



RoadRunner

MR8, MR4 and MR2 Series Digital Video Recorders | Mobile Digital Video Systems

OPERATING MANUAL



	<div style="background-color: black; color: white; padding: 5px;">WARNING</div> <div style="border: 1px solid black; padding: 5px;">RISK OF ELECTRIC SHOCK DO NOT OPEN</div>	
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. IDIS Co., Ltd. is not responsible for any problems resulting from the use thereof. The information contained herein is subject to change without notice. Revisions or new editions to this publication may be issued to incorporate such changes.

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

Remove the power connector from this equipment 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 Connector

Operator or installer must remove the power connector 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, uninstall it 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

Remove the power connector from this equipment and refer servicing to qualified service personnel under the following conditions:

- A. When the power connector 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.

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Chapter 1 – Introduction

Features

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 four or eight 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
- Selectable Recording Time After Ignition Switch Is Turned Off
- 4 or 8 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
- Compact Size
- Multiple Search Engines (Date/Time, Calendar, Event)
- Records up to 120/100 Images per Second (NTSC/PAL)
- 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, Alarm, Motion and Panic)
- 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 or Modem
- 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.

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, CD-RW and flash drives.

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

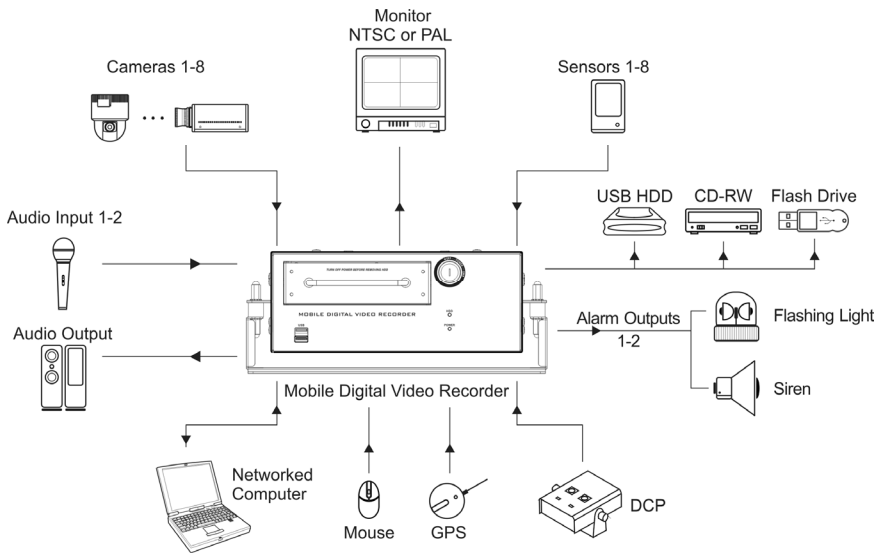


Figure 1 – Typical DVR installation

Chapter 2 – Installation

Package Contents

The package contains the following:

- Digital Video Recorder
- Power Cable
- Standard DCP (Driver Control Panel) and DCP Cable
- User's Manual (This Document)
- RAS Software CD and User's Manual
- Mount Kit

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. DO NOT MOUNT THE DVR ON A CARPET OR OTHER SOFT SURFACE THAT MIGHT BLOCK VENTILATION HOLES. IF YOU ARE INSTALLING THE DVR IN AN ENCLOSED AREA, MAKE CERTAIN THERE IS ADEQUATE VENTILATION.

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



Figure 2 – Floor Mounting



Figure 3 – Ceiling Mounting

CAUTION: Both types of racks must be attached so that the rubber collars of the vibration isolation mounts are under the DVR and above the rack as shown in both illustrations. Attaching the racks in any other manner can cause the isolation mounts to fail.

