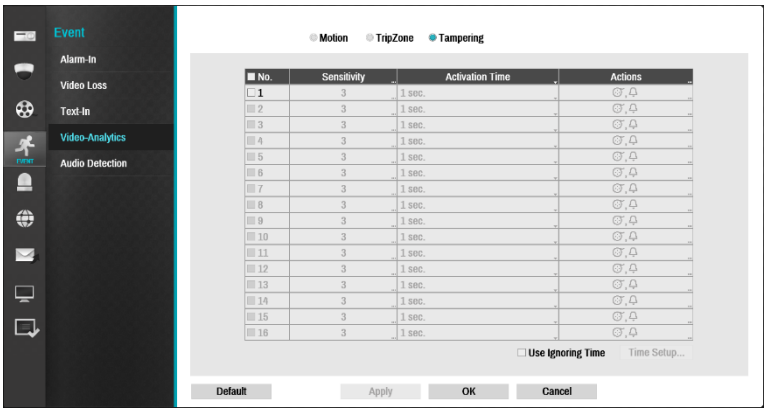
Select the box under **Actions**. The Recorder can be set to react to TripZone detection differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Select the box beside **Ignoring Interval**. A list of intervals ranging from 1 to 5 seconds or Never appears. The Recorder will not log and notify TripZone events occurred during the preset interval range.

NOTE: The record action for TripZone events is not affected by the TripZone Ignoring function.

Selecting **Daytime Setup** allows set up the Daytime range. Use the Up and Down arrow buttons to set the Daytime range. The Recorder considers the remaining time range as Nighttime.

Tampering



Video **Tampering** detection can be turned On or Off for each camera.

Selecting the box under the **Sensitivity** heading allows adjustment of the Recorder's sensitivity to tampering. There are five settings with 1 being the least sensitive and 5 being the most sensitive.

Selecting the box under the **Activation Time** heading allows setting the duration before the Recorder reports a tampering. The Recorder will not detect a tampering of less than the Activation Time set.

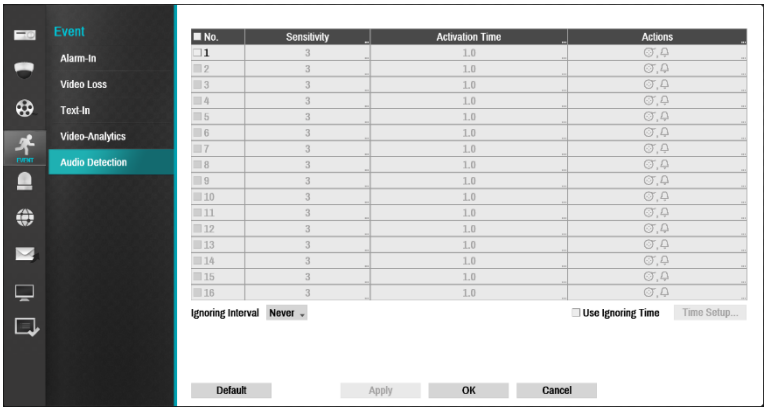
Select the box under **Actions**. The Recorder can be set to react to tampering detection differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Selecting **Use Ignoring Time** toggles between On and Off. When set to On, the Recorder ignores tampering events occurring during the preset period. Selecting Time Setup allows set up of the event ignoring time.

NOTE: The record action for tampering events is not affected by the Tampering Ignoring function.

Audio Detection

PATH: Event Menu > Audio Detection



Audio Detection can be turned On or Off for each camera. This feature sends alerts when audio detection is below the set sensitivity level. This notification indicates a possible loss of audio.

Selecting the box under the **Sensitivity** heading allows adjustment of the Recorder's sensitivity to audio detection. There are five settings with one being the least sensitive and five being the most sensitive.

Selecting the box under the **Activation Time** heading allows setting the duration before the Recorder reports an audio detection. The Recorder will not consider any audio detection to be an event if the detected audio is less than the Activation Time.

Select the box under **Actions**. The Recorder can be set to react to audio detection differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out and Alarm LED, and/or notify a number of different devices.

Select the box beside **Ignoring Interval**. A list of intervals ranging from one to five seconds or **Never** appears. The Recorder will not log and notify audio detection events occurring during the preset interval range.

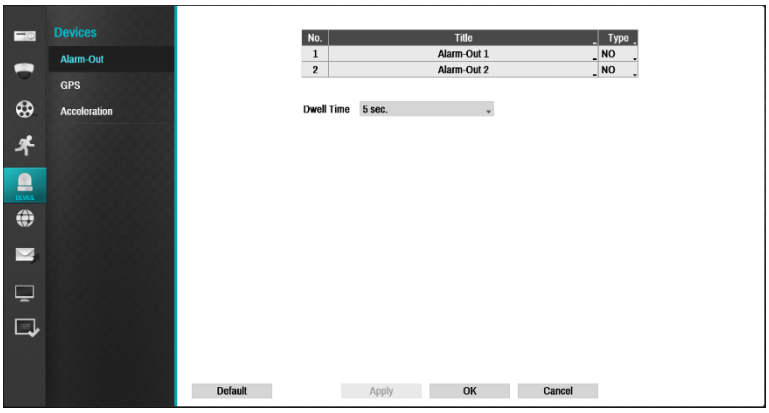
NOTE: The record action for audio detection events is not affected by the Audio Detection Ignoring function.

Selecting **Use Ignoring Time** toggles between On and Off. When set to On, the Recorder ignores audio detection events occurring during the preset period. Selecting **Time Setup** allows set up of event ignoring time.

