RoadRunner

MRH Series Digital Video Recorders Mobile Digital Video Systems

OPERATING MANUAL

Apollo Video Technology
www.avt-usa.com

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 from us. See the Open Source Guide on the software CD (*OpenSourceGuide**OpenSourceGuide.pdf*) or as a printed document included along with the Operating Manual.

Important Safeguards

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

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

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

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

5. Water and/or Moisture
Do not use this equipment near water or in contact with water.

6. Accessories
Do not place this equipment on an unstable cart, stand or table. The equipment may fall, causing serious injury to a child or adult, and serious damage to the equipment. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.

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

7. Power Sources
This equipment should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power, please consult your equipment dealer or local power company.

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

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

10. 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.

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

12. Damage requiring Service
Unplug this equipment from the wall outlet and refer servicing to qualified service personnel under the following conditions:

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

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

14. 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.

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

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

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

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

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

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

21. 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.

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

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.

Table of Contents

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Chapter 1 — Introduction

Feature

Your mobile color DVR is designed for mass transit use and operates using 9 to 30 volts DC, which makes it compatible with the typical 12 VDC and 24 VDC power systems found in buses. The DVR provides viewing and recording capabilities for 4, 8 or 16 cameras or other video sources. It provides exceptional picture quality in both live and playback modes, and offers the following features:

- 9 to 30 VDC Operation
- Vibration Isolation Mounting Bracket
- Removable Hard Disk Drive
- Lock & Key Power Switch
- Programmable System Shutdown or Start After Ignition Switch Is Turned Off
- 4, 8 or 16 Composite Video Input Connectors
- Compatible with Color (NTSC or PAL) and B&W (CCIR and EIA-170) Video Sources
- Auto Detection for NTSC and PAL
- H.264 Codec
- Compact Size
- Multiple Search Engines (Date/Time, Calendar, Event)
- Real-time Recording (480/400 Images per Second (NTSC/PAL) with Standard (CIF) Resolution for 16-channel DVR)
- Continuous Recording in Disk Overwrite Mode
- 2 USB 2.0 Ports for data extractions and software upgrade
- Continues Recording while Transmitting to Remote Site and during Playback
- User-friendly Graphical User Interface (GUI) Menu System
- Multiple Recording Modes (Time-lapse, Pre-event, Event and Panic)
- Two-way Audio Communication
- 2-Channel Audio Recording and 1-Channel Audio Playback
- Supports GPS Input
- Text Input for ATM, POS
- Alarm Connections Include: Input, Output and Reset Input
- Live or Recorded Video Access via Ethernet
- Time Synchronization using industry standard protocol
- Self-diagnostics with automatic notification including hard disk drive S.M.A.R.T. protocol

Technical Overview

The DVR converts analog NTSC or PAL video to digital images and records them on a hard disk drive. Using a hard disk drive allows you to access recorded video almost instantaneously; there is no need to rewind tape. The technology also allows you to view recorded video while the DVR continues recording video.

Digitally recorded video has several advantages over analog video recorded on tape. There is no need to adjust tracking. You can freeze frames, fast forward, fast reverse, slow forward and slow reverse without image streaking or tearing. Digital video can be indexed by time or events, and you can instantly view video after selecting the time or event.

Your DVR can be set up for event or time-lapse recording. You can define times to record, and the schedule can change for different days of the week and user defined holidays.

The DVR can be set up to alert you when the hard disk drive is full, or it can be set to record over the oldest video once the disk is full.

Your DVR uses a proprietary encryption scheme making it nearly impossible to alter video.

You can view video and control your DVR remotely by connecting via Ethernet. There are two USB ports that can be used to upgrade the system or copy video clips to external hard disk and flash drives.

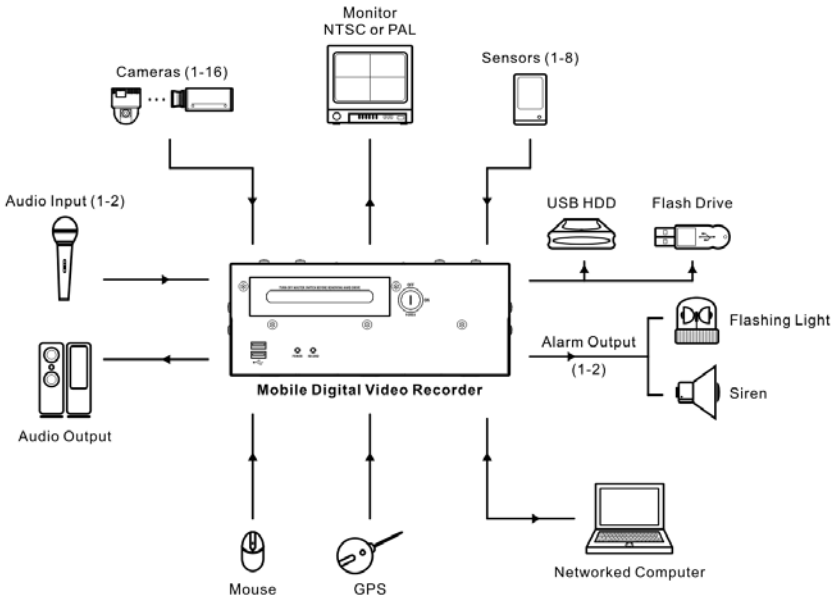


Figure 1 — Typical DVR installation.

NOTE: This manual covers the 4-, 8- and 16-channel digital video recorders. The DVRs are identical except for the number of cameras 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

Package Contents

The package contains the following:

- Digital Video Recorder
- Operating Manual (This Document)
- RAS Software Operating Manual
- Power Cable and Heater Power Cable
- Screws for Mounting

Mounting the DVR

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

CAUTION: The DVR must be mounted level using the bracket to attach it to the floor. The DVR must NOT be mounted on its side or upside down. The vibration isolation mounts are not designed to support the DVR if it is mounted on its side or upside down.

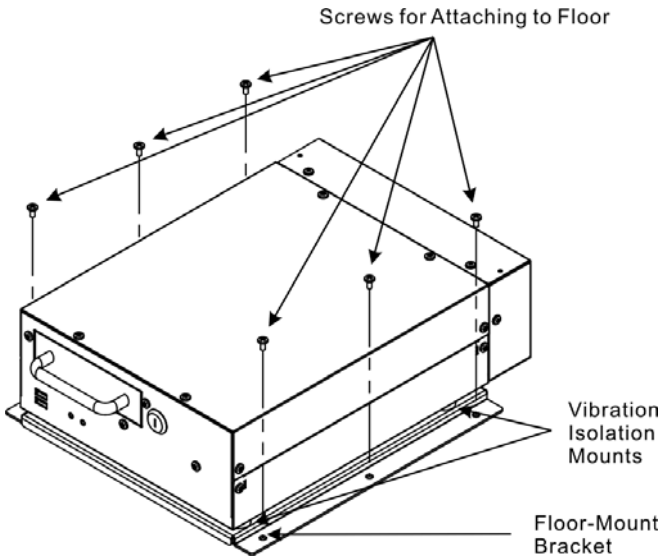
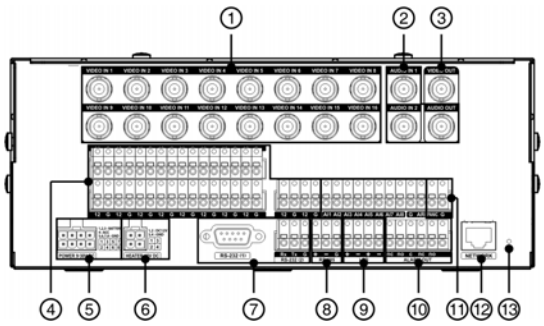


Figure 2 — Typical Mounting.

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

Rear Panel Connectors



① Video Input
② Audio In/Out
③ Video Out
④ 12V DC Output
⑤ Power In
⑥ Heater Power In
⑦ RS232C Port
⑧ RS485 Port
⑨ LED
⑩ Alarm Input/Output
⑪ Panic
⑫ Network Port
⑬ Factory Reset Switch

Figure 3 — 16-Channel DVR rear panel.

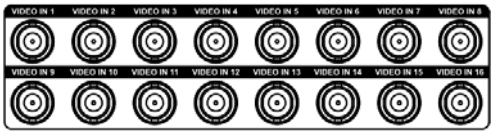
Your DVR can be used with either NTSC or PAL equipment.

NOTE: You cannot mix NTSC and PAL equipment. For example you cannot use a PAL camera and an NTSC monitor.

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

WARNING: IF YOU ARE GOING TO LEAVE THE MONITOR CONNECTED TO THE DVR DURING NORMAL VEHICLE OPERATION, IT IS EXTREMELY IMPORTANT THAT THE MONITOR, AMPLIFIER, AND CABLES DO NOT INTERFERE WITH ANY OF THE VEHICLE'S CONTROLS. IT IS ALSO IMPORTANT THAT THEY DO NOT BLOCK THE DRIVER'S VIEW OR REACH. FAILING TO HEED THESE WARNINGS COULD CAUSE AN ACCIDENT CAUSING SERIOUS INJURY OR DEATH.

Video Input



Connect the coaxial cables from the video sources to the BNC Video In connectors.

Audio In/Out

Your DVR can record audio from up to four sources. Connect the audio sources to Audio In 1and Audio In 2 as needed using RCA jacks. Connect Audio Out to your amplifier.

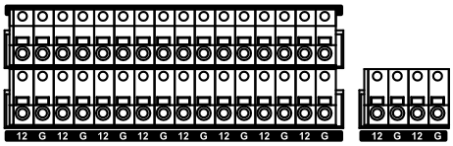
NOTE: It is the user's responsibility to determine if local laws and regulations permit recording audio.

The DVR does not have amplified audio output, so you will need a speaker with an amplifier. The DVR does not have a pre-amplifier for audio input, so the audio input should be from an amplified source, not directly from a microphone.

Video Out

Connect the main monitor to the Video Out connector.

12V DC Output

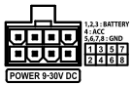


The DVR has a 12 VDC output terminal strip. This is enough to power sixteen cameras and two additional devices such as the GPS.

Connection

12V	VDC Output
G	Chassis Ground (18 connectors)

Power In



Connect the power connector to the DVR.

CAUTION: When the power supply does not meet the requirement (9 ~ 30VDC, 12A) during operation, a surge or a reverse voltage might damage the DVR.

The DVR will operate on a wide range of mass transit vehicles. It will accept power inputs ranging from 9 to 30 VDC. This allows it to operate on both 12 and 24 volt systems. The power connector has eight pins.

Pins 4 should be connected to a fuse that is connected to the positive (+) power bus bar that is turned on when the ignition switch is in the Accessory position.

Pins 1, 2 and 3 should be connected to fuses that are connected directly to the positive (+) battery power bus bar. These pins provide power to the DVR when the ignition switch is turned off. The DVR will continue to record video during the ignition off timeout (Refer to *Chapter 3 — Configuration, System Setup* for details).

CAUTION: Even if you do not plan to use the ignition off timeout feature, it is important to connect Pins 1, 2 and 3. The DVR uses power from these pins for purposes in addition to the ignition off timeout, and it will not function properly if they are not connected.

Pins 5, 6, 7, and 8 should be connected directly to ground (-). Although it is possible to connect only one of the four pins, it is recommended to use four wires to create a more stable current path.

Heater Power In

Connect the heater power connector to the DVR. If the temperature inside the DVR or the HDD rack is on 32°F (0°C) or lower, the DVR does not boot and the built-in heater will operate to increase the temperature until the temperature goes up to 32°F (0°C) and the DVR boots. After the DVR boots, the temperature sensor inside the DVR or the HDD rack continues checking the temperature and keeps the temperature from dropping to 32°F (0°C) or lower by controlling the heater.

Connection

Pin 1 and 2	12V DC Input
Pin 3 and 4	Chassis Ground

CAUTION: When the power supply does not meet the requirement (12VDC, 10A) during operation, the DVR and heater might be damaged.

WARNING: DO NOT TOUCH THE BOTTOM OR TOP OF THE REMOVABLE HARD DISK DRIVE WHEN REMOVING IT AFTER THE BUILT-IN HEATER OPERATES IN THE LOW TEMPERATURE CONDITION. WHEN THE HEATER OPERATES, THE TEMPERATURE OF THE HARD DISK DRIVE INCREASES HIGH AND TOUCHING THE BOTTOM OR TOP OF IT MAY CAUSE INJURY.

RS232C Port

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

Connection

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

RS485 Port

The DVR can be controlled remotely by an external device or control system using RS485 half-duplex serial communications signals. The RS485 connector can also be used to control PTZ (pan, tilt, zoom) cameras. See *Chapter 3 ─ Configuration* and the PTZ camera or remote controller manufacture's manual for configuring the RS485 connection.

Connection

Master Unit				Slave Unit
+	→	To	→	TX+/ RX+
−	→	To	→	TX-/ RX-
G	→	To	→	G

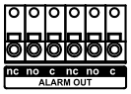
LED

The DVR can activate external LED devices. Heartbeat (H) and recording status (R) outputs are provided (50mA@12VDC). A heartbeat LED will blink at a constant rate as long as the DVR is operating since the system boots. When the system stops operating, the LED blinks for one minute and stops blinking. A recording status LED will blink when the DVR is recording or searching video on the hard disk drive.

Connection

Master Unit				Slave Unit
+	→	To	→	Anode
−	→	To	→	Cathode

Alarm Input/Output



NOTE: To make connections on the Alarm Connector Strip, press and hold the button and insert the wire in the hole below the button. After releasing the button, tug gently on the wire to make certain it is connected. To disconnect a wire, press and hold the button above the wire and pull out the wire.

AI 1 to 8 (Alarm-In): You can use external devices to signal the DVR to react to events. 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 2.4V and for NO (Normally Open) is above 2.8V, and it should be stable at least 0.5 seconds to be detected. See *Chapter 3 ─ Configuration* for configuring alarm input.

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

NOTE: All the connectors marked G are common.

NC/NO (Relay Alarm Outputs): The DVR 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.

ARI (Alarm Reset In): An external signal to the Alarm Reset In can be used to reset both the Alarm Out signal. Mechanical or electrical switches can be wired to the ARI (Alarm Reset In) and G (Ground) connectors. The threshold voltage is below 0.3V and should be stable at least 0.5 seconds to be detected. Connect the wires to the ARI (Alarm Reset In) and G (Ground) connectors.

Connection

AI (1 to 8)	Alarm Inputs 1 to 8
G	Chassis Ground (3 connectors)
ARI	Alarm Reset In
NC	Relay Alarm Output (Normally Closed)
NO	Relay Alarm Output (Normally Open)
C	Relay Common

Panic

An external signal to the PANIC can be used to start panic recording of all camera channels. Turing the signal Off stops panic recording. Mechanical or electrical switches can be wired to the PANIC and G (Ground) connectors. The threshold voltage is below 0.3V and should be stable at least 0.5 seconds to be detected.

Connection

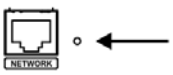
PANIC	Panic Recording Input
G	Chassis Ground

Network Port

The DVR can be networked using the 10/100Mb Ethernet connector. Connect a Cat5 cable with an RJ-45 jack to the DVR connector. The DVR can be networked with a computer for remote monitoring, searching, configuration and software upgrades. See *Chapter 3 ─ Configuration* for configuring the Ethernet connections.

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

Factory Reset Switch



The DVR has a Factory Reset switch to the right of the Network port on the rear panel. This switch will only be used on the rare occasions that you want to return all the settings to the original factory settings.

CAUTION: When using the *Factory Reset*, you will lose any settings you have saved.

To reset the unit, you will need a straightened paperclip:

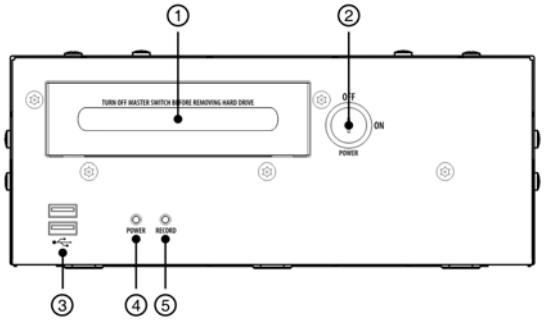
1. Turn the DVR off.
2. Poke the straightened paperclip into the unlabeled hole to the right of the Network port.
3. Hold the switch until the DVR turns on and live monitoring screen appears.
4. Release the reset switch. All of the DVR's settings are now at the original settings it had when it left the factory.

Your DVR is now ready to operate. Refer to *Chapter 3 ─ Configuration* and *Chapter 4 ─ Operation*.

Chapter 3 — Configuration

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

Front Panel Controls



① HDD Rack
② Power
③ USB Port
④ Power LED
⑤ Record LED

Figure 4 — DVR front panel.

HDD Rack

A removable hard disk drive is mounted in the HDD rack. The hard disk drive can be removed to view the video on the personal computer or on another DVR. Turn off the unit before removing the hard disk drive. The Power Switch must be in the Off position to remove the drive. Refer to the *Appendix – Playback on PC with USB Interface* for details of playing back images on the personal computer.

Power Switch

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

USB Port

Two USB ports on the front panel are provided to connect external hard disk or flash drives for video clip copying or system upgrades. Position external drives close enough to the DVR so that you can make the cable connections, usually less than 6 feet. Use the USB cable provided with the hard disk drive to connect it to the DVR.

A USB mouse (not supplied) can be connected to one of the ports. You can use the mouse to configure DVR settings.

A USB to Serial converter can be connected to the USB port. Multiple text-in devices can be used with a USB to Serial converter.

Power LED

The Power LED is lit when the unit is On.

Record LED

The Record LED blinks when the DVR is recording or searching video on the hard disk drive.

Turning on the Power

The DVR can be turned on by inserting the key in the On/Off switch and rotating it clockwise. The switch can be left in the On position and the key removed. This way the DVR will power up when the ignition is turned. The DVR is operational in approximately 60 seconds after the ignition switch is turned on. The DVR will be operational in 30 minutes after the ignition switch is turned on if the 30 minutes when the Use 30 seconds Delayed Start feature is turned on (Path: System menu > Power Management) and the accessory power is applied while the On/Off switch is left in the On position. The Power LED on the front panel will illuminate, and this action signifies the DVR has been turned on properly.

NOTE: Check the heater power connector is connected to the DVR. If the temperature is on 32°F (0°C) or lower, the DVR does not boot and the heater will operate to increase the temperature until the temperature goes up to 32°F (0°C) and the DVR boots. Refer to *Chapter 2 — Installation* for details.

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

- **The battery power voltage is lower than 9V, or it is 32V or higher.**
- **There is 2.5V or more of voltage difference between the accessory and battery power.**
- **When turning on the DVR after the emergency shutdown or shutoff, the battery power voltage does not keep the range from 11.5V or higher to lower than 32V for 60 seconds more. In this case, you can turn on the DVR 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 or shutoff.**

WARNING: DO NOT TOUCH THE BOTTOM OR TOP OF THE REMOVABLE HARD DISK DRIVE WHEN REMOVING IT AFTER THE BUILT-IN HEATER OPERATES IN THE LOW TEMPERATURE CONDITION. WHEN THE HEATER OPERATES, THE TEMPERATURE OF THE HARD DISK DRIVE INCREASES HIGH AND TOUCHING THE BOTTOM OR TOP OF IT MAY CAUSE INJURY.

Turning off the Power

The DVR can be turned off by rotating the key counter-clockwise to the Off position. The DVR will be turned off after the ignition off timeout if the ignition off timeout feature is set to On (Path: System menu > Power Management). You also can shutdown the unit by selecting Shutdown in the System menu. When you turn the key to the Off position or the engine is turned off, it takes maximum 20 seconds to turn down the unit after the shut down message appears. When you turn the unit off by selecting Shutdown in the System menu, the unit turns down in 6 seconds after the shutdown message appears.

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

- **The battery power voltage is lower than 8V for 10 seconds, or it ranges from 33V or higher to lower than 36V for 10 seconds. The DVR will shut down.**
- **The battery power voltage is lower than 7V for one second, or it is 36V or higher. The DVR will shut off.**
- **There is 2.5V or more of voltage difference between the accessory and battery power. The DVR will shut down.**

Initial Unit Setup

Before using your DVR for the first time, you will want to establish the initial settings. This includes items such as time and date, display language, camera, remote control, record mode, network and password. Your DVR can be set up using various screens and dialog boxes.