Rear Panel Connectors

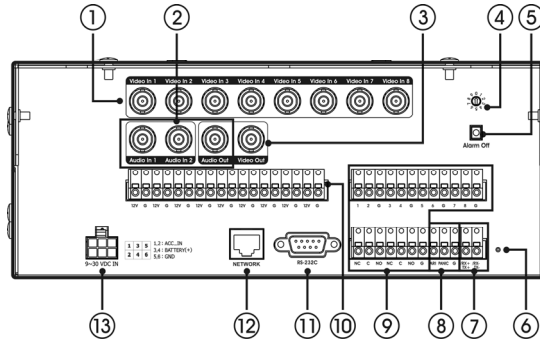


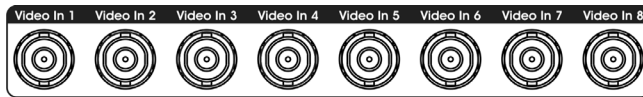
Figure 4 – DVR rear panel

- ① Video Input
- ② Audio In/Out
- ③ Video Out
- ④ Rotary Timer Switch
- ⑤ Alarm Off Switch
- ⑥ Factory Reset Switch
- ⑦ RS485 Port
- ⑧ DCP Input
- ⑨ Alarm Input/Output
- ⑩ 12 VDC Output
- ⑪ RS232C Port
- ⑫ Network Port
- ⑬ Power In (9 to 30 VDC)

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.

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 two sources. Connect the audio sources to Audio In 1 and Audio In 2 as needed using BNC jacks. Connect Audio Out to your amplifier.

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

NOTE: 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.

Rotary Timer Switch



The Rotary Timer sets how long it will delay to boot or shutdown the system operation after the ignition switch is turned on or off. The white arrow indicates which number is selected, and each digit on the rotary timer indicates as following:

- | | |
|-------------------------------------------------------|------------------------------------------------------|
| 0: Timer switch is not set. | 5: 30-second delay boot and 15-minute delay shutdown |
| 1: Two-minute delay shutdown | 6: 30-minute delay shutdown |
| 2: 30-second delay boot and two-minute delay shutdown | 7: One-hour delay shutdown |
| 3: Five-minute delay shutdown | 8: Two-hour delay shutdown |
| 4: 15-minute delay shutdown | 9: Eight-hour delay shutdown |

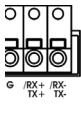
Alarm Off Switch



Alarm Off

Pressing the Alarm Off switch on the back panel resets any active alarms (outputs and DCP buzzer).

Factory Reset Switch



The DVR has a **Factory Reset** switch to the right of the RS485 connectors in 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. If you want to use the same DVR name registered on the DVRNS server after initializing the system using the factory reset, you need to contact the DVRNS server manager. Please record and save the help desk information before factory reset.

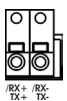
To reset the unit, you will need a straightened paperclip:

1. Turn the DVR off.
2. Turn it on again.
3. While the DVR is initializing, poke the straightened paperclip to the unlabeled hole in the right of the RS485 connectors.
4. Hold the switch until the DVR is completely initialized.

NOTE: When the DVR successfully resets to factory defaults its live video will begin showing on the monitor.

5. Release the reset switch. All of the DVR's settings are now at the original settings it had when it left the factory.

RS485 Port



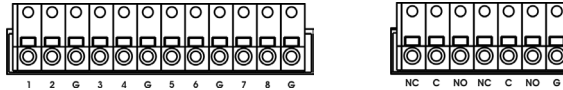
The DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS485 half-duplex serial communications signals. The RS485 connector can also be used to control PTZ (pan, tilt, zoom) cameras. Connect TX+/RX+ and TX-/RX- of the control system to the RX+/ TX+ and RX-/TX- (respectively) of the DVR. See *Chapter 3 — Configuration* and the PTZ camera or remote controller manufacture's manual for configuring the RS485 connection.

DCP Input



Use the enclosed bracket to mount the DCP (Driver Control Panel). Refer to the DCP Installation section in this chapter for details.

Alarm Input/Output

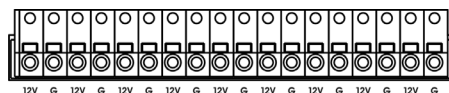


NOTE: To make connections on the Alarm Connector Strip, press and hold the button and insert the wire in the hole below the button. After releasing the button, tug gently on the wire to make certain it is connected. To disconnect a wire, press and hold the button above the wire and pull out the wire.

- 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 alarm-in port and G (Ground) connectors. The threshold voltage is 4.3V and should be stable at least 0.5 seconds to be detected. See *Chapter 3 — Configuration* for configuring alarm input.
- NC/NO (Alarm-Out): 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 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.
- G (Ground): Connect the ground side of the Alarm input and/or alarm output to the G connector.