Devices Setup

Alarm-Out

PATH: Devices Menu > Alarm-Out



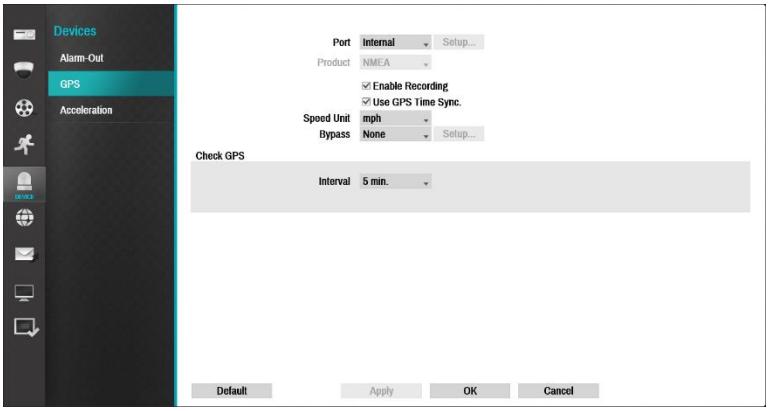
Each alarm output can be given its own title by selecting the box under the **Title** heading. Enter the title of each alarm output.

Selecting the box under the **Type** heading allows to set the alarm output for **NO** or **NC** (*normally open* or *normally closed*).

Selecting the box beside **Dwell Time** allows setting the dwell time of the alarm output. Dwell times range from five seconds to 15 minutes.

GPS

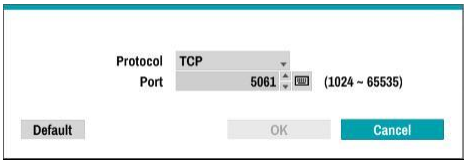
PATH: Devices Menu > GPS



Select the box beside **Port** and select from **Internal**, **RS232** (1~2), **RS485** and **LAN** (1 ~ 16). If the RS232 or RS485 ports are in use for another function, they cannot be configured for GPS.

If RS232 and RS485 ports are selected, select **Setup**, and select the correct **Baud Rate**, **Parity**, **Data Bits** and **Stop Bits** for the connected device.

If LAN port is selected, select Setup… and select the correct Protocol and Port.



Select the box beside **Protocol** and select from TCP and UDP.

Select the box beside **Port** and set the port number by using the Up and Down arrow. Select the keyboard symbol ⌨ to change the settings.

If **Internal** is selected, connect a GPS antenna to the GPS connector on the rear of the recorder.

Select the box beside **Product** and select from NMEA and TAIP.

Selecting **Enable Recording** toggles between On and Off. When set to On, the Recorder will record the GPS information.

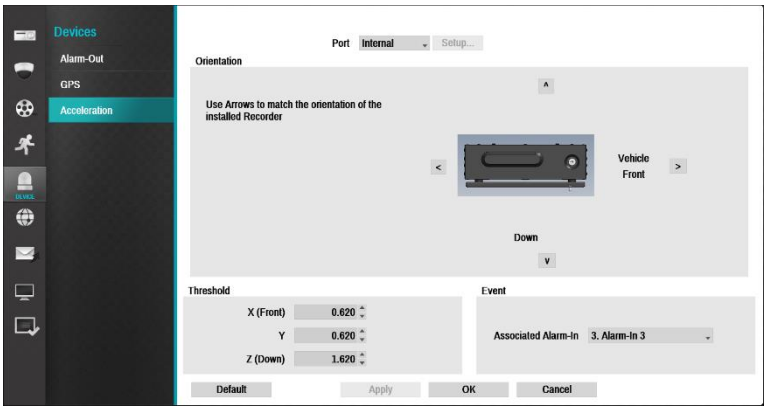
Selecting **Use GPS Time Sync** toggles between On and Off. When set to On, the Recorder will synchronize the time to the GPS satellite every hour.

If the **Internal GPS** is selected, GPS data can be transmitted from the recorder to another device by using the Bypass function. Select the port for transmitting the GPS data.

Select the box beside **Check GPS - Interval** to define GPS loss detection time. The Recorder will log and notify GPS loss if the GPS receiver does not receive any GPS data during the set interval.

Acceleration

PATH: Devices Menu > Acceleration



Select the box beside **Port** and select from **Internal**, **RS232** (1~2), **RS485** and **LAN** (1~16). If the RS485 ports are in use for another function, they cannot be configured for **Acceleration**.

Configure the orientation of the installed Recorder.

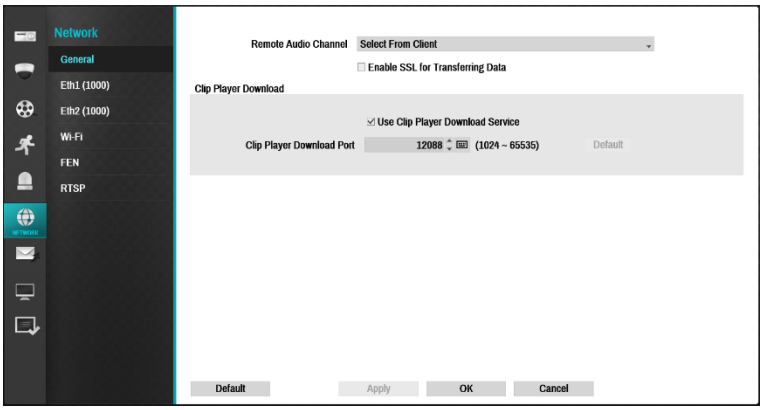
Configure the **Threshold** for X, Y, and Z for the internal acceleration sensor. When the X, Y, and Z exceeds the defined threshold, the Recorder will trigger an event.
Select **Alarm-in No.** to react when the acceleration event occurs.
Title and **Action** can be set in Alarm-in page.

NOTE: For the Notify action to work, the Recorder should be registered in the RsM (RoadRunner Secure Management Software™).

Network Setup

General

PATH: Network Menu > General



The Recorder supports two-way audio communication between a local system and a PC running RsM. Selecting the box beside **Remote Audio Channel** selects the audio channel that sends audio to the remote site. Selecting **Select From Client** will send audio of the channel selected from RsM.

NOTE: Depending on network conditions, audio might be interrupted or out of synchronization during transmission.

Select **Enable SSL** for **Transferring Data** to toggle between On and Off. When it is On, the security of data, except video and audio transmitted for remote monitoring or remote recording, can be enhanced by using the SSL (Secure Sockets Layer) authentication. When using the SSL function, the Recorder cannot be connected with a remote program that does not support the SSL function.