A USB mouse (not supplied) will be used to configure DVR settings. You can use a USB mouse to navigate through the setup screens and menus much like you would on a computer. Clicking the mouse left button in setup screens and dialog boxes selects items.

Throughout the screens you will see . Selecting the and gives you the opportunity to reset that screen to its default settings. After you are finished with any setup screen, you can select Save to save the changes and exit the screen. If you do not wish to save the changes, select Cancel to exit the screen.

Move the mouse pointer to the top of the screen and then select (Login) in the Live Monitoring menu to enter the setup screens. The Login screen appears.

Select a User and enter the password obtained from your administrator using a virtual keyboard displayed when selecting the button. See instructions below for using the virtual keyboard. There is no default password when logging in the admin user for the first time. If you do not know the password, click the ? button to get guidance.

Figure 5 — Login screen.

NOTE: To assure the secure management of the system, setting up a password is strongly recommended.

To log the user out of the system, move the mouse pointer to the top of the screen and then select (Logout) in the Live Monitoring menu. The Logout screen displays asking you to confirm whether or not you want to log out the current user.

Setup Screen

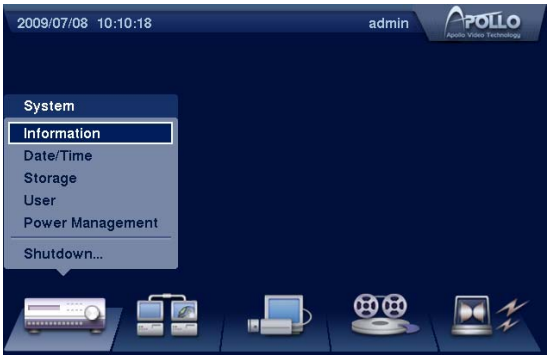


Figure 6 — Setup screen.

Move the mouse pointer to the top of the screen and then select (Setup) in the Live Monitoring menu to enter the setup screen.

While setting up the DVR, there will be many opportunities to enter names and titles. When making these entries, a Virtual Keyboard will appear.

Select the character you want in the name or title. That character appears in the title bar and the cursor moves to the next position. Selecting toggles between the upper and lower case keyboards, backspaces, deletes entered characters, and switches the keyboard layout. You can use up to 31 characters including spaces in your title.

Special characters can be created using ^ and a capital letter; e.g., ^J for NL (New Line), ^M for CR (Carriage Return). Special characters are commonly used by text input devices and will be useful when performing Text-In Searches.

System Setup

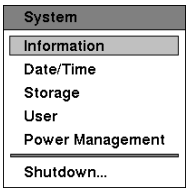
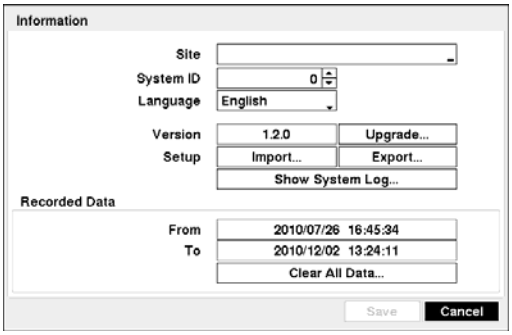


Figure 7 — System menu.

Information

PATH: System menu > Information



In the Information screen, you can name the site location, assign a System ID number, select the language the screens are displayed in, display software version number, upgrade the software, show the System Log, display recorded time data, and clear all data.

Select the Site box, and a virtual keyboard appears that you can use to enter a Site Name. Once you have entered your title, select OK.

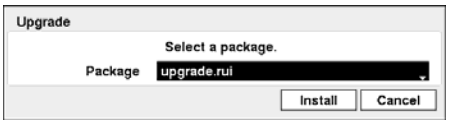
Select the box beside System ID and change the number by selecting it and using the Up and Down arrows to increase and decrease the number from 0 to 99.

Figure 8 — Information setup screen.

NOTE: The System ID number is used to identify the unit when it is connected with other DVRs through the RS485 port. You cannot use the same ID number for two or more DVRs that are in the same RS485 network. It is possible to have multiple DVRs with System ID 0 that are in the same area as long as they are not part of an RS485 network. If this is the case, all will be controlled at the same time when using the infrared remote control.

Select the box beside Language, and a drop-down menu displays the available languages. Select the desired language.

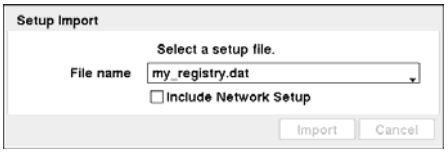
The box beside Version displays the software version of the DVR.



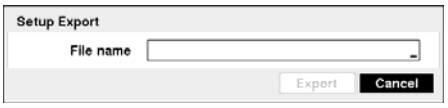
To upgrade the software, connect a USB device containing the upgrade package file to the DVR. Select Upgrade…, and the Upgrade screen appears. The screen displays the upgrade package file names that are available. The ".rui" indicates that the file is for software upgrades and ".ofi" indicates that the file is for optical drive firmware upgrades.

Select the desired file and select the Install button will install the selected software package. Selecting the Cancel button will close the window without upgrading the software. If the upgrade package file is not installed on the DVR properly, you will get an error message. The system restarts automatically after completing the upgrade.

CAUTION: The USB device must be FAT16 or FAT32 format.



You can import saved DVR settings or export the current DVR settings. To import saved DVR settings, connect the USB device containing the setup file (.dat) to the DVR. Select Setup – Import… and select the desired setup file. And then select the Import button to import the selected settings and change the DVR settings accordingly. Select Include Network Setup to toggle between On and Off. When set to Off, the network settings will not be changed.

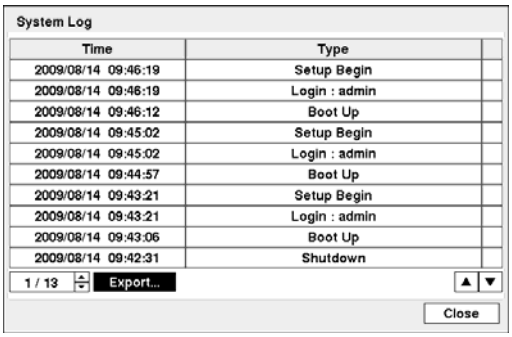


To export the current DVR settings, connect the USB device to the DVR. Select Setup – Export… and select the box beside File name. A virtual keyboard allows you to enter the file name. Selecting Export will save the current settings in .dat file format on the USB device.

NOTE: Even after changing the DVR settings by importing saved settings, the time-related settings (Date/Time, Time Zone and Daylight Saving Time) will NOT be changed.

CAUTION: The USB device must be FAT16 or FAT32 format.

Select Show System Log… to display the System Log.



The System Log screen lists system activities (up to 5,000 from the latest) that have occurred along with the time and date. The icon will be displayed in the last column for system activities of the remote site. You can scroll through the log pages by using the Up and Down arrows, or you can go directly to a log page by entering the log page number in the box at the bottom left of the screen. Select Close to exit the screen.

To export the system log information, connect the USB device to the DVR. Select Export… and select the box beside File name. A virtual keyboard allows you to enter the file name. Selecting Export will save the log information in .txt file format on the USB device.

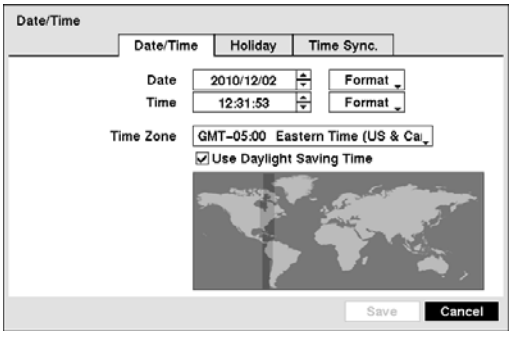
NOTE: When opening the saved .txt file, setting to the proper character encoding and using fixed width fonts will be required to read the file properly.

The box beside Recorded Data – From / To displays the time information of recorded data.

Selecting Clear All Data… will clear all video data. You will be asked to verify that you wish to clear all data before the DVR erases the video data. Clear All Data… will not clear the System Log.

Date/Time

PATH: System menu > Date/Time > Date/Time tab



Select the first box beside Date and the individual sections of the date will highlight. Use the Up and Down arrows to change the number.

Select the Format box beside Date and select from the three available date formats to save your selected format.

Select the first box beside Time and the individual sections of the time will highlight. Use the Up and Down arrows to change the number.

Select the Format box beside Time and select from the three available time formats to save your selected format.

Figure 9 — Date/Time setup screen.

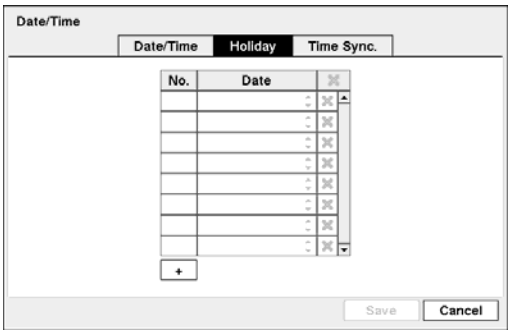
NOTE: The clock will not start running until you have selected *Save*.

Select the box beside Time Zone and select your 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.

PATH: System menu > Date/Time > Holiday tab



You can set up holidays by selecting +. The current date appears.

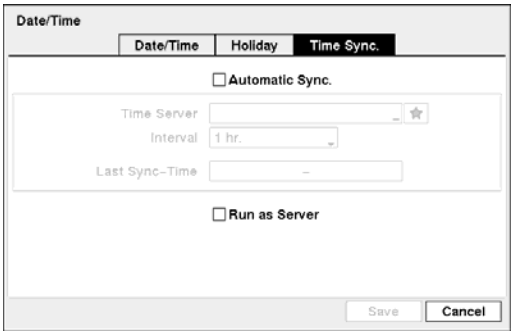
Select the month and day and change them by using the Up and Down arrows. Dates can be deleted by selecting the ✖ beside the date.

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

Figure 10 — Holiday setup screen.

PATH: System menu > Date/Time > Time Sync. tab

You can set up time synchronization between the DVR and standard time servers that are available in most time zones and countries, or between the DVR and another DVR.



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

Select the box beside Time Server, and a virtual keyboard appears that you can use to enter the IP address or domain name of the time server. Or, select ★ and then a time server from the time server list.

NOTE: You can use the domain name instead of IP address if you already set up the DNS Server when setting up the LAN.

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

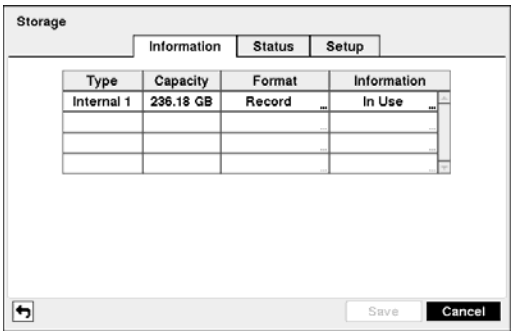
Figure 11 — Time Sync. screen.

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

Selecting Run as Server toggles between On and Off. When it is On, the DVR you are setting up will run as a time server.

Storage

PATH: System menu > Storage > Information tab

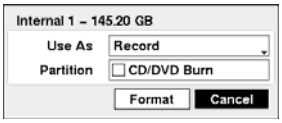


The information in the Type column describes the storage device.

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. ⊙ indicates when the device has temporary space set aside so that video clips can be saved on a DVD RW.

Figure 12 — Storage Information screen.

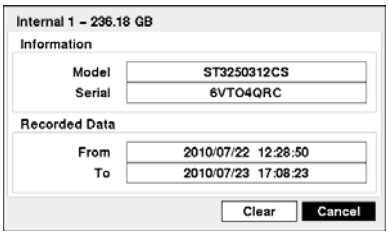


Select the box in the Format column for the desired storage device, and you will be able to format the device for recording. When selecting Not Using from Use As and selecting the Format button, the device will not be used for recording. You can also set aside space to store temporary files for CD or DVD burning by selecting Partition – CD/DVD Burn.

NOTE: The DVR does NOT support USB hard disk drives with a version lower than 2.0.

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

Select the box in the Information column for the desired storage device, and you will be able to check the time information about recorded data.



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

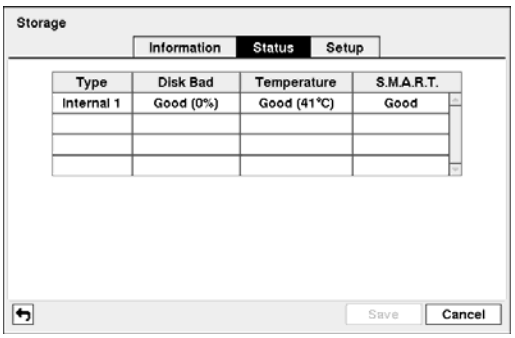
Recorded Data displays the time information about recorded data of the device.

If you want to erase recorded data on the selected device, select Clear. You will be asked whether or not you want to delete the data.

If you want to use a USB hard disk drive, select Use after connecting the device. Select Don't Use if you want to stop using the device.

CAUTION: Do NOT disconnect the USB cable or the power from the device while copying video clips. If the USB cable is disconnected while copying video clips, archived data might be lost.

PATH: System menu > Storage > Status tab



The Type column displays the type of storage device.

The Disk Bad column displays the percentage of bad sectors. Not formatted indicates the device is not formatted.

The Temperature column displays the temperature of the storage device.

The S.M.A.R.T. column displays "Good", "Bad" or "N/A", depending on storage conditions.

- Good – The storage condition is normal.
- Bad – Data cannot be written on or read from the storage device.
- N/A – Storage conditions are normal, however, the S.M.A.R.T. monitoring is not working or supported.

Figure 13 — Storage Status screen.

NOTE: When the storage condition is "Bad", the Event Status – Storage screen displays and you can check the storage condition for details. Once the "Bad" message displays, replacing the hard disk drive is recommended, usually within 24 hours.

***Temperature* and *S.M.A.R.T.* information will be available only for the internal hard disk drive supporting the SMART (Self-Monitoring Analysis and Reporting Technology) monitoring program.**

PATH: System menu > Storage > Setup tab

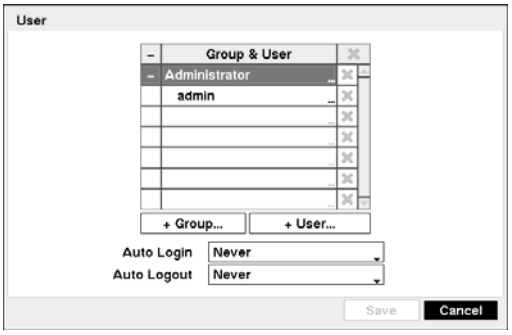
Selecting Auto Format toggles between On and Off. When set to On, the internal hard disk drive will be formatted automatically when the system boots if the internal hard disk drive is not formatted or used for another DVR (except of the same model).

Figure 14 — Storage Setup screen.

User

PATH: System menu > User

The User screen displays the authorized groups and users, and you can add and delete groups and users. When adding a group, you can assign authority levels to the group.



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. To collapse or expand a group, select the +/- column in front of the desired group.

Selecting a Group Name allows you to change the authority levels assigned to the group.

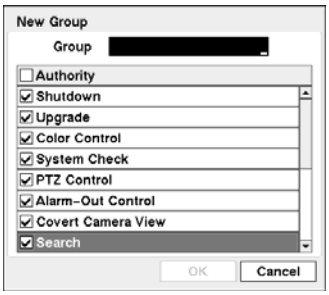
Figure 15 — User setup screen.

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 you to add or change the password assigned to that user. You can also change the group to which the user is assigned.

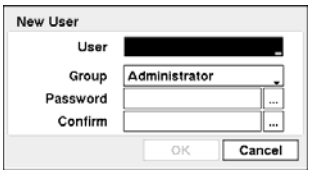
The ✖ column can be used to delete a User Name or an entire Group. If the ✖ is grayed out, that Group or User cannot be deleted. Select the ✖, and you will be asked to confirm that you want to delete the User or Group. To delete the User currently logged into the DVR on a local system or a PC running RAS, log the user out of the system first and then delete the user.

To add a Group, select the + Group… box. A virtual keyboard appears allowing you to enter the Group name. You can use up to 15 characters including spaces 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:

- Shutdown – The user can shut the system down on a local system.
- Upgrade – The user can upgrade the software on a local system or a PC running RAS.
- Color Control – The user can control brightness, contrast, hue and saturation for cameras on a local system or a PC running RAS.
- System Check – The user can view the remote system status or check the remote system status as a batch process on a PC running RAS.
- PTZ Control – The user can control the PTZ camera on a local system or a PC running RAS.
- Alarm-Out Control – The user can reset the DVR's outputs during an alarm by selecting (Alarm Reset) in the Live Monitoring or Search menu on a local system or alarm-out control button on a PC running RAS.
- Covert Camera View – The user can view video from cameras set as Covert while in the Live Monitoring or Search mode on a local system or a PC running RAS.
- Search – The user can access the Search mode on a local system or a PC running RAS.
- Clip-Copy – The user can copy video clips on a local system or a PC running RAS.
- Setup – The user without Setup authority cannot establish any system settings excluding system shutdown and logout on a local system or a PC running RAS.
- System Time Change – The user can change the system date and time on a local system or a PC running RAS.
- Data Clear – The user can clear all video data or format disks on a local system or a PC running RAS.
- PTZ Setup – The user can establish all PTZ settings on a local system or a PC running RAS.
- Alarm-Out Setup – The user can establish all Alarm-Out settings on a local system or a PC running RAS.
- Covert Camera Setup – The user can establish all Covert Camera settings on a local system or a PC running RAS.
- Record Setup – The user can establish all Record settings on a local system or a PC running RAS.



To add a User, select the + User… box. A virtual keyboard appears allowing you to enter the User Name. Enter the name and assign the User to a Group and password. The password can be up to 8 digits. You will be asked to confirm the password.

Selecting the box beside Auto Login allows you to select a User to be automatically logged in when the DVR is powered up. It can also be set to never automatically login a user.

Selecting the box beside Auto Logout allows you to select from a list of times that the user will be automatically logged out. The options are: Never, 1 min., 3 min., 5 min., 10 min., 15 min., 20 min., 25 min., 30 min. and 1 hr.

Power Management

PATH: System menu > Power Management

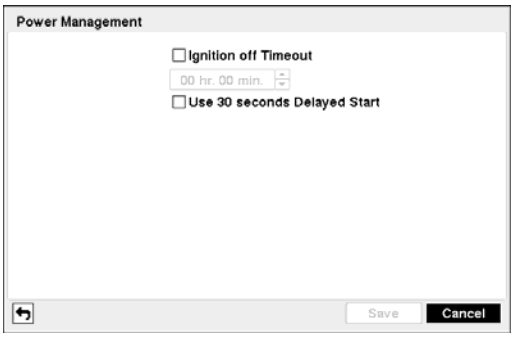


Figure 16 — Power Management screen.

Selecting Ignition off Timeout toggles On and Off. When set to On, the DVR will delay to shut down the system after the ignition switch is turned off. Set the delay time by using the Up and Down arrows.

Selecting Use 30 seconds Delayed Start toggles On and Off. When set to On, the DVR will delay to start the system for 30 minutes 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.

NOTE: For the ignition off timeout feature to work properly, the pin 1, 2 and 3 should be connected to fuses that are connected directly to the positive (+) battery power bus bar when connecting the power connector to the DVR. Refer to *Chapter 2 — Installation* for details.

Shutdown

PATH: System menu > Shutdown

The Shutdown screen will ask you to confirm whether or not you want to shut the system down. After selecting Shutdown, a screen will appear telling you when it is safe to disconnect power.

Figure 17 — Shutdown screen.