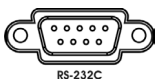
NOTE: All the connectors marked G are common.

12 VDC Output



The DVR has a 12 VDC output terminal strip. This is enough to power eight cameras and one additional device such as the DCP.

RS232C Port



An RS232 port is provided to connect an external modem for remote monitoring, configuration and software upgrades, and to connect a remote control keyboard. Use a modem cable with a DB-9S (female) connector to connect to the DVR. See *Chapter 3 — Configuration* for configuring the modem.

NOTE: The DVR is not supplied with a modem cable, and many modems are not supplied with cables. Make certain you have the correct cable when purchasing the modem.

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.

Power In



1	3	5	1,2 : ACC_IN
2	4	6	3,4 : BATTERY(+); 5,6 : GND

Connect the power connector to the DVR.

CAUTION: When the power supply does not meet the requirement (9 ~ 30VDC, 10A) during operation, a surge or a reverse voltage might damage the DVR. Install the power conditioner to connect the power cable to the DVR when a surge or a reverse voltage is expected based on the ISO 7637-2 standard. Refer to the *Appendix A – Power Conditioner* for details of installing the power conditioner.

NOTE: You must use fuses that can handle the DVR and all of the 12 VDC cameras and accessories attached to it. The DVR draws 6 Amps at 12 VDC and 3 Amps at 24 VDC. The maximum total load that can be drawn from the 12 VDC terminal strip is 2.5 Amps.

NOTE: AWG #18 wire should be used as a minimum to connect all pins on the power connector.

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 six pins. Pins 1 and 2 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. Although it is possible to connect only one of the two pins, it is recommended to use two wires to create a more stable current path.

CAUTION: Even if you do not plan to use the delayed shut-off feature, it is important to connect Pins 3 and 4. The DVR uses power from these pins for purposes in addition to delayed shut off, and it will not function properly if they are not connected.

Pins 3 and 4 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 based on the setting of the Rotary Switch. Although it is possible to connect only one of the two pins, it is recommended to use two wires to create a more stable current path.

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

Rear Panel Cover

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

DCP Installation

Use the enclosed bracket to mount the DCP. It should be mounted so that it is within easy reach of the operator and close enough to the DVR for the cable to reach the connectors.

WARNING: IT IS EXTREMELY IMPORTANT THAT THE DCP, BRACKET AND CABLE 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.

Installing the Standard DCP

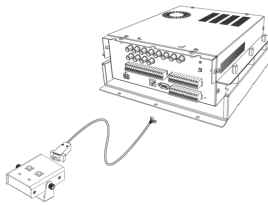
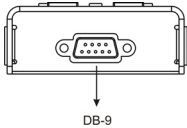


Figure 5 – Standard DCP Installation

Connecting the DB-9 Connector

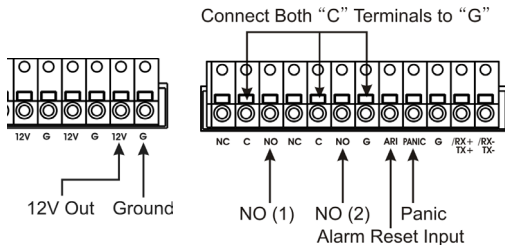


Connect the DB-9 connector to the back of the DCP

Connecting the Wires

Connect the individual wires to the terminal strip connectors as shown below.

NOTE: Both of the "C" terminals should be connected to ground. It does not matter which ground ("G") connector is used.



White wire	Panic
Yellow wire	Alarm Reset Input
Green wire	NO (1)
Blue wire	NO (2)
Red wire	12VDC Out
Black wire	Ground (G)

Installing the Premium DCP

NOTE: The premium DCP is available only with the 4-channel DVR, and it is not supplied with the DVR. Ask your dealer or distributor about the purchase of the premium DCP.