CAUTION: The remote connection will be disconnected temporarily after changing the SSL settings.

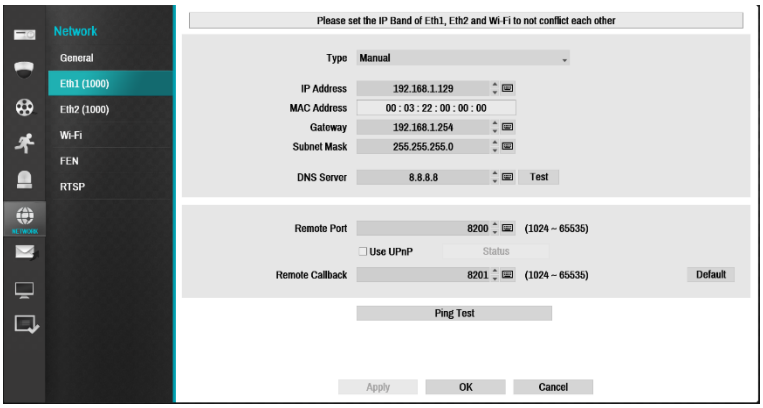
NOTE: This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit (http://www.openssl.org/).

Select Use Clip Player Download Service to toggle between On and Off. When it is On, you can download the clip player program from the following web site:

- http://ipaddress:port/ClipPlayer.exe (e.g. when the Recorder IP address is 192.168.1.129 and port number is 12088, enter http://192.168.1.129:12088/ClipPlayer.exe)

Eth1 (1000)

PATH: Network Menu > Eth1 (1000)



Select the box beside **Type**, and select the type of network configuration between **Manua**l and **DHCP**.

Selecting Manual from the Type allows set up of LAN parameters manually.

Select the number to change and use the Up and Down arrows to increase or decrease. Select the keyboard symbol ⌨ to change the settings. The factory default LAN settings are:

IP Address:192.168.1.129
Gateway: 192.168.1.254
Subnet Mask: 255.255.255.0
DNS: 8.8.8.8

NOTE: Be sure to obtain the appropriate IP Address, Gateway, Subnet Mask and DNS from your network administrator.

Select the box beside **DNS Server** and set the IP address of the DNS server by using the Up and Down arrow. Select the keyboard symbol ⌨ to change the settings.

Select the box beside **Remote Port** and set the port number by using the Up and Down arrow. Select the keyboard symbol ⌨ to change the settings. The factory default port setting is 8200.

Select **Use UPnP** to toggle between On and Off. When On, port forwarding from the NAT (Network Address Translation) device (router) to the Recorder will be enabled automatically via UPnP (Universal Plug and Play) service.

NOTE: For UPnP to work, your NAT router must support UPnP Port Forwarding and the function should be set to Enabled.

Port settings cannot be saved when *Use UPnP* is On.

Select the **Status** box to display the port numbers forwarded from the NAT device via UPnP service.

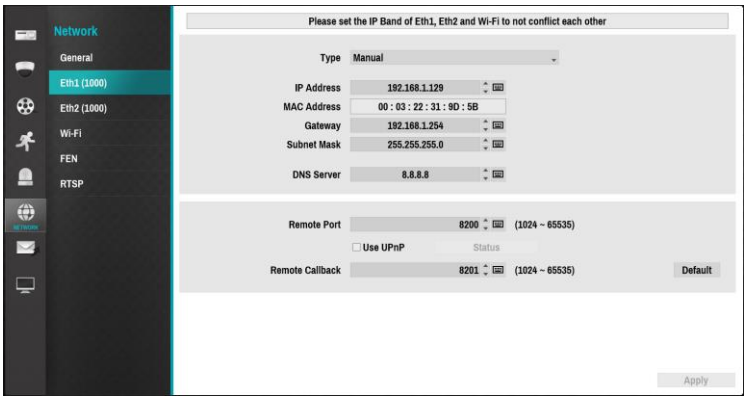
Select the box beside **Remote Callback** and set the port number by using the Up and Down arrow. Select the keyboard symbol ⌨ to change the settings. The factory default port setting is 8201.

NOTE: Obtain the appropriate Port Numbers for each RsM related program (Port and Callback) from your network administrator.

NOTE: The system restarts automatically after changing the port settings.

CAUTION: When changing the port settings, change the port settings on the PC running RsM as well. Refer to the RsM manual for details.

Select **Ping Test** to test the current WAN settings you made



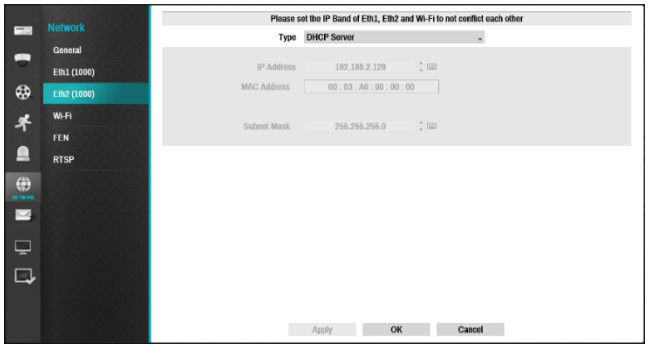
Selecting **DHCP** from the **Type** and selecting **Apply** button reads the current IP address of the Recorder configured by DHCP (Dynamic Host Configuration Protocol) network.

Select **Auto** (Default) to toggle between On and Off. When it is On, the Recorder will obtain the IP address of the DNS server automatically.

NOTE: The option to select DNS *Auto* is only available when the Recorder network type is configured for DHCP.

Ethernet 2

PATH: Network Menu > Ethernet 2



Select the box beside **Type** and select a desired option. This setting allows you to change the network setting of the Recorder's **Video In** (Camera network) ports on the rear of the recorder (1~16) and the front 10/100 **Ethernet Port**. Check the camera's network setting first before you change this setting. Default Type is DHCP Server.