Network Setup

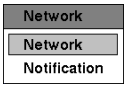
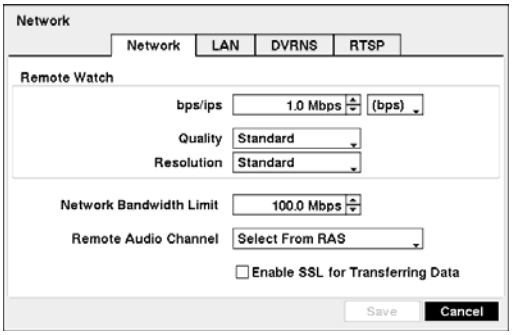


Figure 18 — Network menu.

Network

PATH: Network menu > Network > Network tab



Select the first box beside Remote Watch – bps/ips, and set the Transfer Speed from 50Kbps to 100Mbps by using the Up and Down arrows.

Select the second box beside Remote Watch – bps/ips, and select the unit of measure for the transfer speed between: bps and ips.

Select the box beside Remote Watch – Quality, and select the Quality from: Very High, High, Standard and Basic.

Select the box beside Remote Watch – Resolution, and select the Resolution from: High (Half D1) and Standard (CIF).

Figure 19 — Network setup screen.

NOTE: The higher Quality and Resolution settings require higher Transfer Speed settings. The transfer speed you set is the maximum speed. Depending on the network environment, this speed may not be achieved.

You can limit the network bandwidth settings so that system does not consume too much network bandwidth. Select the box beside Network Bandwidth Limit and set the desired maximum bandwidth from 10Kbps to 100Mbps by using the Up and Down arrows.

NOTE: When limiting the network bandwidth, the remote watch image on the PC running RAS might not be displayed properly.

The DVR supports two-way audio communication between a local system and a PC running RAS. Selecting the box beside Remote Audio Channel allows you to select the audio channel that sends audio to the remote site. Selecting Select From RAS will send audio of the channel selected from RAS.

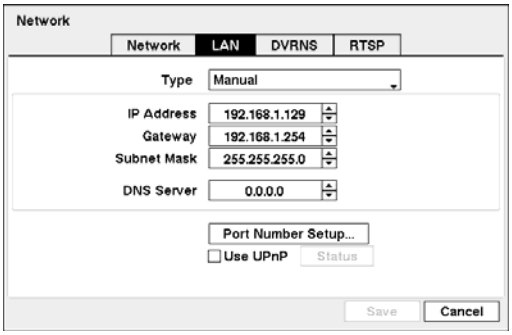
NOTE: Depending on network conditions, audio might be interrupted or out of synchronization during transmission.

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 DVR cannot be connected with a remote program which 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/).

PATH: Network menu > Network > LAN tab



Select the box beside Type, and select the type of network configuration from: Manual, DHCP and ADSL (with PPPoE).

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

Change the numbers by selecting them and using the Up and Down arrows to increase or decrease the number. The factory default LAN settings are:

IP Address: 192.168.1.129
Gateway: 192.168.1.254
Subnet Mask: 255.255.255.0

Figure 20 — LAN (Manual) setup screen.

NOTE: You will need to get the appropriate IP Address, Gateway and Subnet Mask from your network administrator.

Select the box beside DNS Server. Use the Up and Down arrows to set the IP address of the DNS server.

Select Use UPnP to toggle between On and Off. When it is On, port forwarding from the NAT (Network Address Translation) device to the DVR will be enabled automatically via UPnP (Universal Plug and Play) service. This function will be used especially when accessing to a port on a private IP address.

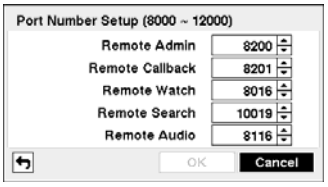
NOTE: For the UPnP service to work, the NAT device should support the UPnP Port Forwarding function and the function should be set to enabled.

You cannot change the port settings when *Use UPnP* is On.

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

Select the Port Number Setup… box, and the Port Number Setup screen appears.

NOTE: You will need to get the appropriate Port Numbers for each RAS related program (Admin, Callback, Watch, Search and Audio) from your network administrator.



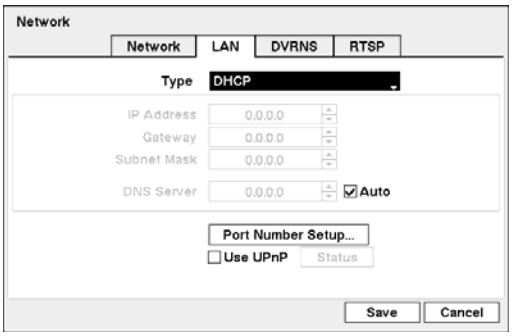
Change the numbers by selecting them and using the Up and Down arrows to increase or decrease the number. The factory default Port settings are:

Remote Admin: 8200
Remote Callback: 8201
Remote Watch: 8016
Remote Search: 10019
Remote Audio: 8116

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

Do NOT use the same port number for two different programs, otherwise, the DVR cannot be connected with the PC running RAS.

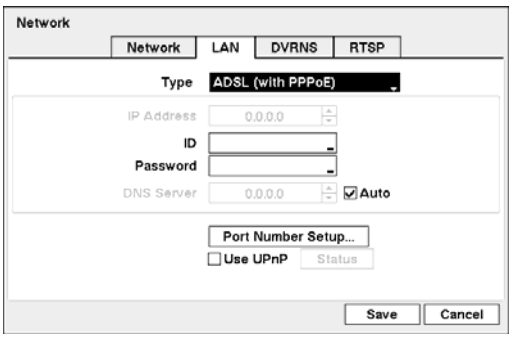
CAUTION: When changing the port settings, you must change the port settings on the PC running RAS as well. Refer to the RAS manual for details.



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

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

NOTE: Selecting *Auto* will only be enabled when the DVR is configured for DHCP or an ADSL network.



Selecting ADSL (with PPPoE) allows you to set up the ADSL network.

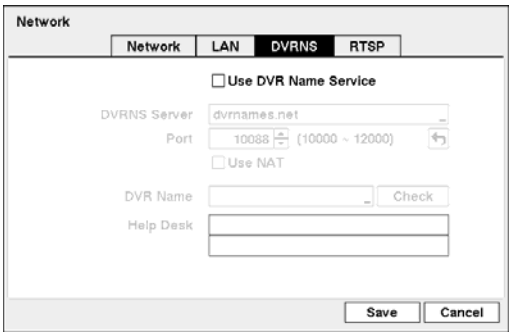
Select the box beside ID, and a virtual keyboard appears allowing you to enter the ID for ADSL connection.

Select the box beside Password, and a virtual keyboard appears allowing you to enter the password for ADSL connection.

NOTE: Entering the *ID* and *Password* and selecting *OK* reads the current IP address of the DVR configured by the ADSL network.

If the DVR is configured for DHCP or an ADSL network, the IP address of the DVR might change whenever the unit is turned on.

PATH: Network menu > Network > DVRNS tab



Select Use DVR Name Service to toggle between On and Off.

NOTE: The DVRNS (DVR Name Service) allows the DVR to use Dynamic IP addresses for remote connection. When this feature is On, you can access your DVR remotely using the DVR name instead of its IP address. For the DVRNS feature, the DVR should be registered on the DVRNS server.

Select the box beside DVRNS Server, and a virtual keyboard appears allowing you to enter the IP address or domain name of the DVRNS server.

Figure 21 — DVRNS setup screen.

NOTE: You will need to get the IP Address or domain name of the DVRNS Server from your network administrator.

You can use the domain name instead of IP address if you already set up the DNS Server when setting up the LAN.

Select the box beside Port and set the port number of the DVRNS server by using the Up and Down arrows to increase or decrease the numbers.

Select Use NAT to toggle between On and Off.

NOTE: When using the NAT (Network Address Translation) device, refer to the NAT manufacturer's instructions for the proper network settings.

Select the box beside DVR Name, and a virtual keyboard appears allowing you to enter the DVR name to be registered on the DVRNS server.

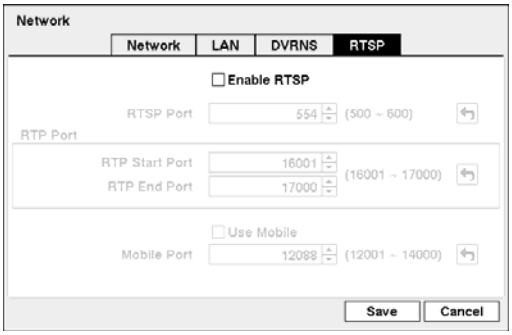
Select the Check box to check whether or not the name you entered can be used.

NOTE: The DVR name you entered should be checked by selecting Check, otherwise the DVRNS changes will not be saved.

When entering no name or a name already registered on the DVRNS server, an error message displays.

Selecting Save registers the DVR on the DVRNS server. Proper DVRNS settings will display the help desk information of the DVRNS server in the box beside Help Desk.

PATH: Network menu > Network > RTSP tab



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

Select the box beside RTSP Port, and set the port number of the RTSP server obtained from your system administrator by using the Up and Down arrows.

Select the box beside RTSP Start Port, and set the start port number of the RTP server obtained from your system administrator by using the Up and Down arrows.

Select the box beside RTSP End Port, and set the end port number of the RTP server obtained from your system administrator by using the Up and Down arrows.

Figure 22 — RTSP setup screen.

Select Use Mobile to toggle between On and Off. When set to on, you can access a remote DVR using a Blackberry or other mobile devices.

Select the box beside Mobile Port, and set the port number of the web server obtained from your system administrator by using the Up and Down arrows.

NOTE: When using NAT (Network Address Translation) or firewall services, opening all UDP ports allows you to access a DVR using Blackberry and Android devices.

You can access a remote DVR 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/track ID='channel number'", or start Internet Explorer on your Blackberry or other mobile devices and enter "http://IP address:Mobile Port number/".

Some media players might play video properly depending on network conditions.

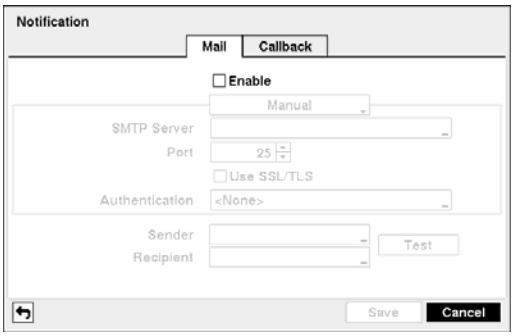
RTSP service might not be supported, depending on the type of media player.

Notification

The DVR can be set up to send an email or to contact a computer running RAS (Remote Administration System) when an event occurs.

Select Notification in the Network menu, and the Notification screen displays. You will be able to change the Mail and Callback settings.

PATH: Network menu > Notification > Mail tab



Select Enable to toggle between On and Off. You will only be able to change the settings if Mail is enabled.

Select the box beside SMTP Server, and a virtual keyboard appears that you can use to enter the IP address or domain name of the SMTP server.

NOTE: You will need to get the IP Address or domain name of the SMTP Server from your network administrator.

You can use the domain name instead of IP address if you already set up the DNS Server when setting up the LAN.

Figure 23 — Notification Mail setup screen.

Select the box beside Port and enter the SMTP Server port number obtained from your system administrator by using the Up and Down arrows. The default port number is 25.

Select Use SSL/TLS to toggle between On and Off. When it is On, the DVR 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 a virtual keyboard appears allowing you to enter the user ID and password.

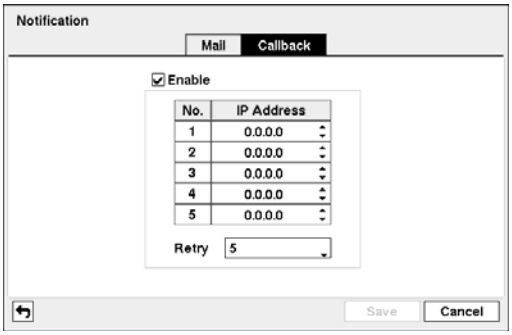
Select the box beside Sender and enter the sender's e-mail address. Use the virtual keyboard to enter the e-mail address.

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

Select the box beside Recipient and enter the recipient's e-mail address. Use the virtual keyboard to enter the e-mail address.

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

PATH: Network menu > Notification > Callback tab



Select Enable and toggle between On and Off. You will only be able to change the IP addresses if Callback is enabled.

Select the IP Address box that you want to change and enter the IP address of the computer you want contacted during an event by using the Up and Down arrows. You can enter up to five IP addresses.

Select the box beside Retry and enter the number of times you would like the DVR to try contacting the computer. You can select from 1 to 10 retries.

Figure 24 — Notification Callback setup screen.

Devices Setup

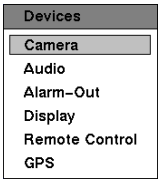


Figure 25 — Devices menu.

Camera

PATH: Devices menu > Camera > Settings tab

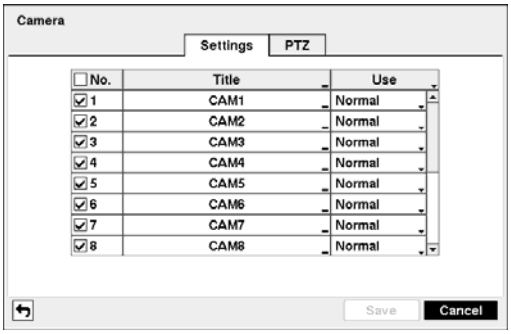


Figure 26 — Camera setup screen.

You can turn the camera number On or Off, and you can change the Title of each camera using the virtual keyboard. You can also determine which cameras will display on the monitors by selecting Normal, Covert 1 or Covert 2 from a drop-down list in the Use column.

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

PATH: Devices menu > Camera > PTZ tab

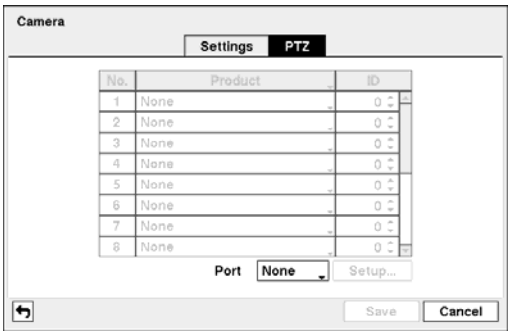
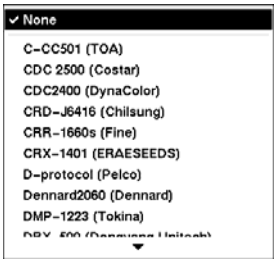


Figure 27 — Camera PTZ setup screen.

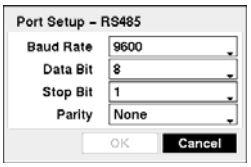
NOTE: You will only be able to set up PTZ devices if the PTZ port is set to RS232 or RS485.



Select the box in the Product column for the PTZ camera you wish to configure, and a list of PTZ devices appears. Select your camera from the list. You will need to connect the camera to the RS232 or RS485 connector on the back of the DVR following the camera manufacturer's instructions.

You can assign IDs to each camera by selecting the box under the ID heading. Change the number by selecting it and using the Up and Down arrows to increase and decrease the number. The PTZ ID number can be set from 0 to 256.

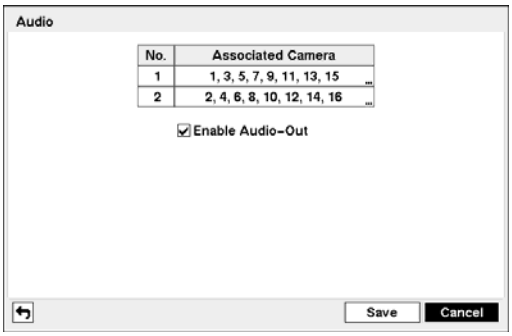
Select the Setup… box, and the Port Setup window appears.



Configure the port's setting based on the PTZ camera manufacturer's instructions.

Audio

PATH: Devices menu > Audio



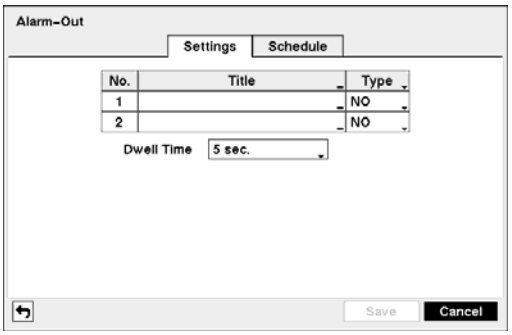
The DVR can record up to two audio inputs. Select the box beside the input. A list of cameras appears, and you can select which camera you want associated with that audio input. You cannot associate the same camera with two audio inputs.

Selecting Enable Audio-Out toggles between enabling and disabling audio out.

Figure 28 — Audio setup screen.

Alarm-Out

PATH: Devices menu > Alarm-Out > Settings tab



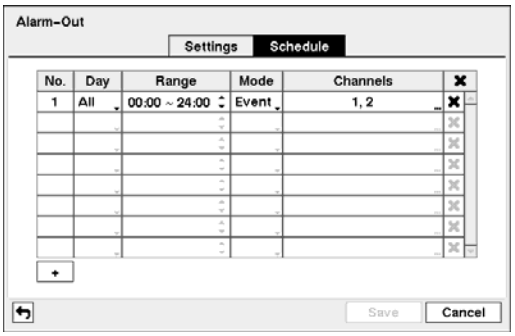
Each alarm output can be given its own title by selecting the box under the Title heading. A virtual keyboard appears allowing you to enter the title.

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 you to set the dwell time of the alarm output. Dwell times range from 5 seconds to 30 minutes.

Figure 29 — Alarm-Out Settings screen.

PATH: Devices menu > Alarm-Out > Schedule tab



You can add and edit alarm output schedules on this screen. Select the + to add a schedule. Selecting the boxes under the Column heading allows you to edit the information in those boxes.

The Day box allows you to select the days that the alarm schedule will be active. The choices are: Sun, Mon, Tue, Wed, Thu, Fri, Sat, M~F, Hol and All.

The Range box allows you to set the time that the alarm schedule will be active in 15-minute increments from 00:00 to 24:00.

Figure 30 — Alarm-Out Schedule screen.

The Mode box allows you to set how the alarm reacts during the scheduled time. When set to On, the Alarm-Out is active during the scheduled time. When set to Event, the Alarm-Out is only active when there is an Event during the scheduled time.

The Channels box allows you to set which alarm outputs will be active.

The ✖ box allows you to delete an alarm output schedule. You will be asked to confirm whether or not you really wish to delete the schedule.

Display

PATH: Devices menu > Display > OSD tab

Select Display in the Devices menu, and the Display screen allows you to select what information will be displayed on the monitor.

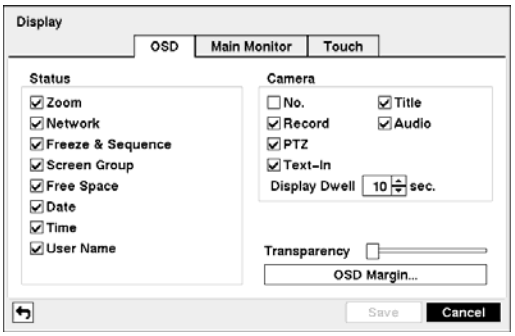


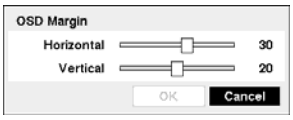
Figure 31 — Display OSD screen.

Selecting an item toggles that item On and Off. When an item is On, there is a checkmark in the box beside it. The following items can be turned On or Off:

- Zoom – The icon displays on the enlarged video.
- Network – The icon displays when the unit is connected to a network via Ethernet. The icon displays on each camera when audio communication is available between the DVR and a PC running RAS via Ethernet.
- Freeze & Sequence – The icon displays while in the Freeze mode, and the displays while in the Sequence mode.
- Screen Group – The number of screen group displays when the DVR is not in the 4x4 display mode of the 16-channel DVR, 3x3 mode of the 8-channel DVR, and 2x2 mode of the 4-channel DVR..
- Free Space – The icon displays when the DVR is in the Recycle mode, and the percentage of available storage space displays when the DVR is not in the Recycle mode.