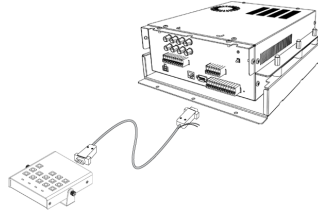
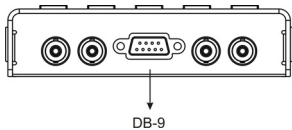
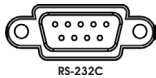


Figure 6 – Premium DCP Installation

Connecting the DB-9 Connector



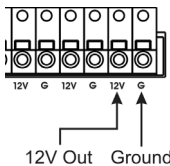
Connect the DB-9 connector to the back of the DCP



Connect the other DB-9 connector to the RS232C port on the back of the DVR.

Connecting the Wires

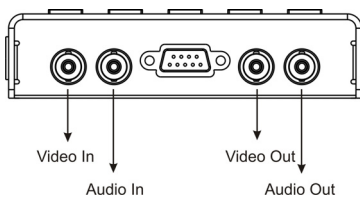
The red and black wires are connected to the 12 VDC power strip as shown below.



Red wire	12VDC Out
Black wire	Ground (G)

Connecting the Monitor and Amplifier

You can connect a monitor and amplifier to the DCP.



- When connecting a monitor to the DCP, connect it to the Video Out BNC on the DCP and connect a cable with BNC connectors between the Video Out on the DVR and the Video In on the DCP.
- When connecting an amplifier to the DCP, connect the Audio Out of the DVR to the Audio In on the DCP and connect the Audio Out on the DCP to the Audio In on the amplifier. (Most monitors that have audio inputs have internal amplifiers.)

NOTE: You can use a portable monitor to set up the DVR and then disconnect it from the DCP for normal operation.

NOTE: The Audio connectors on both the DVR and Premium DCP are BNCs. This is to prevent the connectors from coming loose from normal vibration during vehicle operation.

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.

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

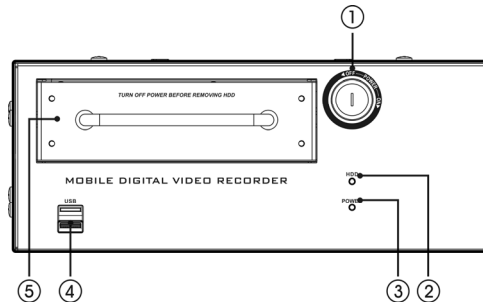
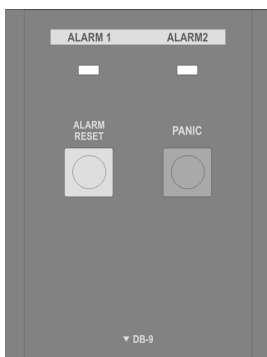


Figure 7 – DVR front panel

- ① **Power Switch:** The unit can be turned on or off with the key provided with the unit.
- ② **HDD LED:** The LED flickers when the DVR is recording or searching video on the hard disk drive.
- ③ **POWER LED:** The LED is lit when the unit is On.
- ④ **USB Ports:** They are provided to connect a USB mouse for controlling the unit and external hard disk, CD-RW or flash drives for video clip copying or system upgrade. A USB to Serial converter also can be connected to the USB port to use multiple text-in devices. 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.
- ⑤ **Removable HDD:** The hard disk drive can be removed to view the video on the personal computer or on another DVR. Remove the hard disk drive after the unit turns off. The Power Switch must be in the Off position to remove the drive. Refer to the *Appendix E – Playback on PC with USB Interface* for details of playing back images on the personal computer.

Standard DCP Controls




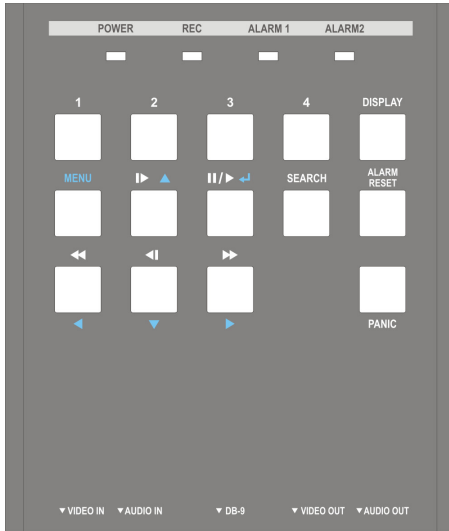
- **ALARM1:** The LED flickers when the alarm output 1 is active.
- **ALARM2:** The LED flickers when the alarm output 2 is active.
- **ALARM RESET:** Pressing the button does multiple functions as follows:
 - It resets the outputs during an alarm.
 - It displays the event log when you are in the live monitoring mode unless there is an active alarm.
- **PANIC:** Pressing the button starts panic recording of all camera channels, and displays  on the screen. Pressing the button again will stop panic recording.