NOTE: When making changes to Ethernet 2, make sure the IP information does not conflict with the IP settings of *Ethernet 1*.

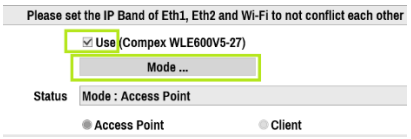
- **None**: Disables this setting (not recommended)
- **Manual**: Allows you to configure an IP address and other settings manually
- **DHCP Client**: Retrieves an IP address and other settings automatically from a DHCP server
- **DHCP Server**: Makes the Recorder run as a DHCP server. The Recorder allocates an IP address automatically between 192.168.2.[1~99]/24, to each camera or laptop/PC, which are connected to the Recorder's rear **Video In** (Camera) ports or the front 10/100 **Ethernet Port**

Wi-Fi

PATH: Network Menu > Wi-Fi

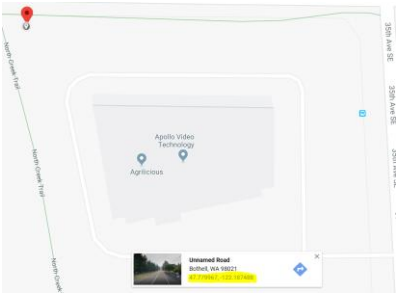
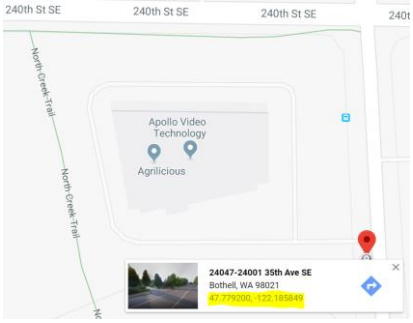
NOTE1: If the Wi-Fi Module is not installed, the entire Wi-Fi menu is disabled.

Select **Use** checkbox to use the Wi-Fi function then select mode:

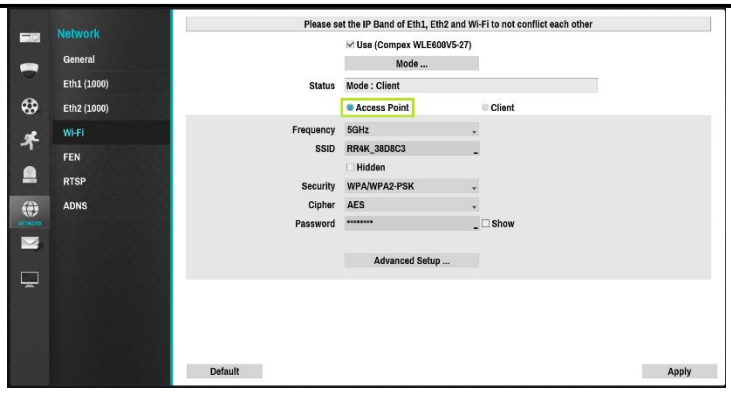


Status: Displays the current operation mode and the connection status.

Configure the mode settings before making changes to the **Access Point** or client menu. By default, the mode is Access Point for all **Geolocation** conditions. In the **Mode** menu, you may choose to force the Recorder to behave as an Access Point or Client based on three different condition types:

Type	Description	Recommendation
All	The Recorder will be in this mode whenever the Recorder is not within another mode rule (Client or Access Point)	This is the default mode. If you do not wish to use any advanced mode changes using geolocation, set the mode and leave this as the only rule (Client or Access Point). **NOTE: This rule has a lower priority to additional Invalid or Region mode rules**
Invalid	When there is no GPS signal the Recorder will switch the WiFi Mode to the user defined mode (Client or Access Point)	Recommend having this set to the Wi-Fi mode you would like the recorder to be in when the vehicle is at the Facility or had no GPS signal. Since some facilities park their vehicles indoors the GPS signal may be obscured. **NOTE: not required if you only have one *All* type rule**
Region	Allows you to add multiple (64) GeoFence location based on two geographic points (top left and bottom right decimal degree coordinates	For example, you can use Google Maps to find the decimal degrees for the top left and bottom right of the GeoFence (of your facility) for the mode you wish the Recorder to be in when the vehicle enters the geolocation. Here is an example of the Apollo HQ top left and bottom right geolocation Top Left = 47.779967, -122.187488  Bottom Right = 47.779193, -122.185849 

After setting up the **Mode** menu, return to the **Access Point** menu. Even if changes to the Mode are not initially required, it is recommended to complete set up to reflect the vehicle information and security settings in the event this functionality is desired at a later date.



- Access Point Setup
- **Frequency**: Choose 2.4GHz or 5GHz
- **SSID**: Specify the SSID name to be displayed (for example: 1001)
- **Hidden**: Check to hide SSID broadcasting (Not recommended as this only encourages attacks)
- **Security/Cipher**: Choose the encryption method
- **Password**: Set the password
- **Type**: Select the type of network (DHCP is recommended for Access Point mode)

- Client Setup
- **SSID**: Enter or Select **San** and chose an **SSID** from the list you wish the recorder to connect to.
- **Security/Cipher**: Choose the encryption method (If you used the **Scan SSID** feature this will automatically be populated to the correct **Security** and **Cipher** settings)
- **Password**: Enter the password for the recorder to use
- **Advanced**: Select the type of network, DHCP or manual (static IP)
    - If you use Dynamic IP, please use setup ADNS on the recorder and mSET server or use Dynamic IP Reservations. To use dynamic IP reservations, take note of the MAC address under the Wi-Fi Client Advanced Setup menu and record this against the vehicle number for use when creating DHCP reservations

FEN

PATH: Network Menu > FEN

Select **Use FEN** to toggle between On and Off.

NOTE: FEN is the technology that automatically sets up Recorder to work seamlessly for remote viewing via the network internet connection. For FEN to work, naming the Recorder will be required.

Select the box beside **FEN Server** enter the IP address or domain name of the FEN server.

NOTE: Obtain the IP Address or domain name of the FEN Server from the network administrator.

Use the domain name instead of IP address if already set up the DNS Server.