- Date/Time – The current date and time information displays.
- User Name – The name of the current user logged in displays.
- Camera No. – The camera number displays at the top-left corner of each camera screen.
- Camera Title – The camera title displays at the top-left corner of each camera screen.
- Record – The record related icons display on each camera screen.
- Audio – The icon displays on each camera screen for which the DVR can play live audio.
- PTZ – The icon displays on each PTZ camera screen.
- Text-In – The text input strings display on the screen. You can adjust the Display Dwell time (sec.) for the text input strings displayed on the screen.

You can adjust the transparency of the setup screens by selecting Transparency and holding down the mouse button and dragging the pointer.



Selecting OSD Margin… displays how OSD text will be displayed on the monitor. You can adjust the horizontal and vertical margins so that text and icons will not be hidden beyond the edges of the monitor.

PATH: Devices menu > Display > Main Monitor tab

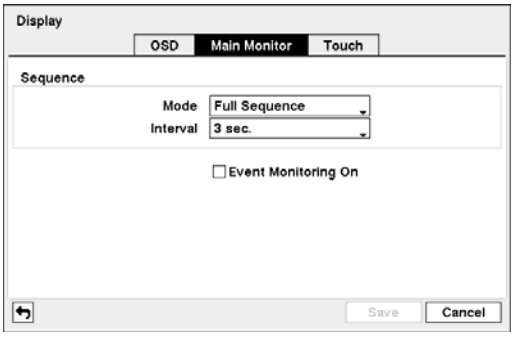


Figure 32 — Main Monitor screen.

Select the box beside Mode and select between Full Sequence and Cameo Sequence (8- and 16-channel models only).

Selecting (Sequence) in the Live Monitoring menu causes the DVR to sequence cameras, and the DVR can sequence cameras in two modes: "Full" and "Cameo". In the Full mode, the DVR sequences through the cameras and displays them full screen. In the Cameo mode, the bottom right window in a multi-screen format sequences through the cameras.

NOTE: Any cameras that are Off, have lost video or are set to Covert (unless the user has authority to view covert cameras) will be excluded from the Cameo sequence.

You can define the screen layout in a variety of formats and set the DVR to sequence through the different screen layouts (pages) so that all the cameras will be displayed. You can also set up the DVR to display one camera or a group of cameras all the time while cycling through the remaining cameras in a "cameo" window. This can be done with one camera displayed full screen while displaying the cameo window as a PIP (picture in picture), or displaying the cameras in a grid pattern with the bottom right window as the cameo.

NOTE: Sequence cannot be used in the 4x4 display mode of the 16-channel, 3x3 mode of the 8-channel and 2x2 mode of the 4-channel DVR.

You can adjust the display dwell time by selecting the box beside Interval. You can select dwell intervals ranging from 1 second to 1 minute.

Selecting Event Monitoring On toggles between On and Off. When it is On, the DVR will display the camera associated with the event when an event occurs.

PATH: Devices menu > Display > Touch tab

See Appendix – Use of Touch Screen Monitor.

Remote Control

PATH: Devices menu > Remote Control

Select Remote Control in the Devices menu, and the Remote Control setup screen allows you to select a port and make correct settings for a remote control.

Figure 33 — Remote Control setup screen.

Select the box beside Port and select from None, RS232 1, RS232 2 and RS485. If the RS232 ports and RS485 port are in use for PTZ control, networking, text input or GPS, the remote control cannot be configured.

Select Setup… and select the correct Baud Rate, Parity, Data Bits and Stop Bits for the device you are connecting to the DVR.

Select the box beside Remote Control Product and select the device from the list.

GPS

PATH: Devices menu > GPS

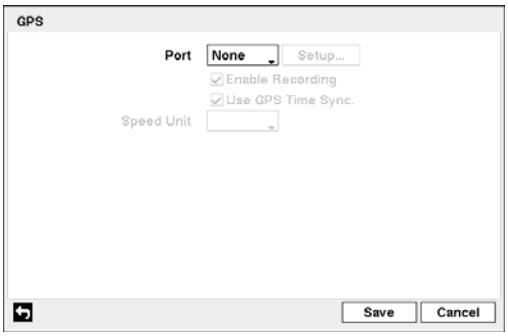


Figure 34 — GPS setup screen.

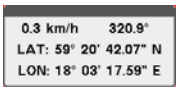
Select the box beside Port and select from None, RS232 1, RS232 2 and RS485. If the RS232 ports and RS485 port are in use for PTZ control, networking, text input or remote control, the GPS cannot be configured.

Select Setup… and select the correct Baud Rate, Parity, Data Bits and Stop Bits for the device you are connecting to the DVR. Use the GPS manufacturer's recommended settings when configuring the RS232 or RS485 ports.

Selecting Enable Recording toggles On and Off. When set to On, the DVR will record images with GPS information.

Selecting Use GPS Time Sync toggles On and Off. When set to On, the DVR will synchronize the time to the GPS satellite in the interval of 1 hour.

Select the box beside Speed Unit and select the unit of measure for the display speed between km/h and mph when displaying GPS speed on the screen.



Selecting Save displays the GPS information box on the screen while the GPS receiver receives satellite data. You can change the position of GPS information box by clicking the bar on the top of the box and dragging it to where you want it located on the screen.

Recording Setup

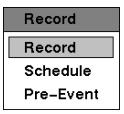


Figure 35— Record menu.

Record

PATH: Record menu > Record > Settings tab

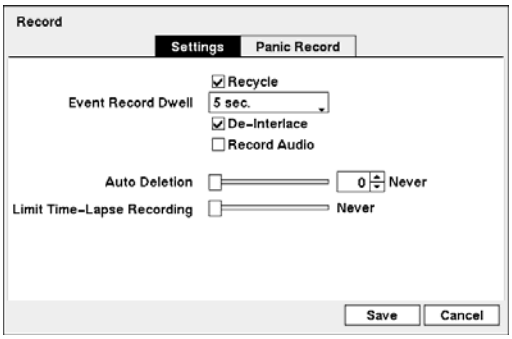


Figure 36 — Record Settings screen.

Selecting Recycle toggles between On and Off. In the Recycle mode, the DVR records over the oldest video data once all available storage space has been used. When Recycle is turned off, the DVR stops recording once all available storage space has been used.

Select 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 5 seconds to 30 minutes. Refer to *Event Actions* screen in this chapter for information regarding event recording.

Selecting De-Interlace toggles between On and Off. When set to On, the DVR will turn the de-interlace filter on while recording video with Very High (D1) resolution.

NOTE: The video signal has a time difference of 1/60 second (1/50 second for PAL) between odd and even fields because it is composed of 60 interlaced fields per second (50 fields for PAL). When recording video with Very High (D1) resolution, video is made up of frame units combining two fields – one odd field and one even field. This can cause horizontal scan lines or flashes in areas with motion because of the time difference between the two fields. Turning on the de-interlace filter provides clearer video by eliminating these horizontal scan lines and flashes.

The DVR can record up to two audio inputs. Selecting Record Audio toggles between On and Off.

Select the slide bar beside Auto Deletion, and use the slider bar or Up and Down arrows to adjust the length of time recorded data will be kept from 1 to 999 days. The DVR 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.

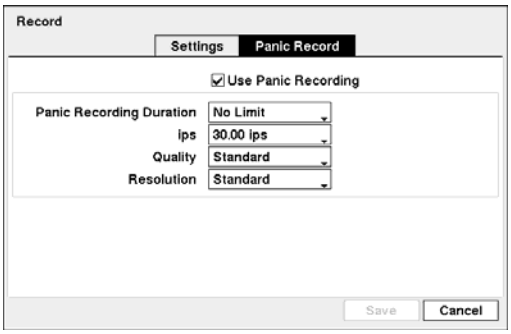
Select the slide bar beside Limit Time-Lapse Recording, and adjust the length of the maximum storage time for time-lapse recording from 1 to 99 days. The Limit Time-Lapse Recording feature will function when the storage device has enough space to record video data longer than the preset period. When this feature is On, the DVR records over the oldest "time-lapse" video once all available storage has been used in the Recycle mode, so more event video can be saved. Selecting Never will disable the Limit Time-Lapse Recording function.

NOTE: When the storage device does not have enough space to record video data longer than the preset Limit Time-Lapse Recording period, the DVR records over the oldest video data (time-lapse or event video) as it would in the Recycle mode even if this feature is turned On.

The maximum storage time is only an estimate because the amount of space required to store video varies depending on many factors such as motion and image complexity.

CAUTION: When more than one disk is installed in the unit, the DVR records video on the disks sequentially based on time. And these sequentially recorded videos have the advantage that you can search recorded video easily even though a disk is removed from the unit. However, video recorded in the same time range might be saved on different disks by channel and by the type of recording mode. Once the Limit Time-Lapse Recording is set to On, the DVR will maintain this recording limitation even after disabling the function. If you want the DVR to record video on the disks sequentially based on time again, you must format all disks that are currently used for recording.

PATH: Record menu > Record > Panic Record tab



Selecting Use Panic Recording toggles between On and Off.

Select the Panic Recording – Duration box and set the duration of panic recording. Panic recording will stop automatically after the preset duration unless you stop the panic recording manually. You can set the dwell from 5 minutes to 1 hour. Select No Limit if you want to stop panic recording manually.

Selecting the Panic Recording – ips allows you to set the images per second for Panic recording. You can select from 1.00 to 30.00 ips (25.00 ips PAL).

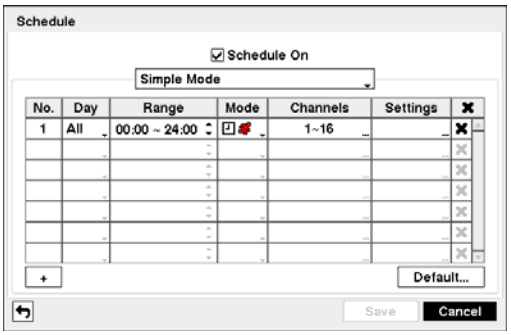
Figure 37 — Panic Record screen.

Selecting the Panic Recording – Quality allows you to set the recorded image quality for Panic recording. You can select from: Very High, High, Standard and Basic.

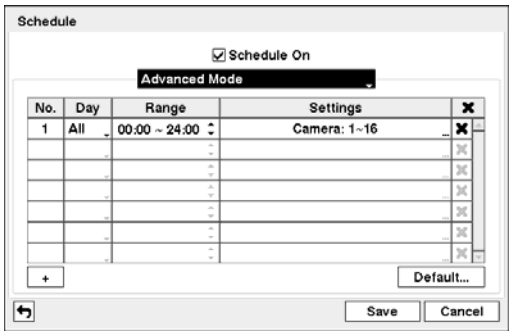
Selecting the Panic Recording – Resolution allows you to set the recorded image resolution for Panic recording. You can select from: Very High (D1), High (Half D1) and Standard (CIF).

Schedule

PATH: Record menu > Schedule



< Simple Mode >



< Advanced Mode >

Figure 38 — Schedule setup screen.

You can program the DVR to record only during certain times based on time, day of the week, and holidays. The smallest time segment you can use is 15 minutes.

Selecting Schedule On toggles between On and Off. In the Schedule On mode, the DVR records video based on the schedule established in the Schedule screen. When turning Schedule recording Off, you will be asked to confirm your decision, and ⊗ displays at the top-left corner of each camera screen. Panic recording will function even when Schedule is turned off. ! displays during panic recording.

Select the Schedule Mode box and select between Simple Mode and Advanced Mode. Selecting Advanced Mode allows you to set up individual recording schedule for each event.

NOTE: Changing the schedule mode will reset all event and action statuses.

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. The smallest time segment you can use is 15 minutes.

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. (Simple Mode Only)

When the DVR is in the No Record mode, it will not record during the preset day and time range except the panic recording. Use the No Record mode when you do NOT want the DVR to record during certain times.

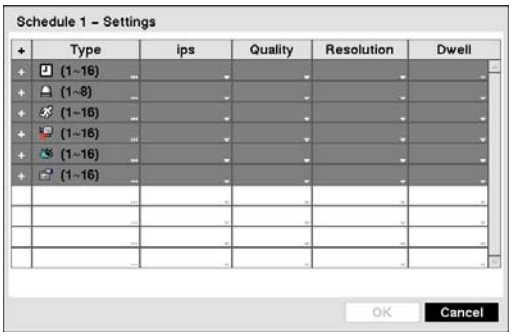
When the DVR is in the Time mode, the icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen during the scheduled times.

When the DVR is in the Event mode, the red icon displays at the top-left corner of the screen. The DVR will record and displays the icon at the top-left corner of the screen when any event occurs. When the DVR is in the Pre-Event recoding mode, the yellow icon displays when there is no event, and the DVR is not recording. When the DVR is in the Pre-Event mode, the red and display when any event occurs and the DVR starts recoding.

When the DVR is in the Time & Event mode, the DVR will follow the Time settings and the icon displays at the top-left corner of the screen. The DVR follows the Event settings and the icon displays.

Select the box under the Channels heading to select which cameras will be recorded. (Simple Mode Only)

Select the box under the Settings heading to define the recording settings.



You can set the ips, Quality and Resolution (ips, Quality, Resolution and Dwell for Advanced Mode setup) of the recording for any modes you set up in the Mode column. If you do not set the ips, Quality, Resolution and Dwell in the Settings column, the DVR will follow the default settings. See below for details.

NOTE: Descriptions of the Record icons in the *Type* column are as follows:

- Time-lapse (Time)
- Alarm-In
- Motion
- Video Loss
- Video Blind
- Text-In

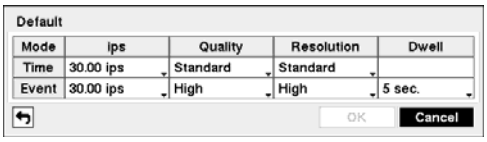
Figure 39 — Schedule – Settings (Advanced Mode) setup screen.

NOTE: Channels that are not defined will use the setting values of the previous schedule item.

When multiple events are detected at the same time from a specific channel, the DVR will record event video with the high setting values if the ips, Quality, Resolution and Dwell values of events are different from each other. However, the ips will be reset to the supported maximum value when the ips, Quality, Resolution and Dwell are all set to the highest value. (Advanced Mode Only)

Select the box under the heading to delete the recording settings. You will be asked to confirm that you want to delete the settings.

Select Default…, and the Default screen appears.



Selecting boxes under ips allows you to set the images per second for Time and Event recording. You can select from 1.00 to 30.00 ips (25.00 ips PAL).

Selecting boxes under Quality allows you to set the recorded image quality for Time and Event recording. You can select from: Very High, High, Standard and Basic.

Selecting boxes under Resolution allows you to set the recorded image resolution for Time and Event recording. You can select from: Very High (D1), High (Half D1) and Standard (CIF).

Selecting boxes under Dwell allows you to set the length of time you would like to record for the associated event. (Advanced Mode Only)

Pre-Event

PATH: Record menu > Pre-Event

If you do not have Event set up in the Record Schedule, a message will display alerting you to this fact.

Figure 40 — Pre-Event setup screen.

When the DVR 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.

You can turn individual cameras On or Off for pre-event recording. The image speed can be set from 1.00 to 30.00 ips (25.00 ips PAL), image quality can be selectable from Very High, High, Standard and Basic, and image resolution can be selectable from Very High (D1), High (Half D1) and Standard (CIF).

You can set the amount of time to record prior to the event by adjusting the Dwell. You can set the Dwell from 5 seconds to 30 minutes. The longer the dwell set, the fewer maximum ips can be set.

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

Event Setup

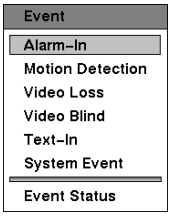


Figure 41 — Event menu.

Alarm-In

PATH: Event menu > Alarm-In > Settings tab

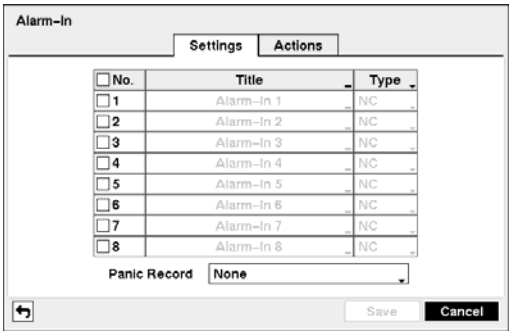


Figure 42 — Alarm-In Settings screen.

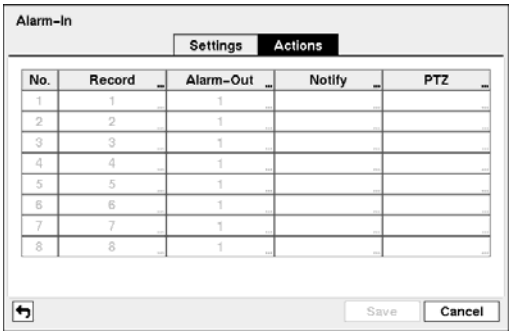
The alarm terminal strip on the back of the DVR has inputs associated with each alarm. You can set up each input on the Alarm-In screen. You can turn each input On or Off by selecting the alarm number.

Each input can be given a title. Select the desired Title box, and a virtual keyboard appears allowing you to enter a title name.

Each input can be set as NO (normally open) or NC (normally closed).

You can set up the DVR to start panic recording whenever it senses an input on one of its alarm input connectors. Select the box beside Panic Record, and a list of Alarm Inputs appears, and you can select which alarm input you want associated with panic recording. The DVR will continue panic recording until an input on the selected alarm input is released or you stop the panic recording manually.

PATH: Event menu > Alarm-In > Actions tab



You can set the actions the DVR will take whenever it senses an input on one of its alarm input connectors.

Select the desired box under the Record heading, and a list of cameras appears. Select the cameras that you want the DVR to record whenever it detects an input on the associated alarm input.

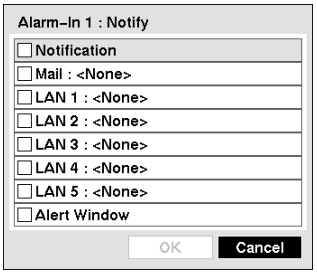
NOTE: For the Record action, the camera you select should be set to the Event or Time & Event recording mode in the Record Schedule setup screen.

Figure 43 — Alarm-In Actions screen.

Select the desired box under the Alarm-Out heading, and a list of Alarm Outputs and Beep appear. Select the Alarm Output connectors that you would like to activate whenever the DVR detects an input on the associated alarm input.

NOTE: For the Alarm-Out action, the alarm output and beep you select should be set to the Event mode in the Alarm-Out setup screen (Schedule tab).

Select the desired box under the Notify heading, and the Alarm-In Notify menu appears.



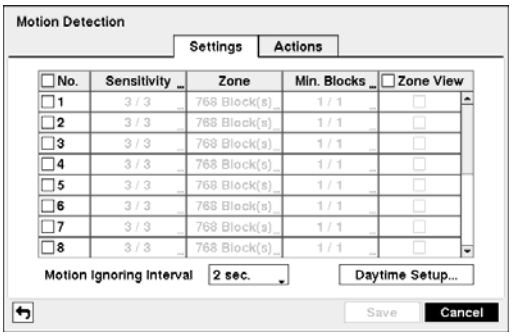
You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the Notification setup screen and the DVR should be registered in the RAS (Remote Administration System).

Select the desired box under the PTZ heading, and a list of PTZ presets appear. Select the preset position for each PTZ camera, where you want PTZ cameras to move to whenever the DVR detects an input on the associated alarm input.

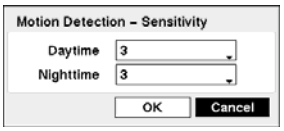
Motion Detection

PATH: Event menu > Motion Detection > Settings tab



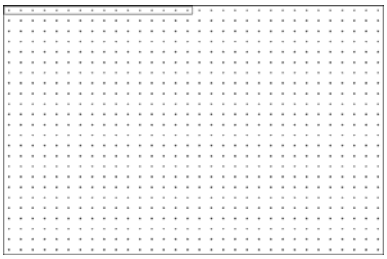
Your DVR has built-in video motion detection. Video motion detection can be turned On or Off for each camera.

Figure 44 — Motion Detection Settings screen.