Figure 8 – Standard DCP

Premium DCP Controls



- **POWER:** The LED is lit when the DVR is operational.
- **REC:** The LED is lit when the DVR is recording video, or flickers when the DVR is in the panic recording mode.
- **1 ~ 4 (Camera button):** Pressing the button does multiple functions as follows.
 - It causes that camera to display full screen in the live monitoring mode and the playback mode. Pressing and holding the button for two seconds or longer displays an image adjustment dialog of that camera in the live monitoring mode.
 - Pressing the camera button 1 or 2 zooms in or out, and pressing the camera button 3 or 4 adjusts focus near or far in the PTZ mode.
 - It enters the password in the Login screen.
- **DISPLAY:** Pressing the button does multiple functions as follows:
 - It toggles the DVR between 2x2 and PIP screen mode.
 - It releases the current event monitoring during event monitoring and returns to the previous screen format.
- **MENU:** Pressing the button does multiple functions as follows.
 - In the live monitoring mode, it enters the setup screen. Entering the setup screen is password protected. Pressing and holding the button for two seconds or longer displays the Live Monitoring menu.
 - In the playback mode, it displays the Search menu. Pressing and holding the button two seconds or longer enters the cameo mode in the multi-screen format, and displays the clip copy screen in the full-screen format.
 - It displays the PTZ menu in the PTZ mode.
 - It closes the current menu or setup dialog box.
- **||/▶◀ (PAUSE/PLAY/ENTER button):** Pressing the button does multiple functions as follows.
 - It selects an item or completes GUI control input in the menu setup.
 - It freezes the current live screen in the live monitoring mode, and the screen displays *
 - It plays video or pauses playback in the playback mode, and the screen displays ▶ or ||.
 - It enlarges a specific part of the screen in the digital zoom mode, and the enlarged screen displays ⊕.
- **SEARCH:** Pressing the button enters the playback mode, and pressing the button again exits the playback mode. When entering the playback mode, video is paused. Pressing the PAUSE/PLAY/ENTER button plays back video at regular speed. The screen displays || when the DVR is in the Pause mode, and the screen displays ▶ when the DVR is playing back video.
- **Arrow Buttons (▶▲, ◀◀, ◀▼, ▶▶):** Pressing the button does multiple functions as follows.
 - It navigates through menus and GUI during system setup.
 - It moves the part of screen to be enlarged in the digital zoom mode.
 - It goes to the next or previous image and plays video in the playback mode. (Next image: ▶▲, Previous image: ◀▼, Backward play: ◀◀, Forward play: ▶▶) Pressing the backward play or forward play button again in the playback mode toggles the playback speed.
 - It tilts the PTZ camera up (▶▲) or down (◀▼), and pans the PTZ camera left (◀◀) or right (▶▶) in the PTZ mode.

Figure 9 — Premium DCP (Optional)

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 Power LED on the front panel will illuminate, and this action signifies the DVR has been turned on properly.

NOTE: The DVR doesn't operate below 0°C. If the temperature falls to below 0°C while the system is working, the unit will turn off, and will turn on again when the temperature rises above 0°C.



Turning off the Power

The DVR can be turned off by rotating the key counter-clockwise to the Off position. It will also power down after the time set on the Rotary Timer switch expires when the ignition is turned off. You also can shutdown the unit by selecting **Shutdown** in the System menu displayed when clicking the right mouse button on the live monitoring screen and selecting **Setup 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 shutdown 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.

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, audio, remote control, record mode, network and password. Your DVR can be set up using various screens and dialog boxes.




A USB mouse will be used configure DVR settings. Clicking the right mouse button on a screen displays menu screens and dialog boxes, and clicking the left mouse button in a menu screen and dialog boxes selects items.