Select the box beside **Port** and set the port number of the FEN server using the Up and Down arrow buttons to increase or decrease the numbers. Select the keyboard symbol ⌨ to change the settings. The factory default port setting is 10088.

Select the box beside **FEN Name** and enter the Recorder name to be registered on the FEN server.

Select the C**heck Box** to check whether or not the name entered can be used.

RTSP

PATH: Network Menu > RTSP

Select **Enable RTSP** (Real-Time Streaming Protocol) to toggle between On and Off.

Select the box beside **RTSP Port**. Set the port number of the RTSP server obtained from your system administrator.

Select the box beside **RTP Start Port**. Set the start port number of the RTP server obtained from your system administrator.

Select the box beside **RTP End Port**. Set the end port number of the RTP server obtained from your system administrator.

NOTE: **When using NAT (Network Address Translation) or firewall services, opening all UDP ports specified with the RTSP menu. This will allow you to access the Recorder using either an iPhone/iPad or Android device.**

You can access a remote Recorder and monitor live video images using media players, such as VLC Player, supporting RTSP service. Start the media player on your local PC and enter "rtsp://ID:Password@IP address:RTSP port number/trackID='channel number'"

ADNS

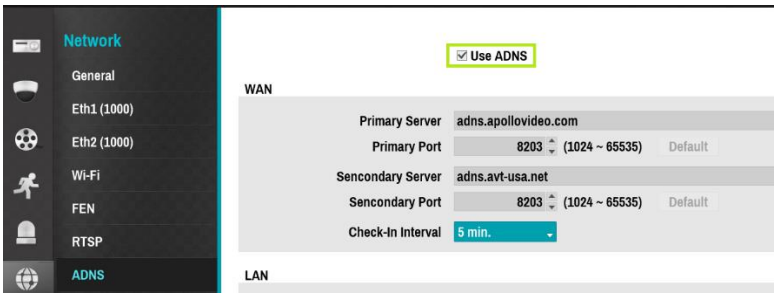
PATH: Network menu > ADNS

ADNS is used by mSET (and ViM 4.6 or later) to update the Recorder's status and Dynamic IP information. The Recorder sends a small TCP packet to the configured primary or secondary server for each Network type. This packet contains Recorders site name, recording status and last known GPS locations.

WAN is for use for when the vehicle reports into the mSET server via a high cost WAN/Cellular network. When the mSET server receives a TCP packet from the recorder using the WAN port (8203) it knows that the Recorder is online, however, the cost to download data is high so mSET will only download the Recorder's system, event, health and GPS information.

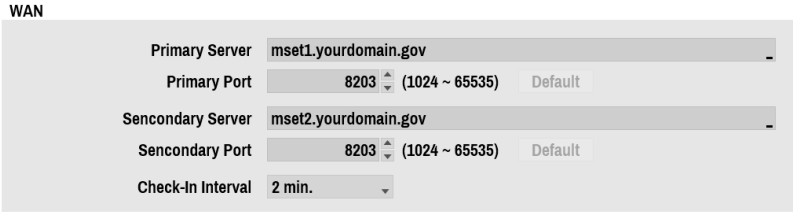
When the mSET server receives a TCP packet via the LAN port (8202), the mSET server knows it can begin downloading any video data and metadata associated with an event.

If you wish to enable ADNS, Select **Use ADNS**



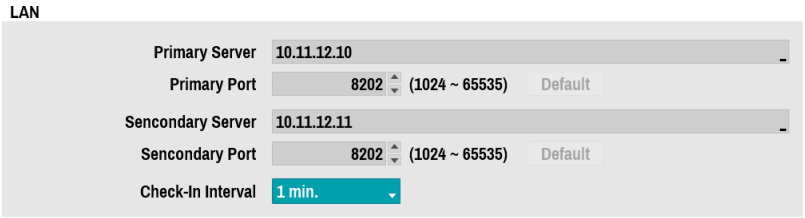
WAN Settings:

- Primary and Secondary Server:
  - Specify the DNS name or WAN IP address of the mSET(ViM) server for WAN (high cost communications)
  - NOTE: Inbound NAT(Port Forwarding Rules) on your firewall will be required to allows inbound (TCP:8202) to reach the mSET(ViM) server(s) Private LAN IP
- Primary and Secondary Port:
  - change only if you are using a custom setup for inbound ADNS communication between the recorders (vehicles) and the mSET(ViM) server
  - Default TCP port is: 8203
- Check-in Interval:
  - Set how often the Recorder will send a TCP packet to the mSET server.



LAN Settings:

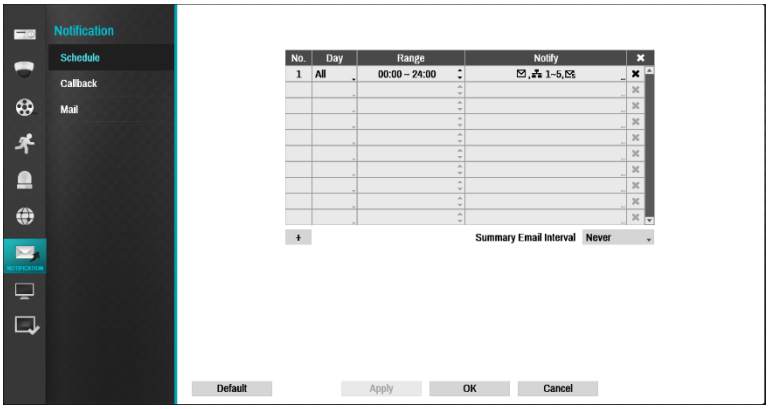
- Primary and Secondary Server:
  - Specify LAN IP address of the mSET (ViM) server for LAN (low cost communications)
- Primary and Secondary Port:
  - Change only if you are using a custom setup for inbound ADNS communication between the recorders (vehicles) and the mSET (ViM) server
  - Default TCP port is: 8202
- Check-in Interval:
  - Set how often the Recorder will send a TCP packet to the mSET server.
  - 1Min is recommended(Default)



Notification Setup

Schedule

PATH: Notification Menu > Schedule

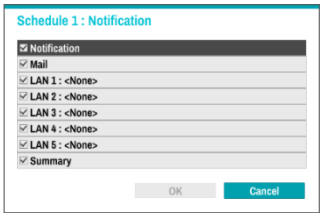


Select the [+] to add a schedule. Selecting the boxes under the **Column** heading allows editing the information in those boxes.