Selecting the box under the Sensitivity heading allows you to adjust the DVR's sensitivity to motion for Daytime and Nighttime independently. There are five settings with 1 being the least sensitive and 5 being the most sensitive.

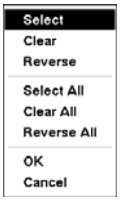
You can define the area of the image where you want to detect motion; e.g., a doorway. Select the box under the Zone heading, and the Motion Detection Zone screen displays.



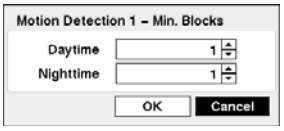
The Motion Detection Zone screen is laid over the video for the selected camera. You can set up motion detection zones by selecting or clearing blocks.

NOTE: Blocks can be selected by holding down the mouse button and dragging the pointer to where you want to end the zone, and individual blocks are selected or cleared by clicking the mouse button.

Click the mouse right button to display the menu screen. The menu on the setup screen has the following functions:



Select — Activates selected blocks to detect motion.
Clear — Deactivates selected blocks so that they will not detect motion.
Reverse — Activates inactive selected blocks and deactivates active selected blocks.
Select All — Activates all blocks to detect motion.
Clear All — Deactivates all blocks so that they will not detect motion.
Reverse All — Activates inactive blocks and deactivates active blocks.
OK — Accepts changes and closes Zone setup.
Cancel — Exits Zone setup without saving changes.



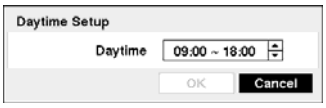
You can adjust the minimum number of detection blocks that must be activated to trigger a motion alarm. Selecting the box under the Min. Blocks heading allows you to adjust the minimum number of detection blocks for Daytime and Nighttime independently. Smaller numbers provide greater sensitivity because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

Turning Zone View On will allow you to observe how the DVR is reacting to motion. When in the motion viewing mode, the detection zone of video will be displayed. Any detected motion within the zone will be displayed in red.

You can control excessive event logging and remote notification of motions detected after the motion dwell time by adjusting the motion ignoring dwell intervals. Select the box beside Motion Ignoring Interval, and a list of intervals ranging from 1 to 10 seconds or Never appears. The DVR will not log and notify motion events occurred during the preset interval range.

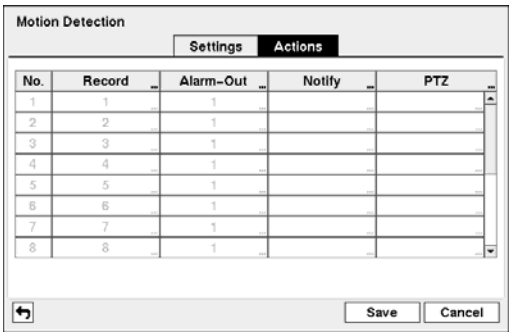
NOTE: The record action for motion events will not be affected by the Motion Ignoring function.

Selecting Daytime Setup allows you to set up the Daytime range.



Select the box beside Daytime and set the Daytime range by using the Up and Down arrows. The DVR will consider the remaining time range as the Nighttime.

PATH: Event menu > Motion Detection > Actions tab



The DVR can be set to react to motion detection differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out connector, notify a number of different devices, and/or move PTZ cameras to preset positions.

NOTE: You can associate multiple cameras with a camera that detects motion.

Select the box under the Record heading, and a list of cameras appears. You can associate as many cameras with that camera as you wish. If the DVR detects motion on the selected camera, it starts recording video from all the associated cameras.

NOTE: For the Record action, the camera you select should be set to the Event or Time & Event recording mode in the Record Schedule setup screen.

Figure 45 — Motion Detection Actions 1 screen.

Select the box under the Alarm-Out heading, and a list of Alarm Outputs appears. You can associate as many Alarm-Outs with that camera as you wish. When the DVR detects motion on the selected camera's input, it triggers output signals on all the associated Alarm-Out connectors.

NOTE: For the Alarm-Out action, the alarm output and beep you select should be set to the Event mode in the Alarm-Out setup screen (Schedule tab).

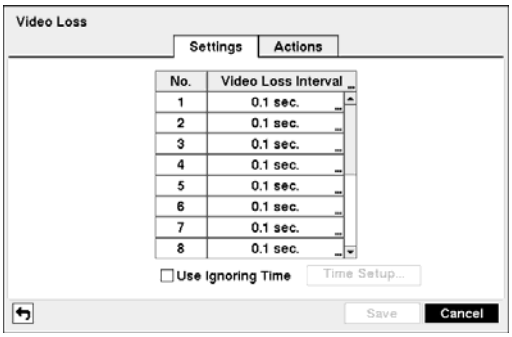
Select the box under the Notify heading. You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the Notification setup screen and the DVR should be registered in the RAS (Remote Administration System).

Select the desired box under the PTZ heading, and a list of PTZ presets appear. Select the preset position for each PTZ camera, where you want PTZ cameras to move to whenever the DVR detects motion on the selected camera's input.

Video Loss

PATH: Event menu > Video Loss > Settings tab

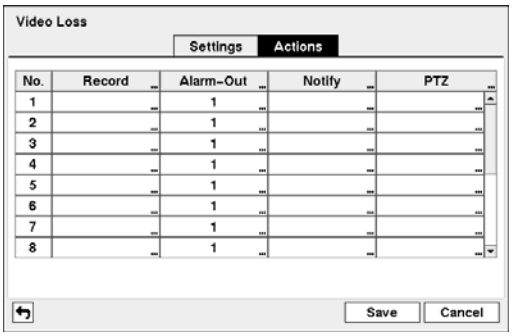


Selecting the box under the Video Loss Interval heading allows you to set the duration of a signal loss before the DVR will report a Video Loss. The DVR will not consider any signal loss from a camera to be a Video Loss if the detected signal loss is shorter than the interval set on this screen.

Select Use Ignoring Time to toggle between On and Off. When set to On, the DVR will ignore video loss events occurring during the preset period. Selecting Time Setup allows you to set up event ignoring time.

Figure 46 — Video Loss Settings screen.

PATH: Event menu > Video Loss > Actions tab



The DVR can be set to react to video loss differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out connector, notify a number of different devices, and/or move PTZ cameras to preset positions.

Select the box under the Record heading, and a list of cameras appears. You can associate as many cameras with that camera as you wish. If the DVR detects video loss on the selected camera, it starts recording video from all the associated cameras.

NOTE: For the Record action, the camera you select should be set to the Event or Time & Event recording mode in the Record Schedule setup screen.

Figure 47 — Video Loss Actions screen.

Select the box under the Alarm-Out heading, and a list of Alarm Outputs appears. You can associate as many Alarm-Outs with that camera as you wish. When the DVR detects video loss on the selected camera, it will trigger output signals on all the associated Alarm-Out connectors.

NOTE: For the Alarm-Out action, the alarm output and beep you select should be set to the Event mode in the Alarm-Out setup screen (Schedule tab).

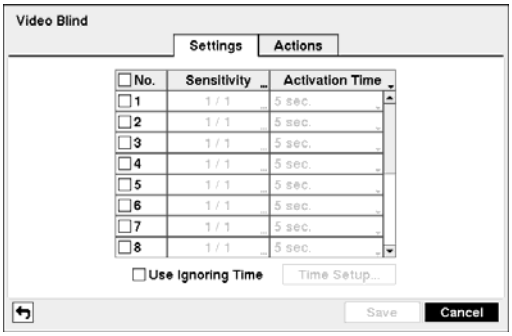
Select the box under the Notify heading. You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the Notification setup screen and the DVR should be registered in the RAS (Remote Administration System).

Select the desired box under the PTZ heading, and a list of PTZ presets appear. Select the preset position for each PTZ camera, where you want PTZ cameras to move to when the DVR detects video loss on the selected camera's input.

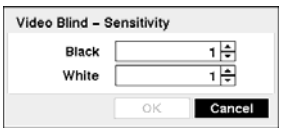
Video Blind

PATH: Event menu > Video Blind > Settings tab



The DVR checks to see if anything is blinding a camera.

Figure 48 — Video Blind Settings screen.



Selecting the box under the Sensitivity heading allows you to adjust the DVR's sensitivity to video blind for Black and White independently from 0 (Never) and 1 (least sensitive) to 15 (most sensitive).

NOTE: Video blind might NOT be detected for a camera with a very noisy image especially when set for low sensitivity values.

Selecting the box under the Activation Time heading allows you to set the duration before the DVR will report a Video Blind. The DVR will not consider any blinded camera to be a Video Blind if the detected blindness is less than the Activation Time set on this screen.

Select Use Ignoring Time to toggle between On and Off. When set to On, the DVR will ignore video blind events occurred during the preset period. Selecting Time Setup allows you to set up event ignoring time.

PATH: Event menu > Video Blind > Actions tab

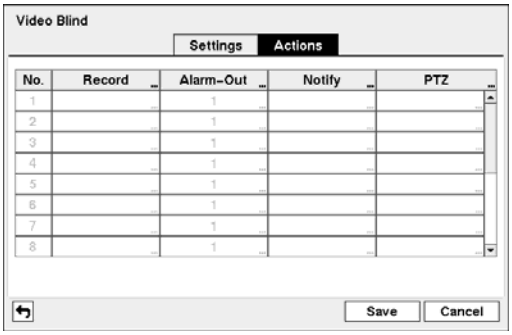


Figure 49 — Video Blind Actions screen.

The DVR can be set to react to video blind differently for each camera. Each camera can be associated with another camera, trigger an Alarm-Out connector, notify a number of different devices, and/or move PTZ cameras to preset positions.

Select the box under the Record heading, and a list of cameras appears. You can associate as many cameras with that camera as you wish. If the DVR detects video blind on the selected camera, it starts recording video from all the associated cameras.

NOTE: For the Record action, the camera you select should be set to the Event or Time & Event recording mode in the Record Schedule setup screen.

Select the box under the Alarm-Out heading, and a list of Alarm Outputs appears. You can associate as many Alarm-Outs with that camera as you wish. When the DVR detects video blind on the selected camera, it will trigger output signals on all the associated Alarm-Out connectors.

NOTE: For the Alarm-Out action, the alarm output and beep you select should be set to the Event mode in the Alarm-Out setup screen (Schedule tab).

Select the box under the Notify heading. You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the Notification setup screen and the DVR should be registered in the RAS (Remote Administration System).

Select the desired box under the PTZ heading, and a list of PTZ presets appears. Select the preset position for each PTZ camera, where you want PTZ cameras to move to when the DVR detects video blind on the selected camera's input.

Text-In

PATH: Event menu > Text-In > Settings tab

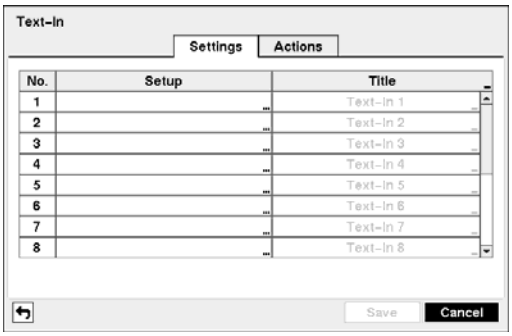


Figure 50 — Text-In Settings screen.

The DVR can be set to react to text input from devices such as ATMs (Automated Teller Machines) and POS (Point of Sale; i.e., cash registers). This screen allows you to configure the DVR for each text-in device.

Select the box under the Setup heading. Selecting the Setup heading changes all the parameters excluding Port settings of all the text input channels.

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

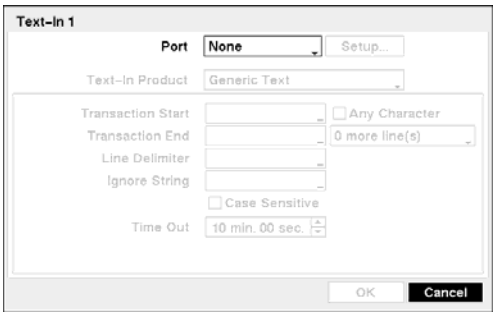


Figure 51 — Text-In Device screen.

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

NOTE: When If you have set the Port as None, you will not be able to make any changes to the screen.

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

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

Select Setup… and configure RS232 1, RS232, RS485, USB-Serial or LAN ports by using the ATM or POS manufacturer's recommended settings.

Select the box beside Text-In Product, and select your device from the list.

NOTE: The following description is for a Generic Text Device. The screen changes for different types of text input devices, and there will be different parameter boxes for you to enter information.

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

If you want the DVR to react to any character sent from the text input device, you will want to turn On Any Character. Select Any Character to toggle between On and Off.

NOTE: If *Any Character* is turned On, you will not be able to enter any text in the *Transaction Start* box.

Select the box beside Transaction End, and enter the Transaction End string by using the virtual keyboard to. Refer to the device manufacturer's documentation for the text string that the device sends when a transaction ends.

Select the more line(s) box, and select the number of additional lines of text that you want the DVR to record. You can choose from 0 to 10.

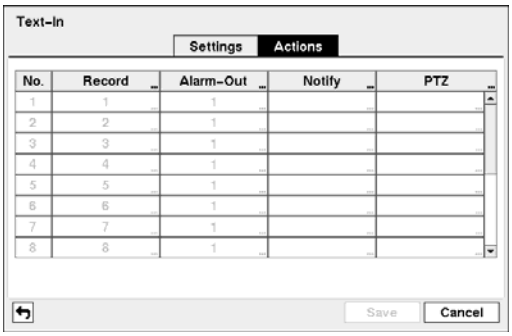
Select the box beside Line Delimiter, and enter the character(s) that the device uses to indicate the end of a line by using the virtual keyboard to. Special characters can be created using ^ and a capital letter; e.g., ^J for NL (New Line), ^M for CR (Carriage Return). Refer to the device manufacturer's documentation for Line Delimiter character(s).

Select the box beside Ignore String, and enter any strings of text that you want the DVR to ignore by using the virtual keyboard to. Refer to the device manufacturer's documentation for text strings that the device sends during transactions, so you will know which ones you do not want recorded.

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.

Select the box beside Time Out, and set the length of time to wait for the new text string. The DVR will consider a transaction complete if no new text strings are entered between the last text input and the dwell time out. You can adjust the Time Out dwell from 5 seconds to 15 minutes.

PATH: Event menu > Text-In > Actions tab



The DVR can be set to react to text input. Text input can be associated with cameras, trigger an Alarm-Out connector, notify a number of different devices, and/or move PTZ cameras to preset positions.

Select the box beside Record, and a list of cameras appears. You can associate as many cameras with the Text Input as you wish. If the DVR detects text input, it starts recording video from all the associated cameras.

NOTE: For the Record action, the camera you select should be set to the Event or Time & Event recording mode in the Record Schedule setup screen.

Figure 52 — Text-In Actions screen.

Select the box beside Alarm-Out, and a list of Alarm Outputs appears. You can associate as many Alarm-Outs with the Text Input as you wish. When the DVR detects text input, it triggers output signals on all the associated Alarm-Out connectors.

NOTE: For the Alarm-Out action, the alarm output and beep you select should be set to the Event mode in the Alarm-Out setup screen (Schedule tab).

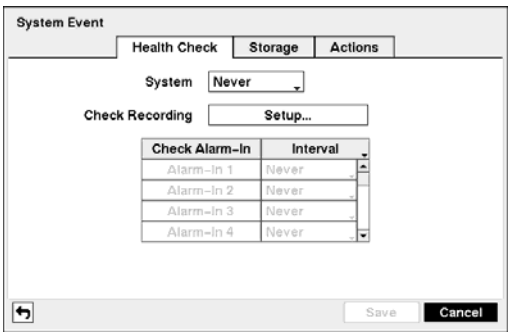
Select the box beside Notify. You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: For the Notify action, the notify item you select should be enabled in the Notification setup screen and the DVR should be registered in the RAS (Remote Administration System).

Select the desired box under the PTZ heading, and a list of PTZ presets appear. Select the preset positions for each PTZ camera, where you want PTZ cameras to move to when the DVR detects text input.

System Event

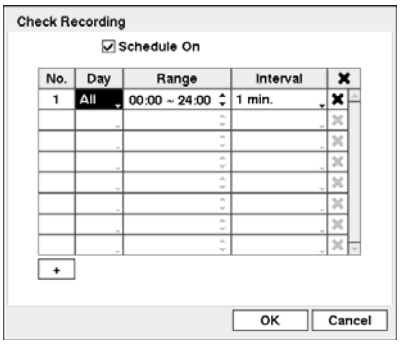
PATH: Event menu > System Event > Health Check tab



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

Selecting the box beside System allows you to select the interval that you want the DVR to run self-diagnostics on the system. You can select from 1 hr. to 30 days or Never.

Figure 53 — Health Check screen

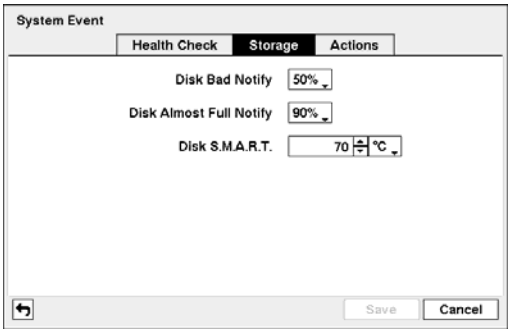


Select the Setup... box beside Check Recording, and the Check Recording screen appears.

Selecting Schedule On toggles On and Off. When set to On, you can select the day, time range and interval that you want the DVR to run self-diagnostics on the recorder. The Interval can be selectable from 1 min. to 7 days or Never. The ✖ box allows you to delete a check recording schedule.

Selecting the box under the Interval heading beside each alarm-in allows you to change the interval that you want the DVR to run self-diagnostics on Alarm Inputs. You can select from 1 hr. to 30 days or Never.

PATH: Event menu > System Event > Storage tab



Select the box beside Disk Bad Notify, and select percentage level of bad disk sectors at which you want the DVR to trigger an alert. Percentage levels range from 10% to 90%.

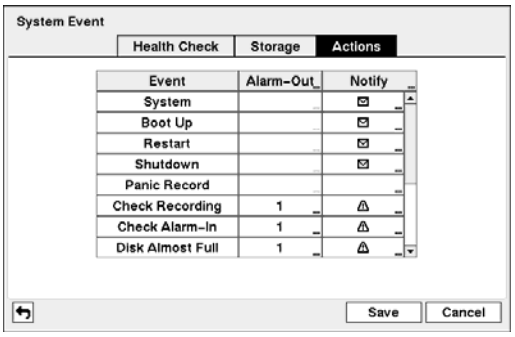
Select the box beside Disk Almost Full Notify, and select the percentage level of disk usage at which you want the DVR to trigger an alert. Percentage levels range from 80% to 99%.

Select the first box beside Disk S.M.A.R.T., and scroll through the numbers by using the Up and Down arrows to. Refer to the hard disk drive manufacturer's documentation for the correct temperature setting. If the temperature of hard disk drive exceeds the defined threshold, the system triggers an alert.

Figure 54 — Storage screen.

Select the second box beside Disk S.M.A.R.T., and select either ºC (Celsius) or ºF (Fahrenheit).

PATH: Event menu > System Event > Actions tab



The DVR can be set to react to system events. System events can be associated with an Alarm-Out connector, and/or notify a number of different devices.

Select the Alarm-Out box beside the desired event (not supported for System, Boot Up, Restart, Shutdown and Panic Recording), and a list of Alarm Outputs appears. You can associate as many Alarm-Outs with the Event as you wish. If the DVR detects that event, it triggers output signals on all the associated Alarm-Out connectors.

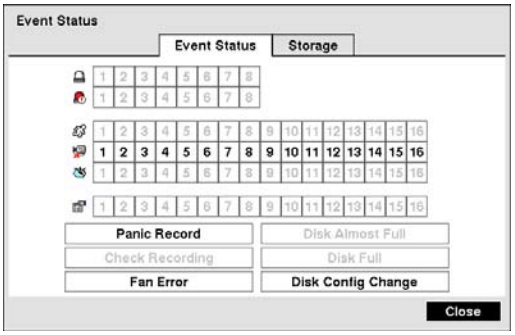
Figure 55 — System Event Actions screen

Select the Notify box beside the desired event. You can toggle the entire list On and Off by selecting Notification. You can toggle the individual items On and Off by selecting that item. Select OK to accept your changes.