The **Day** box allows selection of the days that the notification schedule will be active. The choices are: Sun, Mon, Tue, Wed, Thu, Fri, Sat, M-F, Hol and All.

The **Range** box allows setting the time that the notification schedule will be active in 15-minute increments from 00:00 to 24:00.

Select the desired box under the **Notify** heading, and the **Schedule Notify** menu appears.



Toggle the entire list On and Off by selecting **Notification**. Toggle the individual items On and Off by selecting that item. Select **OK** to accept the changes.

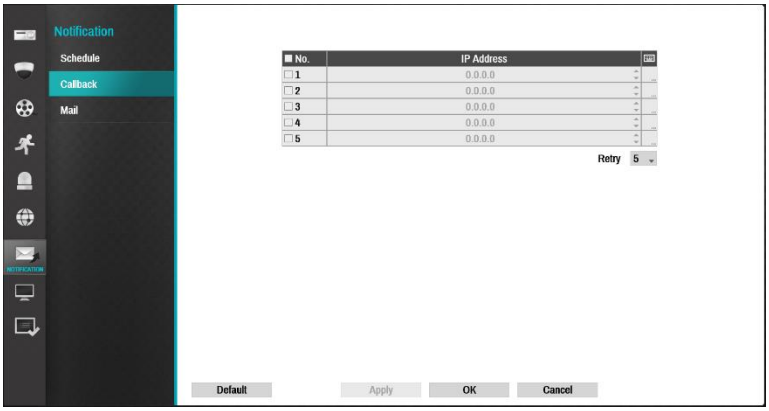
NOTE: For the Notify action, the notify item selected should be enabled in the Notification setup screen and the Recorder should be registered in the RsM (RoadRunner Secure Management Software™).

NOTE: The Notify action for system events made in the System - Monitoring setup screen on the System menu is not affected by the Notification Schedule settings.

Highlight the box beside **Summary Email Interval** and select the interval for the Recorder to send a summary email. The Recorder sends an email containing a summary of events detected during the preset interval.

Callback

PATH: Notification Menu > Callback



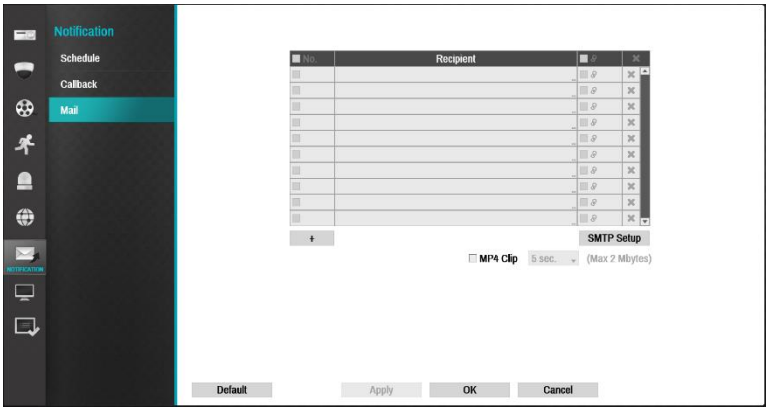
The Recorder can be set up to contact a computer running RsM (RoadRunner Secure Management Software) when an event occurs. Select the box under the **No.** heading and toggle between On and Off. The IP addresses can be set when the row is enabled.

Select the **IP Address** box to change and enter the IP address of the computer to contact during an event by using the Up and Down arrows. Five IP addresses are available.

Select the box beside **Retry** and enter the number of times for the Recorder to try contacting the computer.

Mail

PATH: Notification Menu > Mail



The Recorder can be configured to send an email when an event occurs. The **Mail** account can be turned On or Off by selecting the boxes under the **No.** heading.

Select the [+] to add a mail recipient.

Select the first box under **Recipient** and enter the recipient's e-mail address.

Select the second box under Recipient and select between Manual and listed SMTP mail server providers.

NOTE: The e-mail address must include the "@" character to be a valid address.

Select the box under the 🔗 heading to toggle between On and Off. The Recorder will clip an event detected video segment and attach it to an email when the 🔗 box is turned On.

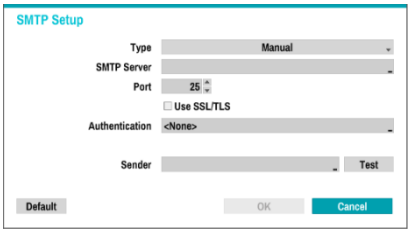
NOTE: Attaching a video clip to an email is not available for the Text-In event.

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

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

The **Mail** accounts can be deleted by selecting the ☒ beside the account.

Select the **SMTP Setup** box, and the SMTP Setup screen appears.



Select the box beside **Type** and select between **Manual** and listed **SMTP** Mail Server providers.

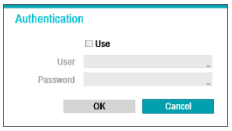
Select the box beside **SMTP Server**, enter the IP address or domain name of the SMTP server.

NOTE: Obtain the IP Address or domain name of the SMTP Server from your network administrator.

NOTE: Use the domain name instead of IP address to set up the DNS Server when setting up the IP Address.

Select the box beside **Port** and enter the **SMTP Server** port number. by using the Up and Down arrows. The default port number is 25.

Select **Use SSL/TLS** to toggle between On and Off. When On, the Recorder can send an email via an SMTP server requiring SSL (Secure Sockets Layer) authentication.



Select the box beside **Authentication** and an Authentication screen appears. Select Use to toggle between On and Off. Select the box beside User/Password and enter the user ID and password.

Select the box beside Sender and enter the sender's e-mail address.