NOTE: Some items of *Notification* may not be available depending on an event.
For the Notify action to work, the DVR should be registered in the RAS (Remote Administration System).

Event Status

PATH: Event menu > Event Status > Event Status tab



The Event Status screen displays the status of the DVR's systems and inputs. Events will be highlighted, and related channels or events will flicker for five seconds when detected.

(Alarm-In), (Motion), (Video Loss), (Video Blind) and (Text-In) will be highlighted when each event is detected based on the settings you made in the Alarm-In, Motion Detection, Video Loss, Video Blind and Text-In setup screen on the Event menu.

(Check Alarm-In) and Check Recording will be highlighted when each event is detected based on the settings you made in the System Event setup screen on the Event menu.

Figure 56 — Event Status screen.

Panic Record will be highlighted while the DVR is in the panic recording mode.

Disk Almost Full will be highlighted when the DVR is not in the Recycle mode and the level of disk usage reaches the Disk Almost Full percentage you made in the System Event setup screen on the Event menu. Disk Full will be highlighted when the DVR is not in the Recycle mode and all available storage space has been used. Disk Config Change will be highlighted when a storage device is removed or replaced.

Fan Error will be highlighted when the cooling fan to the left of the power cord on the rear panel is not working for more than four seconds.

Selecting the Storage tab will display the hard disk drive status. Refer to the Storage section for details.

Chapter 4 — Operation

NOTE: This chapter assumes your DVR has been installed and configured. If it has not, please refer to Chapters 2 and 3.

The main functions of DVR are recording and playing back video. However, you have much greater control over recording and playing back video. You can establish recording schedules based on time of day and day of the week. The DVR allows you to search through the recorded video using sophisticated tools. It also supports remote control and viewing, and recording video at the same time you are watching previously recorded video.

A USB mouse (not supplied) will be used to control the operation. You can use a USB mouse to navigate through the menus much like you would on a computer.

Turning on the Power

The DVR can be turned on by inserting the key in the On/Off switch and rotating it clockwise. The switch can be left in the On position and the key removed. This way the DVR will power up when the ignition is turned. The DVR is operational in approximately 60 seconds after the ignition switch is turned on. The DVR will be operational in 30 minutes after the ignition switch is turned on if the 30 minutes when the Use 30 seconds Delayed Start feature is turned on and the accessory power is applied while the On/Off switch is left in the On position. The Power LED on the front panel will illuminate, and this action signifies the DVR has been turned on properly.

NOTE: Check the heater power connector is connected to the DVR. If the temperature is on 32°F (0°C) or lower, the DVR does not boot and the heater will operate to increase the temperature until the temperature goes up to 32°F (0°C) and the DVR boots. Refer to *Chapter 2 — Installation* for details.

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

- **The battery power voltage is lower than 9V, or it is 32V or higher.**
- **There is 2.5V or more of voltage difference between the accessory and battery power.**
- **When turning on the DVR after the emergency shutdown or shutoff, the battery power voltage does not keep the range from 11.5V or higher to lower than 32V for 60 seconds or more. In this case, you can turn on the DVR 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 or shutoff.**

WARNING: DO NOT TOUCH THE BOTTOM OR TOP OF THE REMOVABLE HARD DISK DRIVE WHEN REMOVING IT AFTER THE BUILT-IN HEATER OPERATES IN THE LOW TEMPERATURE CONDITION. WHEN THE HEATER OPERATES, THE TEMPERATURE OF THE HARD DISK DRIVE INCREASES HIGH AND TOUCHING THE BOTTOM OR TOP OF IT MAY CAUSE INJURY.

Turning off the Power

The DVR can be turned off by rotating the key counter-clockwise to the Off position. The DVR will be turned off after the ignition off timeout if the ignition off timeout feature is set to On (Path: System menu > Power Management). You also can shutdown the unit by selecting Shutdown in the System menu. When you turn the key to the Off position or the engine is turned off, it takes maximum 20 seconds to turn down the unit after the shut down message appears. When you turn the unit off by selecting Shutdown in the System menu, the unit turns down in 6 seconds after the shutdown message appears.

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

- **The battery power voltage is lower than 8V for 10 seconds, or it ranges from 33V or higher to lower than 36V for 10 seconds. The DVR will shut down.**
- **The battery power voltage is lower than 7V for one second, or it is 36V or higher. The DVR will shut off.**
- **There is 2.5V or more of voltage difference between the accessory and battery power. The DVR will shut down.**

Live Monitoring

As soon as the DVR completes its initialization process, it will begin showing live video on the attached monitor and playing live audio through the attached speaker. The default mode is to display all cameras at once. Clicking any camera screen will cause that camera to display full screen. It displays live video and plays live audio until the user enters another mode.

While in the live monitoring mode, moving the mouse pointer to the top of the screen displays the following Live Monitoring menu. You can select menus and items by clicking the mouse left button.

① Freeze
② Sequence
③ Camera Menu
④ Alarm Reset
⑤ Panic
⑥ Setup
⑦ Search Mode
⑧ Login/Logout

Figure 57 — Live Monitoring menu.

Live Monitoring Menu

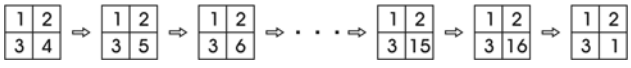
Freeze

Selecting (Freeze) in the Live Monitoring menu will freeze the current image on the screen until you select again. While in the Freeze mode, the icon displays in bottom-left corner if Freeze is selected in the Display setup screen (OSD tab).

Sequence

Selecting (Sequence) in the Live Monitoring menu causes the cameras to display sequentially. When in one of the multi-view formats, pressing this button will cause the DVR to go through predefined screen layouts (Full Sequence). Or, the bottom, right screen will display live cameras sequentially (Cameo Sequence) (8- and 16-channel models only). For example, if you select (Sequence) in the 2x2 format, the DVR changes pages as follows:

< Full Sequence >



< Cameo Sequence >

Selecting again exits the Sequence mode. While in the Sequence mode, the icon displays in bottom-left corner if Sequence is selected in the Display setup screen (OSD tab). If all the cameras in a page are Off, or have lost video or are set to Covert (unless the user has authority to view covert cameras), that page will be excluded from the sequence.

NOTE: The *Full Sequence* for the full sequence monitoring and the *Cameo Sequence* for the cameo sequence monitoring should be selected in the Display setup screen (Main Monitor tab).

Camera Menu

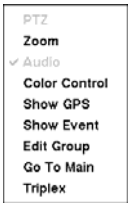
Selecting (Camera Menu) in the Live Monitoring menu displays the following Camera Menu.

- PTZ: Selecting PTZ and choosing the camera number allows you to control the selected camera as long as it has Pan, Tilt and Zoom capabilities. Refer to the following *PTZ Mode* section for details.
- Zoom: Selecting Zoom and choosing the camera number zooms the current image of the selected camera on the screen. Selecting Zoom again in the Camera Menu again exits the Zoom mode. Refer to the following *Zoom Mode* section for details.
- Audio: Selecting Audio toggles audio output On and Off.
- Color Control: Selecting Color Control and choosing the camera number allows you to control brightness, contrast, hue and saturation for each camera for the selected camera if a user who has Color Control authority logs into the system.

NOTE: It is important that cameras and monitors are correctly installed and adjusted prior to making any image adjustments using the DVR's controls.

Any image adjustments you make will be applied to both the live video on the monitors and the recorded video.

The Camera Menu also can be displayed by clicking the mouse right button on each camera screen.



- Show/Hide GPS: Selecting Show GPS or Hide GPS shows or hides the GPS information box on the screen if the DVR has GPS data.
- Show/Hide Event: Selecting Show Event or Hide Event shows or hides the alarm-in information box on the screen while alarm-in events are detected.
- Edit Group: Selecting Edit Group enters the active cameo mode (8- and 16-channel models only). Select Edit Group and choose a camera that you want to change display position (e.g., Camera A). Then, click the right mouse button to display the menu. If you choose another camera in the menu (e.g., Camera B), the screen displays Camera B instead of Camera A. Clicking the right mouse button and selecting *Exit Group Edit* in the menu exits the Active Cameo mode. Refer to the following *Active Cameo Mode* section for details.
- Go To Main: Selecting Go To Main after choosing a channel on the screen swaps the selected channel with the main channel. This function is supported only in the 1+5 and 1+7 display modes and can be activated from any of the channel screens except the main channel screen. The main channel indicates the channel displayed on the large screen which is displayed in the top-left in the 1+5 or 1+7 display mode.
- Triplex: Selecting Triplex when in one of the multi-view formats enters the triplex mode. The DVR supports the Triplex function: monitoring, recording and playing back at the same time. Refer to the *Playing Recorded Video* section in this chapter for details.

Alarm Reset

Selecting (Alarm Reset) in the Live Monitoring menu resets the DVR's outputs during an alarm.

Panic

Selecting (Panic) in the Live Monitoring menu starts panic recording of all cameras, and selecting again stops panic recording.

Setup

Selecting (Setup) in the Live Monitoring menu enters the Main Setup screen. Refer to *Chapter 3 — Configuration* for detailed descriptions of system setup.

Search Mode

Selecting (Search Mode) in the Live Monitoring menu exits the live monitoring mode and enters the search mode.

Login/Logout

Selecting (Login) in the Live Monitoring menu accesses the Login screen, and you will be asked to select a User and enter the password to log into the system. Selecting (Logout) in the Live Monitoring menu displays the Logout screen asking you to confirm whether or not you want to log out the current user.

Active Cameo Mode

When in any multi-view format, click the mouse right button on each camera screen displays the Camera Menu. Selecting Edit Group in the Camera Menu enters the Active Cameo mode (8- and 16-channel models only). The yellow outline surrounding the video indicates the active cameo, and selecting the other camera screen moves the active cameo. Selecting Exit Group Edit in the Camera Menu exits the Active Cameo mode. The active cameo mode will remains in effect for 15 seconds if there is no further operation.

In active cameo mode, select the camera screen you want to display in the active cameo. After setting the camera number to active cameo, the DVR moves the active cameo to the next cameo. When the camera number exists on the current screen, the active cameo is changed with the existing camera number. When the camera number does not exist on the current screen, the active cameo is replaced by the camera number. You can change the screen layout in this way.

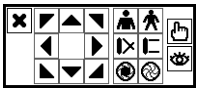
Zoom Mode

You can enter the Zoom mode by selecting Zoom and choosing the camera number in the Live Monitoring menu – Camera Menu. For a few seconds after entering the Zoom mode, a rectangle displays on the screen. A rectangle shows the area that will be enlarged. You can move the rectangle around by holding down the mouse button and dragging the pointer. In the Zoom mode, click the mouse right button and select the enlargement ratio in the menu or scroll mouse wheel and down enlarges the area in rectangle. Exit the Zoom mode by selecting Zoom again in the Camera Menu. While in the Zoom mode, the icon displays if Zoom is selected in the Display setup screen (OSD tab).

PTZ Mode

If a user who has PTZ Control authority logs into the system, the user can control PTZ cameras. The DVR will control cameras with Pan, Tilt and Zoom capabilities. Selecting PTZ and choosing the camera number in the Live Monitoring menu – Camera Menu enters the PTZ mode, and selecting PTZ again in the Camera Menu exits the PTZ mode. When in the PTZ mode, the icon PTZ displays on the PTZ camera screen.

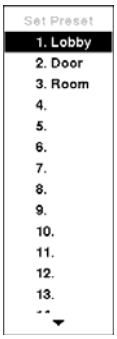
Click the mouse left button on the image and move that image in the direction you want to by dragging the mouse. Use the mouse wheel to zoom in and out. Position the mouse pointer at the bottom of the screen, and the following PTZ toolbar will display.

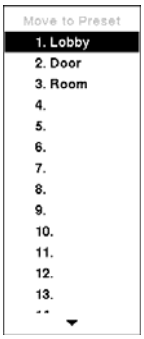


Clicking on the left side exits the toolbar. If you want to display the toolbar again, position the mouse pointer at the bottom of the screen. Change the toolbar location by clicking the empty space on the left side of the toolbar and drag it to where you want it located on the screen. Use the arrow buttons on the toolbar to pan or tilt the camera in the direction you want. The other controls on the toolbar perform as described below:

	Zoom In / Out		Focus Near / Far
	Iris Open / Close		Set / Load Preset

You can save camera position settings as “presets” so that you can go directly to desired views.





< Set Preset > < Move to Preset >

Figure 58 — PTZ Preset menu.

Once you have the camera at the desired settings, select on the tool bar, and the Set Preset dialog box will appear. Select the number you want to assign to the preset. Use the virtual keyboard to enter the preset name.

Select on the tool bar to load the PTZ preset and the Move to Preset dialog box will appear. Select the desired preset to load the preset.

While in the PTZ mode, moving the mouse pointer to the top of the screen selecting (Advanced PTZ) in the menu displays the Advanced PTZ menu.

Set the feature you wish to control by selecting it from the menu. Refer to the camera manufacturer's instructions for the proper settings. Depending on the camera specifications, some features may not be supported.

Event Monitoring

When an event occurs, the DVR will display the camera associated with the event if Event Monitoring On is selected in the Display setup screen (Main Monitor tab).

How the cameras are displayed depends on the number of cameras associated with the event. If one camera is associated with the event, the DVR will display the camera full screen. If two to four cameras are associated with the event, the DVR will display the cameras on a 2x2 screen. If five to nine cameras are associated with the event, the DVR will display the cameras on a 1+5, 1+7 or 3x3 screen. If 10 or more cameras are associated with the event, the DVR will display the cameras on a 4x4 screen.

Event monitoring lasts for the dwell time set for event recording. After the dwell time has elapsed, the monitor returns to the previous screen unless another event has occurred. If you want to return to the live monitoring mode before the dwell time has elapsed, click the mouse button.

Covert Camera

If a camera is set up as Covert 1 in the Camera setup screen (Settings tab), that camera will not be displayed unless a user with Covert Camera View authority logs into the system. However the camera title and status icons will be displayed on the monitor.

If a camera is set up as Covert 2 in the Camera setup screen (Settings tab), that camera appears to be Off unless a user with Covert Camera View authority logs into the system. The camera title will be grayed out and status icons will not be displayed on the monitor.

NOTE: When a camera is set up as *Covert 1*, the DVR displays the camera title and status icons on the covert video. When set up as *Covert 2*, the DVR displays only the camera title on the covert video.

If a user who has Covert Camera View authority logs into the system, the user can view video from cameras set to Covert 1 or Covert 2 including the camera titles and status icons.

Display Menu

In the Live Monitoring mode or Search mode, moving the mouse pointer to the left edge of the screen displays the following Display menu.

① Full Screen
② PIP
③ 2x2
④ 1+5
⑤ 1+7
⑥ 3x3
⑦ 4x4
⑧ Previous Group
⑨ Next Group
⑩ OSD

Figure 59 — Display menu.

Full Screen

Selecting (Full Screen) in the Display menu and choosing the camera number button displays the selected camera full screen. It is the same as clicking the mouse button on a camera image when in one of the multiview formats (i.e., 2x2, 1+5, 1+7, 3x3 or 4x4). Clicking the mouse left button on the screen again returns to the previous display mode.

PIP, 2x2, 1+5, 1+7, 3x3, 4x4

Selecting , , , , or (PIP, 2x2, 1+5, 1+7, 3x3 or 4x4) in the Display menu displays the cameras in the selected multiview screen mode (PIP, 2x2, 1+5, 1+7, 3x3 or 4x4). Selecting each display mode is the same as scrolling the mouse wheel up and down when in one of the multiview formats (i.e., 2x2, 1+5, 1+7, 3x3 or 4x4).

NOTE: The PIP, 1+5 and 1+7 display modes will not be supported in the search mode.

In the 1+5 or 1+7 display mode, the main channel indicates the channel displayed on the large screen which is displayed in the top-left. You can select the camera you want to display on the main channel screen. Select a channel on the screen and click the mouse right button to display the Camera Menu. Selecting *Go To Main* swaps the selected channel with the main channel. This function is supported only in the 1+5 and 1+7 display modes and can be activated from any of channel screens except the main channel screen.

You can change the location of the PIP (Picture-in-Picture) counterclockwise or clockwise, and change its size by using the mouse. Select the PIP and then click the mouse right button to display the following menu. Select the options you want. You can also change the location of the PIP by clicking the mouse left button on the PIP window and dragging it to where you want it located, and change the size of the PIP by clicking the mouse left button at the corner of the PIP window and dragging it until it is the desired size.

Previous Group, Next Group

Selecting or (Previous Group or Next Group) in the Display menu moves to the previous or next page.

OSD

Selecting (OSD) in the Display menu toggles OSD On and Off.

Recording Video

Once you have installed the DVR following the instructions in *Chapter 2 — Installation*, it is ready to record. The DVR will start recording based on the settings you made in the Record setup screen. See *Chapter3 — Configuration.*

Recycle On or Recycle Off. The factory default is Recycle On. It does this by recording over the oldest video once the hard disk is full. Setting the DVR to Recycle Off causes it to stop recording once the hard disk is full.

Standard (CIF), High (Half D1) or Very High (D1). The factory default resolution is Standard. When set to Standard, the DVR has a maximum recording speed of 480 ips (240 ips for 8-channel model and 120 ips for 4-channel model). When set to High, the DVR has a maximum recording speed of 240 ips (120 ips for 8- and 4-channel models). When set to Very High, the DVR has a maximum recording speed of 120 ips (60 ips for 8- and 4-channel models).

Although you will be able to record without changing the unit from its original factory settings, you will want to take advantages of the DVR's many tools. See *Chapter 3 — Configuration* for detailed descriptions of the recording mode options.

Panic Recording

Selecting ! (Panic) in the Live Monitoring menu or turning on the external panic recording device starts panic recording of all cameras, and selecting ! again or turning off the external panic recording device stops panic recording. If you set the Panic Recording Duration in the Panic Record setup screen, panic recording will stop automatically after the preset duration unless you stop the panic recording manually.

NOTE: When the DVR is not in the Recycle mode and all available storage space has been used, panic recording will not operate.

Recording Audio

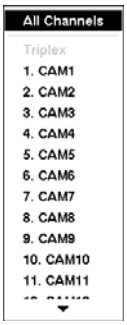
If the DVR was set up to record audio, it will record audio from up to four inputs when video is recording.

NOTE: Make certain you comply with all local and federal laws and regulations when recording audio.

Playing Recorded Video

If a user who has Search authority logs into the system, the user can view recorded image. Once video has been recorded, you can view it by pressing the PLAYBACK button.

The DVR supports the Triplex function: monitoring, recording and playing back at the same time. Pressing the PLAYBACK button when in one of the multi-view formats enters the Triplex mode and displays the Select Playback Camera menu.



Selecting All Channels plays back video of all cameras. The DVR maintains the same display format as it does in the live mode except for the PIP format. You can also change the screen layout in the same way as you do in the live mode.

Selecting the camera number under Triplex enters the Triplex mode and plays back video of the selected camera. When in the single-screen display format, the camera currently displayed on the screen will be selected and when in the PIP display format, the camera displayed on the PIP screen will be selected for the search channel. During the Triplex mode, the DVR maintains the same display format as it does in the live mode. A red outline surrounding the video and the camera title indicates the search channel. While in the Triplex Mode, the DVR continues recording cameras as they were set up in the recording schedule. Also, live monitoring will continue except for the camera that has been selected for playback.

Figure 60 — Select Playback Camera menu.

When playing video for the first time, the DVR will display the most recent image. When playing video subsequent times, the DVR will start playing video from the last recalled image. Recorded audio will be played when the DVR displays a camera with recorded audio in full screen mode.

NOTE: Only the administrator and users with *Covert Camera View* authority can view video from covert cameras. The covert cameras in the playback mode are determined by the current camera settings.

Position the mouse pointer on the playback screen, and the following Record Table Search (Compact View Mode) screen will display. The individual controls on the toolbar perform the following functions as described below:

Go to the previous image | Play | Go to the next image

Fast backward play | Fast forward play

Searching Video

While in the search mode, moving the mouse pointer to the top of the screen displays the following Search menu. You can select menus and items by clicking the mouse left button.