NOTE: The e-mail address must include the "@" character to be a valid address.

Select the **Test** box to test emailing with the current settings you made.

Display Setup

OSD

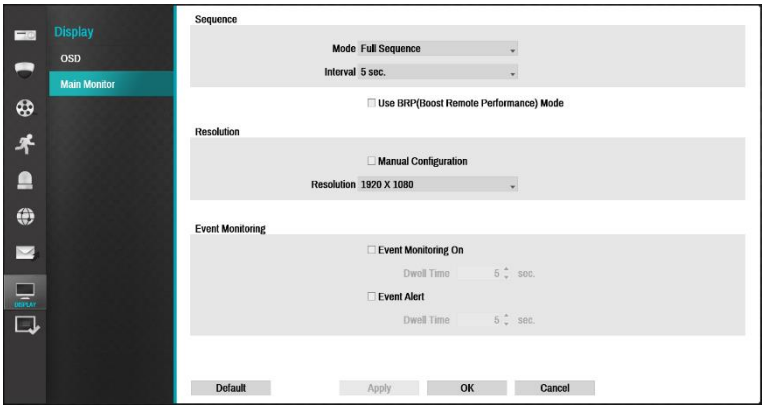
PATH: Display Menu > OSD

Set the **OSD** (On Screen Display) options. The selected information is displayed on the bottom of the screen.

- **No.**: Display the camera number on the upper left corner of the camera screen
- **Title**: Display the camera name on the upper left corner of the camera screen
- **Record**: Display recording and schedule icons
- **Audio**: Display the icon on channels generating audio
- **Text-In**: Display strings received from text-in devices
- **Display Dwell**: Specify how long to display the text-in string. Text-in strings are shown on the single screen only

Main Monitor

PATH: Display Menu > Main Monitor



- **Mode**: Select Full Sequence or Cameo Sequence
- **Interval**: Select between three seconds and two minutes. For more information on Sequences, refer to Live Mode #7 Sequence setup on page 11
- **Use BRP (Boost Remote Performance) mode**: With BRP mode on, the camera full screen does not display in live mode
- **Manual Configuration**: Set the resolution manually regardless of the resolution supported by the monitor
- **Resolution**: Select from 3840 x 2160, 1920 x 1200, 1920 x 1080, 1680 x 1050 and 1600 x 1200

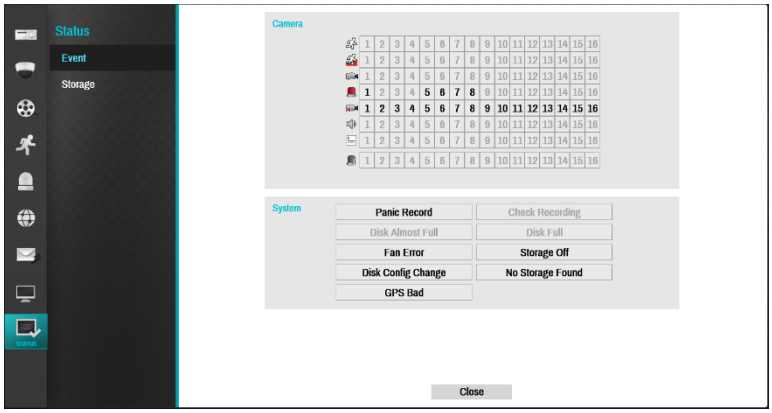
- **Event Monitoring On**: With Event Monitoring enabled, the camera screen linking event monitoring is shown. For more information on Event Monitoring, refer to the **Event Monitoring** on page 25
- **Event Alert**: With Event Alert selected, the red line appears on the top of the camera screen linking event monitoring when an event occurs

NOTE:
- **Supported resolutions may be restricted depending on the monitor.**
- **We recommend that you use 3840 x 2160 or 1920 x 1080 resolution.**

Status Setup

Event

PATH: Status Menu > Event

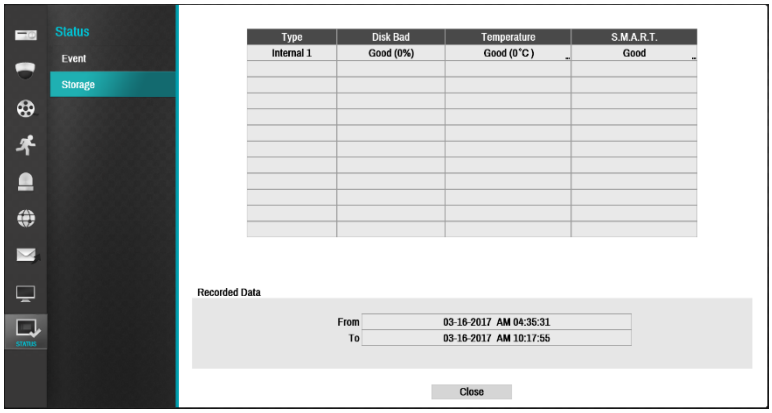


This screen displays an overview of all events. When an event occurs, the corresponding channel flashes for five seconds.

Motion Detection	Trip-Zone	Tampering
Alarm-In	Video Loss	Audio Detection
Text-In	Check Alarm-In	

Storage

PATH: Status Menu > Storage



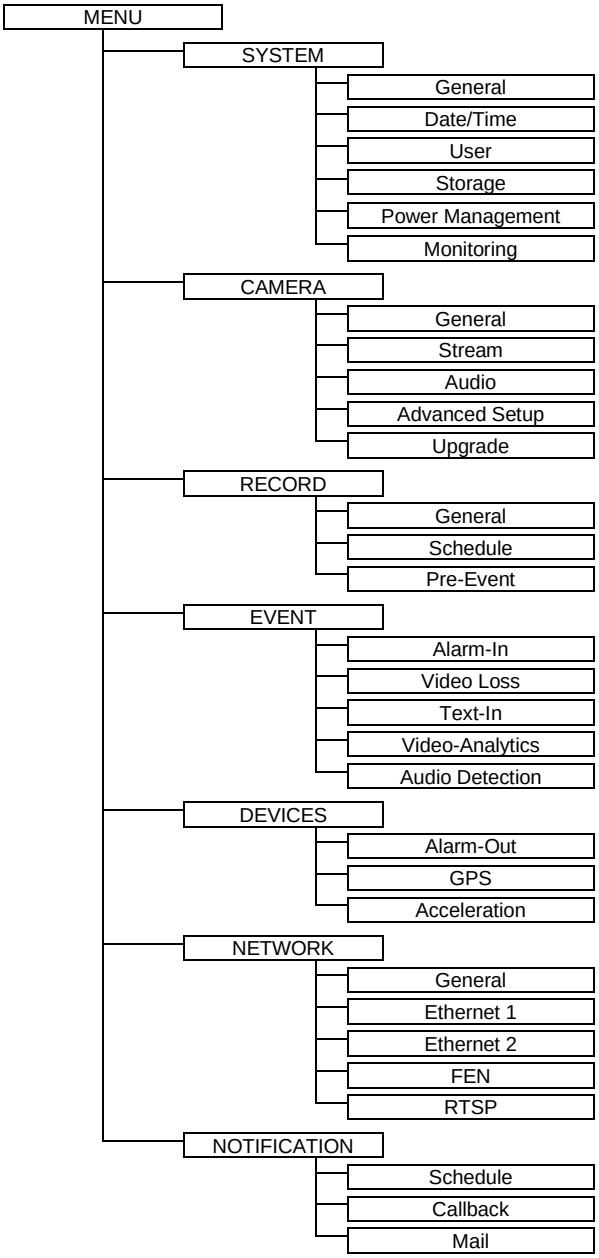
Select Monitoring from the System menu under Setup to configure Disk Bad and Disk Temperature settings.

Disk Bad	Not Formatted	A disk that has never been used before.
	Good	• Disk performing normally. • If the HDD is partially damaged, indicates the bad sector percentage.
	Error	• If the HDD's bad sector ratio is higher than as designated by the user. • Generates a system event.
Temperature	N/A	Unable to detect the disk's temperature.
	Good	Operating within normal temperature range.
	Bad	• Disk temperature higher than as designated by the user. • Generates a system event.
S.M.A.R.T.	N/A	A disk that does not support S.M.A.R.T.
	Good	A disk with normal S.M.A.R.T. status.
	Bad	A disk with abnormal S.M.A.R.T. status. Possibility of damage within 24 hours.

NOTE: Check each disk's data storage time information under Recording Data.

Appendix

Map of Setup Screens



Troubleshooting

Problem	Possible Solution
No Power	• Check power cable connections • Confirm that there is power at the connection terminals
No Live Video	• Check camera video cable and connections • Confirm that the camera has power • Check camera lens settings
The Recorder has stopped recording	If hard disk drive is full, delete video or set the Recorder to the Overwrite Mode If there is a hard disk error, swap the hard disk
While upgrading the system, the Recorder keeps rebooting and the upgrade fails.	If the current system version is higher than the upgrade package file version, reset the Recorder first using the Factory Reset. When using the Factory Reset, saved settings are lost

Please contact technical support by phone: 1-888-AVT-USA1 (425-483-7100), or by email: tech@apollovideo.com for additional information and troubleshooting assistance.

System Log Notices

Boot Up	Schedule On	Clip-Copy Duration of Video:
Shutdown	Schedule Off	Clip-Copy Camera:
Restart	No Storage Found	Callback Fail
Upgrade	Storage Wrong Format	Factory Reset
Upgrade Fail	Storage Formatted	ACC: On
Power Failure	Clear All Data	ACC: Off
Time Change	Clear Disk	Key: On
Time Zone Change	Format Disk	Key: Off
Time Sync	Disk Full	Heater On: Local
Time Sync Fail	Disk Config Change	Heater On: Boot Up
Disk Bad	Disk 'No.' : 'serial number'	Shutdown: Low Voltage
Login	Disk 'No.' : Removed	Shutdown: High Voltage
Logout	Auto Deletion	Shutdown: Low Temperature
Setup Begin	Search Begin	Shutdown: ACC
Setup End	Search End	Recover from Power Failure: Low Voltage
Remote Setup Change	Clip-Copy Begin	Recover from Power Failure: High Voltage
Remote Setup Fail	Clip-Copy End	Camera Upgrade Begin
Setup Imported	Clip-Copy Cancel	Camera Upgrade End
Setup Import Failure	Clip-Copy Fail	Camera Upgrade Failure
Setup Exported	Clip-Copy User:	Camera Upgrade User:
Setup Export Failure	Clip-Copy From:	Camera Upgrade Camera:
Setup Export Cancel	Clip-Copy To:	

Error Code Notices

System Upgrade Related		Clip Copy Related	
No.	Description	No.	Description
0	Unknown error	0	Unknown error
1	File version error	1	Device error
2	Operating system version error	2	Mounting failed
3	Software version error	3	No media
4	Kernel version error	4	Invalid media
100	Upgrade device mounting failed	5	File already existed
101	Package is not found	6	Not enough space
102	Extracting package failed	7	Creating temporary file failed
103	LILO failed	8	Opening disk failed
104	Rebooting failed	9	Formatting disk failed
105	Invalid package	10	Database has been changed
300	Remote connection failed	11	Appending failed
301	Remote network error	12	Bad sector
302	Remote upgrade is not authorized	13	No executable file
303	Saving remote package failed	14	Opening executable file failed
304	Remote upgrade is cancelled by the user	15	Writing executable file failed
400	USB device mounting failed	16	Creating image failed
401	Reading upgrade package on the USB device failed	17	Burning failed
402	Copying upgrade package on the USB device failed	18	Burning is out of time
403	USB device is not connected	19	Connecting device failed
404	USB device is being used	20	Device is busy
405	Unsupported file system	21	Unsupported file system
500	System is busy clip copying	22	Verify failed

Please contact technical support at:
1-888-AVT-USA1 (425-483-7100)
or by email:Support@apollovideo.com
or support.na@luminator.com after June 22, 2020
for assistance and/or additional information.