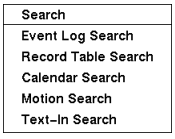
① Search
② Go To
③ Bookmarks
④ Export
⑤ Camera Menu
⑥ Alarm Reset
⑦ Panic
⑧ Exit

Figure 61 — Search menu.

Search Menu

Search

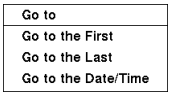
Selecting (Search) in the Search menu displays the following Search menu. See the following *Event Log Search*, *Record Table Search*, *Calendar Search*, *Motion Search* and *Text-In Search* sections for details.



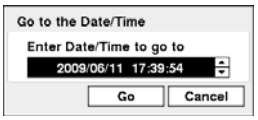
- Event Log Search: Selecting Event Log Search selects video from the event log.
- Record Table Search: Selecting Record Table Search selects using a recording table.
- Calendar Search: Selecting Calendar Search selects using a calendar.
- Motion Search: Selecting Motion Search selects motion events.
- Text-In Search: Selecting Text-In Search selects text input strings.

Go To

Selecting (Go To) in the Search menu displays the following Go to menu.



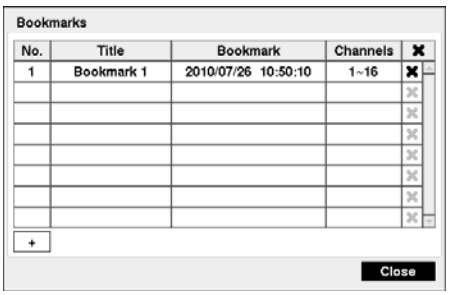
- Go to the First: Selecting Go to the First displays the first recorded image.
- Go to the Last: Selecting Go to the Last displays the last recorded image.
- Go to the Date/Time: Selecting Go to the Date/Time displays the Go to the Date/Time screen.



Set the date and time by using the Up and Down arrows. Once you have set the date and time you want, select Go. The selected date and time will display. (If no video was recorded during the selected time, a message appears alerting you that no image was recorded at that time.)

Bookmarks

Selecting (Bookmarks) in the Search menu displays the Bookmarks screen.

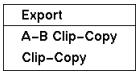


- +: Select to add the current playback point to the bookmark list.
- No.: Displays the bookmark number (max. 64).
- Title: Enter the bookmark name.
- Bookmark: Displays the date and time of the current playback point.
- Channels: Displays the camera number of the current playback video.

Selecting a bookmark moves to the selected bookmark.

Export

Selecting (Export) in the Search menu displays the following Export menu. See the following *Clip Copy* section for details.



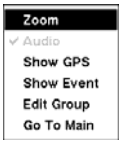
- A–B Clip-Copy: Selecting A–B Clip-Copy will set the starting point of the video to be clip copied, and the icon displays at the bottom-left corner of the screen. Selecting A–B Clip-Copy again will set the ending point of the video to be clip copied and displays the Clip-Copy screen.
- Clip-Copy: Select Clip-Copy, and the Clip-Copy screen appears to allow clip copy setup.

Camera Menu

Selecting (Camera Menu) in the Search menu displays the following Camera Menu.

- Zoom: Selecting Zoom and choosing the camera number zooms the current playback image of the selected camera on the screen. Selecting Zoom again exits the Zoom mode.
- Audio: Selecting Audio toggles audio playback On and Off. Recorded audio will be played when the DVR displays a camera with recorded audio in full screen mode.

NOTE: The *Camera Menu* also can be displayed by clicking the mouse right button on the screen while in the search mode.



- Show/Hide GPS: Selecting Show GPS or Hide GPS shows or hides the GPS information box on the screen while playing back video with GPS data. This function is supported only while playing back video in the normal speed.
- Show/Hide Event: Selecting Show Event or Hide Event shows or hides the alarm-in information box on the screen while playing back alarm-in event video. This function is supported only while playing back video in the normal speed.
- Edit Group: Selecting Edit Group enters the active cameo mode (8- and 16-channel models only). Select Edit Group and choose a camera that you want to change display position (e.g., Camera A). Then, click the mouse right button to display the menu. If you choose another camera in the menu (e.g., Camera B), the screen displays Camera B instead of Camera A. Clicking the mouse right button and selecting *Exit Group Edit* in the menu exits the Active Cameo mode. Refer to the following *Active Cameo Mode* section for details.
- Go To Main: Selecting Go To Main after choosing a channel on the screen swaps the selected channel with the main channel. This function is supported only in the 1+5 and 1+7 display modes and can be activated from any of the channel screens except the main channel screen. The main channel indicates the channel displayed on the large screen which is displayed in the top-left in the 1+5 or 1+7 display mode.

Alarm Reset

Selecting (Alarm Reset) in the Search menu resets the DVR's outputs during an alarm.

Panic

Selecting (Panic) in the Search menu starts panic recording of all cameras, and selecting again stops panic recording.

Data Source

Selecting (Data Source) in the Search menu allows you to select the data source to be searched. Selecting Record searches recorded data on primary storage installed in the DVR, and selecting Other searches recorded data on storage used for another DVR then installed in this DVR.

Exit

Selecting (Exit) in the Search menu exits the search mode and enters the live monitoring mode.

Event Log Search

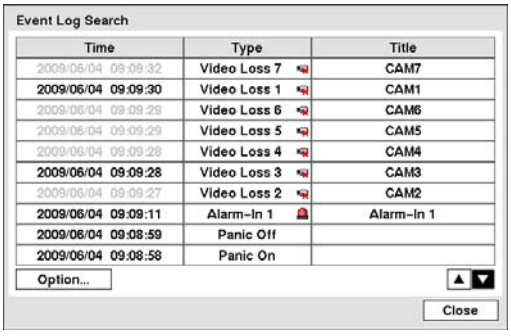


Figure 62 — Event Log Search screen.

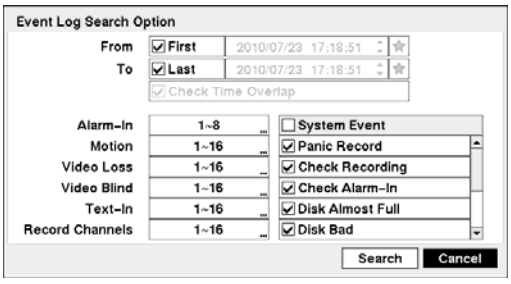
The DVR maintains a log of each time the Alarm Input port is activated. The Event Log Search screen displays this list. Use the arrow buttons to select the event for which you would like to see video.

There is no determined user authority to display the Event Log Search screen, however, the event video will not be played unless a user with Search authority logs into the system.

Selecting the event in the list will extract the event video and display the first image of the event. Position the mouse pointer on the playback screen and select (Play) on the toolbar to start playing the "event" video segment. Selecting (Exit) in the Search menu returns to live monitoring.

NOTE: It is possible that no recorded image displays on the current screen. Select (4x4) for the 16-channel DVR, (3x3) for the 8-channel DVR and (2x2) for the 4-channel DVR in the Mouse Display menu, and you will be able to easily see the camera have recorded video during target time.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.



You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Select the box beside From to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image. Or, select and then a bookmark from the bookmark list.

Select the box beside To to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image. Or, select and then a bookmark from the bookmark list.

Selecting the box beside Check Time Overlap toggles between On and Off. You will only be able to turn the Check Time Overlap on or off if a user-defined date and time is set to From and To. If the DVR's date and time have been reset, it is possible for the DVR to have more than one overlapping start and stop time. When set to On, you will be asked to select one of the overlapping start and stop time. When set to Off, the DVR will display search results from all start times to all stop times.

Select the box beside Alarm-In and select the alarm inputs that you want to include in your search.

Select the box beside Motion and select the cameras for which you want any reports of motion detection.

Select the box beside Video Loss and select the cameras for which you want any reports of lost video.

Select the box beside Video Blind and select the cameras for which you want any reports of blind video.

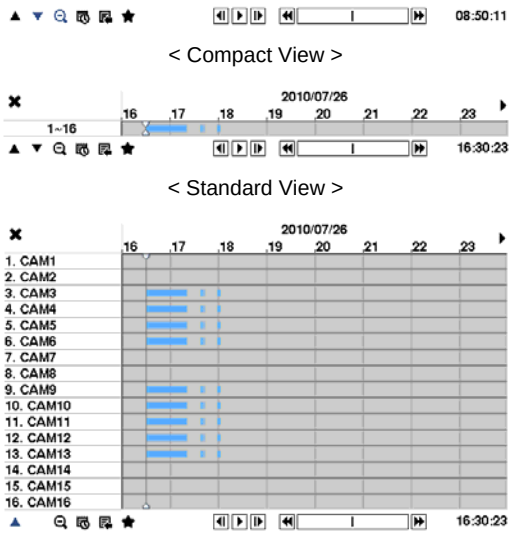
Select the box beside Text-In and select the text-in devices which you want any reports of text input.

Select the box beside Record Channels and select the cameras that you want to search for any reports of event recorded data. The DVR will display the events (not the camera channels) that occurred and that also are recorded on the camera channel that you selected. If you do not select a camera channel in this field, the DVR will search events that are not associated with cameras.

Select system events to toggle On and Off the system events that you want to include in your search. Selecting System Event toggles On and Off all system events.

Once you set your desired search conditions, select Search to display the search results in the Event Log Search screen. Selecting Cancel exits the screen without saving the changes.

Record Table Search



Recording information about video images currently displayed on the screen displays on the recording status bar. A grey vertical line indicates the current search position. To search specific video, move the vertical line by clicking the mouse button on the desired segment.

If the DVR's time and date have been reset to a time that is earlier than some recorded video, it is possible for the DVR to have more than one video stream in the same time range. In this case, the overlapping time range in the record table will be separated by a yellow vertical line.

NOTE: The recorded data in the time range located after the yellow vertical line is the latest.

Figure 63 — Record Table Search screen.

There are three view modes. Standard view, Expanded view and Compact view. Standard view (default) displays combined recording information of all camera channels currently displayed on the screen. In the Standard view mode, selecting the ▲ icon located at the bottom switches to the Expanded view mode. The Expanded view displays the recording information of each camera channel currently displayed on the screen. Selecting the ▼ icon in the Standard view mode switches to the Compact view mode which displays only the toolbar. Selecting the ▲ icon in the Compact view mode switches to the Standard view mode, and selecting the ▼ icon in the Expanded view mode switches to the Standard view mode.

Selecting 🔍+ or 🔍− located at the bottom zooms the record table. Selecting 🔍+ displays eight hours (1-minute based), and selecting 🔍− displays 24 hours (3-minute based) at once. To move to earlier or later times that are not shown in the current record table screen, select the arrows located at the end of the times.

NOTE: If the DVR has images recorded in more than one recording mode in the same time range, the recording status bar displays recording information in the following priority order: Panic → Pre-Event → Event → Time. The color of the bar indicates different recording modes: Red for Panic, Yellow for Pre-Event, Purple for Event, and Blue for Time.

Selecting located at the bottom displays the Calendar Search screen. See the following Calendar Search section for details.

Selecting located at the bottom displays the Search menu.

- Go To: Displays the first or last recorded image, or searches by date and time (see the previous *Searching Video – Go To* section of this chapter for more details).
- Clip-Copy: Clips a video segment and saves it (see the following *Clip Copy* section for more details).
- Zoom: Zooms the current playback image.
- Slow Play: Plays video at low speed (x1/2, x1/3, x1/4, x1/6 and x1/8).

Selecting located at the bottom displays the bookmark list.

The individual playback controls at the bottom perform the following functions as described below:

Go to the previous image | Play | Go to the next image
Fast backward play | Fast forward play

Selecting in the top-left corner exits the Record Table Search screen.

Calendar Search

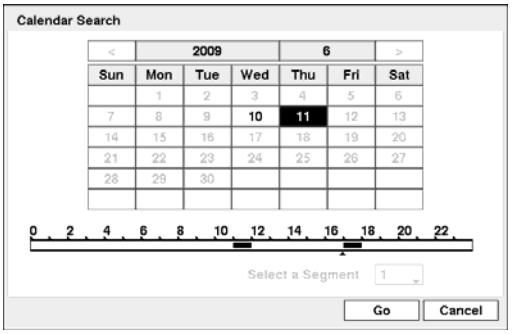


Figure 64 — Calendar Search screen.

Days with recorded video display on the calendar with white numbers.

A time bar displays at the bottom of the calendar. Hours in which video was recorded will be highlighted with blue.

NOTE: The time bar is in one-hour segments. If a segment is highlighted, it means that some video was recorded during that hour. However, it does NOT mean video was recorded for the entire hour.

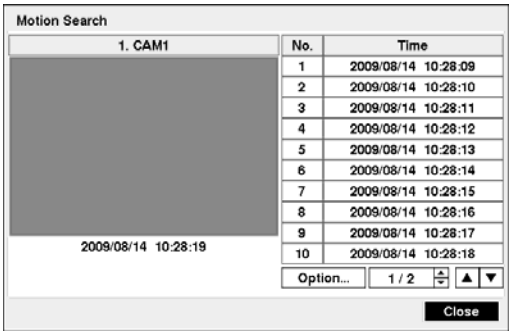
If the DVR's time and date have been reset to a time that is earlier than some recorded video, it is possible for the DVR to have more than one video stream in the same time range. Select the box beside Select a Segment, and select the video stream you want to search. Refer to the *Appendix – Time Overlap* for further information on searching time-overlapped video streams.

NOTE: The lower number of the Segment indicates the latest recorded video.

Once you have set the date and time you want to search by selecting the desired day and time, select Go. The selected date and time will display.

NOTE: It is possible that no recorded image displays on the current screen. Select (4x4) in the Mouse Display menu, and you will be able to easily see the camera have recorded video during target time.

Motion Search



The Motion Search… can be selected from the Search menu while the DVR displays the camera full screen. The Motion Search screen displays a list of motion events. Select the event for which you would like to see video to display the video associated with the selected event on the small search screen.

Selecting Close will extract the video associated with the Motion event and display the first image of the event. Position the mouse pointer on the playback screen and select ▶ (Play) on the toolbar to start playing the "event" video segment. Selecting ↩ (Exit) in the Search menu returns to live monitoring.

Figure 65 — Motion Search screen.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Select the box beside From to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image. Or, select ★ and then a bookmark from the bookmark list.

Select the box beside To to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image. Or, select ★ and then a bookmark from the bookmark list.

Select the box beside Type and can select between Motion Search and Museum Search. Motion Search detects motion in the defined area. Museum Search detects if a defined object has moved.

Select the box beside Zone, and an image from the video appears with a grid overlaid. You can turn sensor blocks On and Off to define the area of the picture in which you want to search for motion.

NOTE: Defining the area of the image in which you want to search for motion is nearly identical to setting up the DVR for Motion Detection. Please refer to *Motion Detection Screen* in *Chapter 3 — Configuration* for more detailed instructions on setting up the detection blocks.

When setting the Museum Search Zone, the zone should be placed inside of the border line of the target object. If the selected block is placed on the border line, the sensitivity of the Museum Search may decrease.

The zone should be placed or focused on the centre or, at least, within the outline of targeted object.

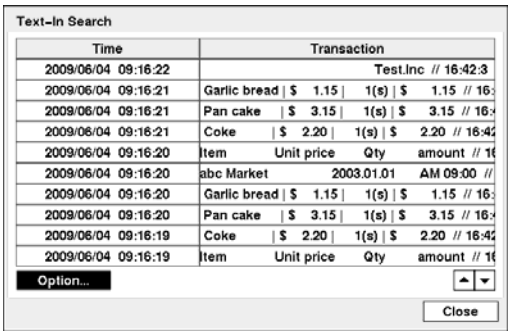
Select the box beside Sensitivity, and you will be able to select from 1 (low sensitivity) to 5 (high sensitivity).

Select the box beside Min. Blocks, and will be able to set the number of sensor blocks that must be activated. Setting the Min Blocks will only be available if Motion Search is selected.

Once you set your desired search conditions, select Search to display the search results in the Motion Search screen. Selecting Cancel exits the screen without saving the changes.

When you search for motion events of another camera, you will be asked whether or not you want to delete the previous search results from the list.

Text-In Search



The DVR maintains a log of each time there is Text Input. The Text-In Search screen displays this list. Use the arrow buttons to select the event for which you would like to see video.

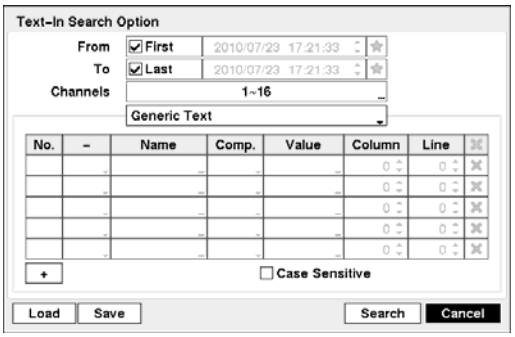
Pressing the (Play/Pause) button will extract the video associated with the Text Input and display the first image of the event. Position the mouse pointer on the playback screen and select (Play) on the toolbar to start playing the "event" video segment. Selecting (Exit) in the Search menu returns to live monitoring.

Figure 66 — Text-In Search screen.

NOTE: It is possible that no recorded image displays on the current screen. Select (4x4) in the Mouse Display menu, and you will be able to easily see the camera have recorded video during target time.

Text Input information will be overlaid on the image while the recorded video is played at regular speed.

You can also narrow your event search by selecting the Option… button and setting up the new search condition.



You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Select the box beside From to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image. Or, select and then a bookmark from the bookmark list.

Select the box beside To to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image. Or, select and then a bookmark from the bookmark list.

Select the Channel and select the text-in devices that you want to search for text input.

Select the Text Input Device box and select your Text Input Device from the list.

Selecting the + allows you to add a new set of search parameter. Set up the desired search parameter. Refer to the *Appendix – Text-In Search Examples* for further information on setting up search parameters. The ✖ column can be used to delete a set of search parameter or entire sets of search parameters.

Selecting Case Sensitive toggles between On and Off. When this feature is On, the search will find only those text strings in which the case matches.

Select Load to load saved search option settings. Select the desired search option settings.

Select Save to save the current search option settings. A virtual keyboard appears that you can use to enter the search option name.

Once you set your desired search conditions, select Search to display the search results in the Text-In Search screen. Selecting Cancel exits the screen without saving the changes.

Clip-Copy

Video clips can be copied on an external USB hard disk or flash drive. The copied video clips can be viewed on computers running Microsoft Windows 98, ME, 2000, XP or Vista. Refer to the *Appendix – USB Hard Disk Drive Preparation* for information on preparing the external drive for clip copy.

Selecting A–B Clip-Copy in the Search – Export menu during the playback will set the starting point of the video to be clip copied, and the icon displays at the bottom-left corner of the screen. Selecting A–B Clip-Copy in the Search – Export menu again will set the ending point of the video to be clip copied by displaying the Clip-Copy screen.

Select Clip-Copy in the Search – Export menu while in the Search mode or Live Monitoring mode, and the Clip-Copy screen appears to allow clip copy setup.

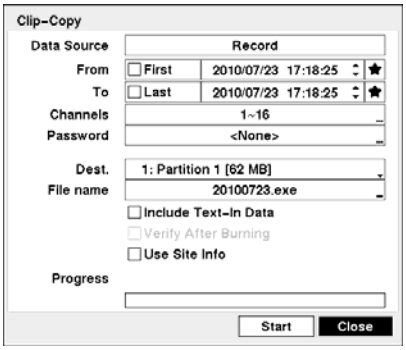


Figure 67 — Clip-Copy screen.

You can search video from the first to last recorded images, or you can set the start and stop times and dates.

Select the box beside From to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the first recorded image. Or, select ★ and then a bookmark from the bookmark list.

Select the box beside To to toggle between On and Off. When set to Off, you can enter a specific Date and Time. When set to On, the search will be from the last recorded image. Or, select ★ and then a bookmark from the bookmark list.

Select the box beside Channels, and you can select the cameras that you would like to include in your video clip.

Select the box beside Password, and a virtual keyboard appears allowing you to enter the password for reviewing the video clips.

Select the box beside Dest., and you can select the storage device on which you would like to record the video clip. You can choose from Internal DVD RW and USB Storage.

CAUTION: The USB device for clip copy must be FAT 16 or FAT32 format.

The DVR automatically assigns a file name to the video clip. However, you can give the video clip file a different name. Select the box beside File Name, and a virtual keyboard appears. Enter a file name for the video you are backing up and select Close. The DVR will automatically add the camera number (for example "01") and ".exe" to the file name.

NOTE: When naming a file, you cannot use the following characters: \, /, :, *, ?, ", <, >, |.

Selecting Include Text-In Data toggles between On and Off. When this feature is On, you can include text-in data when copying video if the video was recorded with text-in data.

Selecting Verify After Burning toggles between On and Off. When this feature is On, you can verify that the data is written on the DVD RW properly.

Selecting Use Site Name toggles between On and Off. When this feature is On, you can add the site name to the file name for the video you are backing up.

NOTE: When the site name is added to the file name, some special characters (\, /, :, *, ?, ", <, >, |) in the site name will be converted to "_".

Once you have given the video clip a file name, select the Start button. The confirmation screen displaying data size will appear. When the storage device does not have enough space, the DVR will ask if you want to copy as much of the video clip as possible in the available space. Select the Continue button to continue clip copy.

Once the clip copy starts, you can cancel it by selecting Cancel or hide the screen by selecting Close. When selecting Close, Clip Copy continues and a confirmation screen will display when complete.

NOTE: The file size for clip copy is limited to 30GB. When copying video clips larger than 2GB, the video clips will be save in units of 2GB. For example, 3 individual 2GB files will be created when saving a 6GB video clip. However, the file size for the One-Touch Clip Copy is limited to 2GB.

You can use other functions on the DVR while video is being backed up. To do this, select the Close button. You can return to the Clip-Copy screen at any time to check the progress.

You do not need to install any special software on your personal computer to review the video clips. Refer to RAS manual for instructions on how to review video clips you have copied.

NOTE: During Clip Copy, you cannot shut the system down, clear data on the storage device, or format the storage device.

CAUTION: Do NOT disconnect the USB cable or the power from the external drive while copying video clips. If the external drive is shut down or the USB cable is disconnected while copying video clips, THE DVR SYSTEM MAY NOT WORK NORMALLY OR THE EXTERNAL DRIVE COULD BE DAMAGED, and you will get an error message the next time you try to copy video clips. You will need to power down the DVR and restart it to get rid of the error message. Once the file system of the USB hard disk drive has been corrupted, this error message cannot be dismissed. Even after restarting the DVR it may automatically restart while preparing to clip copy. You must recover the file system using the recovery program, or you must reformat the hard disk drive.

Appendix

USB Hard Disk Drive Preparation

Preparing the USB hard disk drive in Windows 2000

NOTE: Preparing a USB hard disk drive under Windows XP, Window Vista and Window 7 is almost identical to Windows 2000.

1. Connect the USB hard disk drive to your computer using the USB Cable.
2. Turn on your computer.
3. The USB device icon should display on the Taskbar.
4. If the USB hard disk drive is partitioned or has data, it will show up in *My Computer* as a hard disk drive icon. Check the file system by right clicking on the icon and checking under *Properties* > *General* > *File System*. If the file system is NOT FAT32 format, format the USB hard disk drive using the FAT32 format.
5. If the USB hard disk drive is not partitioned, go to *Administrative Tools* in *Control Panel* and launch *Computer Management*. Open *Disk Management* in *Storage* and right click an unallocated region of the USB hard disk drive. Then, click *Create Partition*.
6. In the *Create Partition wizard*, click *Next* then *Primary Partition*, and follow the instructions on the screen. Make sure that the FAT32 is selected for the file system.

NOTE: The partition size should be less than 32GB because of Microsoft limitations.

After formatting is complete, the USB hard disk drive will be added to *My Computer*.

7. Connect the USB hard disk drive to the DVR.

Preparing the USB hard disk drive in Windows 98

NOTE: Preparing a USB hard disk drive under Windows ME is almost identical to Windows 98.

1. Connect the USB hard disk drive to your computer using the USB Cable.
2. Turn on your computer. The *Add New Hardware wizard* window will appear.
3. Install the device driver for the USB backup device following the instructions provided with your USB hard disk drive.
4. If the USB hard disk drive is partitioned or contains data, it will show up in *My Computer* as a hard disk drive icon. Check the file system in *Properties* > *General* > *File System.* If the file system is NOT FAT32 format, format the USB hard disk drive with FAT32 format.
5. Run the FDISK utility by clicking *Start* then *RUN*. Type "fdisk" and click OK.
6. When the MS-DOS command prompt appears, type "Y" and hit the enter key.
7. In the FDISK Option menu, choose *"5. Change current fixed disk drive."*
8. Choose the appropriate letter corresponding to the USB hard disk drive.
9. In the FDISK Option menu, choose *"1. Create DOS partition or Logical DOS Drive."*
10. In the Create DOS Partition or Logical DOS Drive menu, choose *"1. Create Primary DOS Partition."* And Type "Y" to use all available space and hit the enter key. Hit ESC to exit the screen after the USB hard disk drive partition is created.
11. Restart your computer and verify the newly created drive is in *My Computer*.
12. Right click the newly created hard disk drive icon and select *"Format"*.
13. In the Format Screen, select *"Full"* as the *"Format type"* and click *"Start"*.
14. After formatting is complete, connect the USB hard disk drive to the DVR.

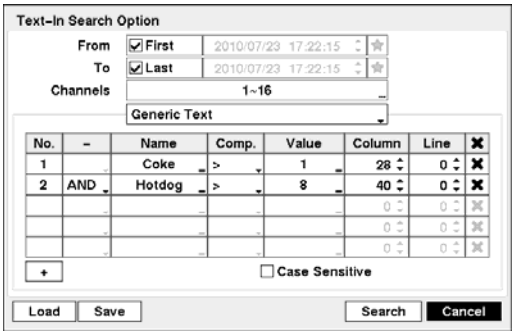
Text-In Search Examples

Search Example I

```
        1         2         3         4         5         6
12345678901234567890123456789012345678901234567890123456789012345678901234567890

    Item       Unit price     Qty       amount
================================================
 Coke          | $    2.20 |     1(s) | $      2.20
 Fanta         | $    2.20 |     1(s) | $      2.20
 Hotdog        | $    3.50 |     3(s) | $     10.50
 Pepsi         | $    1.95 |     1(s) | $      1.95
================================================
                              total : $      16.85
Thank you~~
```

In the above text-in data, you can find that the comparison value is located at 17th (Unit price, $ mark will be ignored automatically), 28th (Qty) and 40th (amount) characters (including spaces) from the left. In this case, you can enter "17", "28" and "40" in each Column box.

For example, if you want to search for Coke with a Qty (Quantity) of more than 1 and Hotdog with an amount totaling over $8, the following search condition can be set.

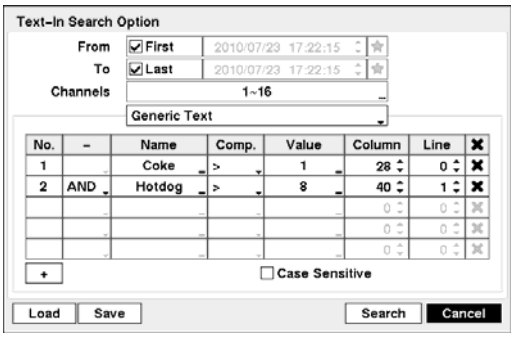


Search Example II

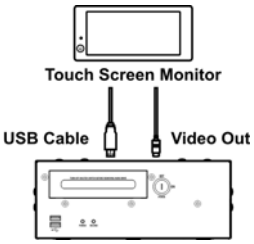
```
        1         2         3         4         5         6
12345678901234567890123456789012345678901234567890123456789012345678901234567890

    Item       Unit price     Qty       amount
================================================
 Coke          | $    2.20 |     1(s)
                                          $      2.20
 Fanta         | $    2.20 |     1(s)
                                          $      2.20
 Hotdog        | $    3.50 |     3(s)
                                          $     10.50
 Pepsi         | $    1.95 |     1(s)
                                          $      1.95
================================================
                              total : $      16.85
Thank you~~
```

In the above text-in data, you can find that the comparison value is located at 17th (Unit price, $ mark will be ignored automatically), 28th (Qty) and 40th (amount) characters (including spaces) from the left, but the value of amount category is located on a different line from Item. In this case, you can enter "17", "28" and "40" in each Column box and enter "1" in the Line box for the next line.

For example, if you want to search for Coke with a Qty (Quantity) of more than 1 and Hotdog with an amount totaling over $8, the following search condition can be set.



Use of Touch Screen Monitor

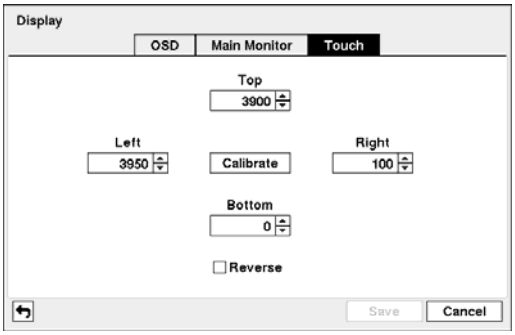


1. Turn off the DVR first to connect the touch screen monitor to the DVR.
2. Connect the touch screen monitor to the Video Out connector on the DVR rear panel by using the cable provided with the touch screen monitor.
3. Connect to the USB port on the DVR front panel by using the USB cable provided with the touch screen monitor.
4. Turn on the DVR after completing the connection. Connect the main monitor to the Video Out connector.

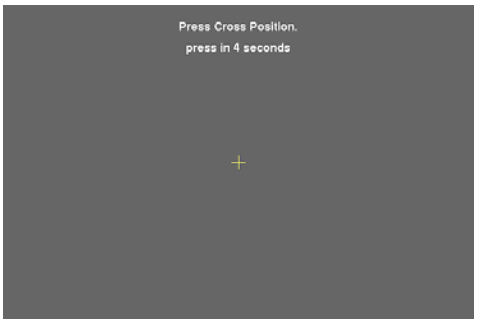
NOTE: Ask your dealer or distributor about the purchase of the touch screen device.

Calibration

After connecting the touch screen monitor, enter the setup screen and move to the Touch screen (Devices > Display > Touch tab) to calibrate the touch accuracy.



Select Calibrate and the black screen appears.



Press the center of the + icon. When pressing it, the + icon moves to the left-top corner of the black screen. Press the center of the + icon again, and the + icon moves to the right-top. Repeat this procedure at the right-bottom and left-bottom also.

If the calibration fails, the system will return to the Touch screen automatically in 10 seconds.

You can also calibrate manually by selecting the Top, Left, Right and Bottom box and adjust the values.

Selecting Reverse reverses the x-axis and the y-axis of the touch screen.

Select Save to apply the calibration.

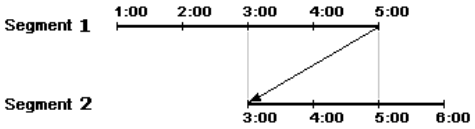
Operation Control

You will control the DVR operation by touching the screen. See the following for the touch screen operation:

- Short touch: Functions the same as clicking the mouse left button.
- Middle touch (0.5 to 1.5 second-touch) and move: Functions the same as dragging the mouse.
- Long touch (1.5 second or more touch): Functions the same as clicking the mouse right button.
- Short touch and quick move upward or downward: Functions the same as moving the mouse wheel.
- Short touch and quick move to left or right: Moves to the previous or next camera group.

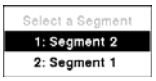
Time Overlap

If the DVR's time and date have been reset to a time that is earlier than the existing recorded video, it is possible for the DVR to have more than one video stream in the same time range. In this case, you can search overlapping video streams individually by selecting a specific segment. For example, when the DVR has recorded video from one to five o'clock and the user changes the time backward from five to three o'clock and then continues recording until six o'clock, there will be two video streams and segments from three to five o'clock.

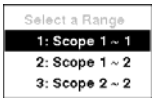


You can search overlapping video streams by selecting a specific time or time range.

If you want to search recorded video at four o'clock during the overlapping time range using a search menu such as Go to the Date/Time, select the segment you want to search.



If you want to search recorded video from four to five o'clock during the overlapping time range using a search menu such as Event Log Search, Text-In Search or Motion Search, it is possible for the DVR to have two overlapping start and stop times. You will be asked to select one of the overlapping start and stop times from the search time ranges as follows:

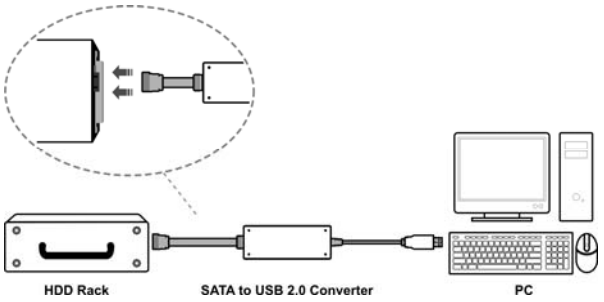


- From four o'clock of the first segment to five o'clock of the first segment
- From four o'clock of the first segment to five o'clock of the second segment
- From four o'clock of the second segment to five o'clock of the second segment

Playback on PC with USB Interface

If you want to search or play back the video that is on your DVR's removable hard disk drive on your PC, you will need a SATA to USB2.0 converter (not supplied) and the dedicated Hard Disk Player (HDP) program (optional).

Refer to the HDP User's Manual for details of installation and operation the dedicated HDP program.



System Log Notices

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

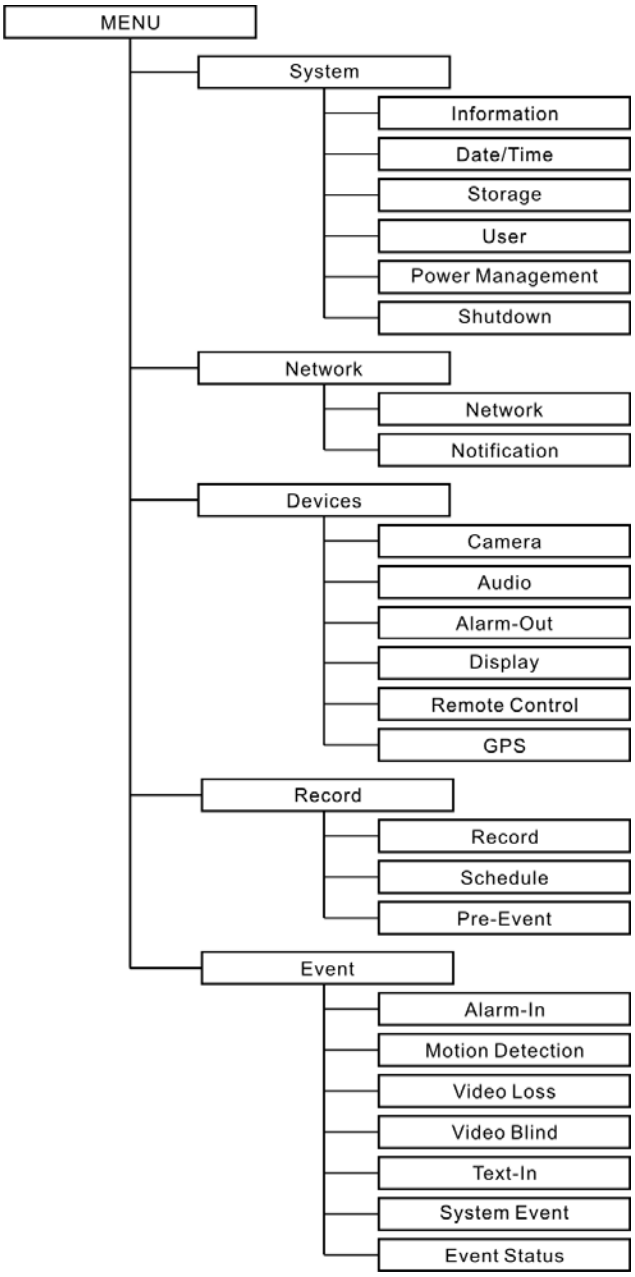
Error Code Notices

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	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.

Troubleshooting

Problem	Possible Solution
No Power	• Check power cord connections. • Confirm that there is power at the outlet.
No Live Video	• Check camera video cable and connections. • Check monitor video cable and connections. • Confirm that the camera has power. • Check camera lens settings.
DVR has stopped recording	If hard disk drive is full, you will either need to delete video or set the DVR to the Overwrite Mode.
The icon ● displays, however, the DVR is not recording.	When the DVR is in the Pre-Event recording mode, the yellow and ● display when there is no event, and the DVR is not recording. The red and ● display when any event occurs and the DVR starts recording.
While upgrading the system, the DVR keeps rebooting and the upgrade fails.	If the current system version is higher than the upgrade package file version, you should reset the DVR first using the Factory Reset. When using the Factory Reset, you will lose any settings you have saved.

Map of Screens



Specifications

VIDEO	
Signal Format	NTSC or PAL (Auto Detect)
Video Input	Composite: 4, 8 or 16 inputs, 1 Vp-p, auto-terminating, 75 Ohms
Monitor Outputs	Composite: 1 BNC, 1 Vp-p, 75 Ohms
Video Resolution	Composite: 720x480 (NTSC), 720x576 (PAL)
Record Speed (images per second)	Real-time: 480ips (NTSC), 400ips (PAL) @ CIF (16-ch Model) 240ips (NTSC), 200ips (PAL) @ CIF (8-ch Model) 120ips (NTSC), 100ips (PAL) @ 2CIF (4-ch Model)
Playback Speed (images per second)	Full Duplex: 480ips (NTSC), 400ips (PAL) @ CIF (16-ch Model) 240ips (NTSC), 200ips (PAL) @ CIF (8-ch Model) 120ips (NTSC), 100ips (PAL) @ 2CIF (4-ch Model)

INPUTS/OUTPUTS	
Alarm Input	8 terminal, programmable as NC or NO, Threshold: <= 2.4V ⎓ for NC and >= 2.8V ⎓ for NO, 0~50V ⎓
Alarm Output	2 relay output, programmable as NC or NO, 0.5A@125V ~, 1A@30V ⎓
Alarm Reset Input	1 TTL, terminal block
Panic Input	Terminal block
LED Output	Two-connector terminal block (Heartbeat and Recording Status), 50mA@12V ⎓
Network Connectivity	10/100 Mbps Ethernet (RJ-45)
Audio Input	BNC Input: 2 Line In
Audio Output	BNC Output: 1, Line Out
Text Input	POS Interface, ATM Interface
GPS Input	GPS Interface

CONNECTORS	
Video Input	Composite: 4, 8 or 16 BNC
Monitor Output	Composite: 1 BNC
Audio In	2 BNC connector
Audio Out	1 BNC connector
Alarm Input/Output	Terminal Blocks
Ethernet Port	RJ-45
RS232C Serial Port	DB9 (P), terminal block
RS485 Serial Port	Two-connector terminal block
USB Port	2 (USB 2.0)

STORAGE	
Primary Storage	SATA hard disk drive (Removable)
Secondary Storage	USB hard disk drive or flash drive

Specifications are subject to change without notice.

GENERAL	
Dimensions (W x H x D)	9.8" x 4.6" x 13.8" (250mm x 117mm x 350mm)
Unit Weight	13.6 lbs. (6.18kg)
Shipping Weight	19.0 lbs. (8.62kg)
Shipping Dimensions (W x H x D)	19.7" x 17.7" x 16.5" (500mm x 450mm x 420mm)
Operating Temperature*	41°F to 104°F (5°C to 40°C)
Operating Humidity	0% to 90%
Power	9 to 30 V ⎓, 12A
Heater Power	12V ⎓, 10A
Power Consumption	Max. 110W
Heater Power Consumption	Max. 120W
Approvals	FCC, E-mark, MIL-STD-810F (Shock&Vibration only), SAE 1455 (Shock&Vibration only), IP54

* When the temperature inside the DVR or the HDD rack is on 32°F (0°C) or lower, the DVR increases the temperature by operating the built-in heater.

Specifications are subject to change without notice.