Throughout the screens you will see . Selecting  gives you the opportunity to reset that screen to its default settings. You can save your changes by selecting **Save**. Selecting **Cancel** exits the screen without saving the changes.

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



Figure 10 — Virtual Keyboard

Select the character you want in the name or title by clicking the left mouse button. 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, and  deletes entered characters. 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.

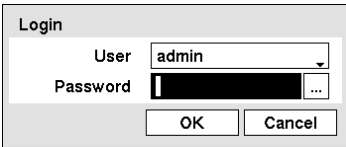
Entering Setup Menu

When the DVR turns on, the live monitoring screen appears. Clicking the right mouse button on the live monitoring screen displays the following live monitoring menu.



Selecting Setup Menu... enters the setup screen. The Login screen appears.

Figure 11 — Live Monitoring Menu



- **User:** Select a User.
- **Password:** Enter the password using a Virtual Keyboard. Clicking [] button displays a Virtual Keyboard. There is no default password when logging in the admin user for the first time.

Figure 12 — Login screen

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

Setup Screen

When you log in to the DVR, the following setup screen appears on the screen. Select the desired menu.

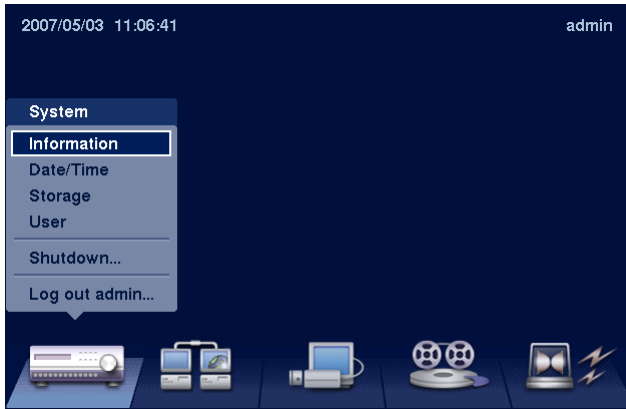


Figure 13 — Setup screen

System Menu



Figure 14 – System Menu

Information Setup

Select Information in the System menu and the Information screen appears.

Figure 15 – Information screen

- **Site:** Name the site location using a virtual keyboard.
- **System ID:** Assign a System ID number to identify the unit when it is connected with other DVRs through the RS485 port.

NOTE: 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.

- **Language:** Choose the desired language. A drop-down menu displays the available languages.
- **Version:** Displays the software version of the DVR. To upgrade the software, connect a USB device containing the upgrade package file to the DVR and select Upgrade.... The Upgrade screen appears.

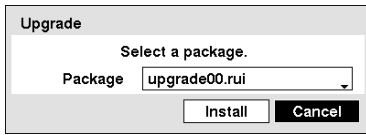


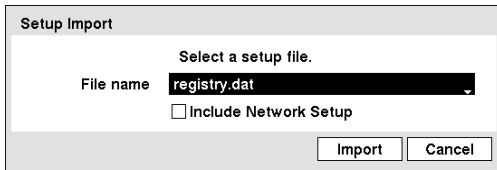
Figure 16 – Upgrade screen

Choose the desired upgrade file. Available upgrade package file names are listed in the drop-down list. The “.rui” indicates that the file is for software upgrades and “.ofi” indicates that the file is for optical drive firmware upgrades. Selecting Install will install the selected software package. 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.

NOTE: The *Upgrade* button will be deactivated if the hard disk drive has not been formatted as it requires the space for temporary files when upgrading the system.

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

- Setup: Imports saved DVR settings or exports the current DVR settings.
 - Import...: To import saved DVR settings, connect the USB device containing the setup file (.dat) to the DVR. Selecting Import... displays the Setup Import screen.



Choose the desired setup file. Then, change the DVR settings accordingly. Select Include Network Setup if you do not want the network settings to be changed.

Figure 17 – Setup Import screen

- Export...: To save the current DVR settings in .dat file format on the connected USB device, connect the USB device to the DVR. Selecting Export... displays the Setup Export screen.



Enter the file name using a virtual keyboard.

Figure 18 – Setup Export screen

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.

- Show System Log...: Displays the System Log.

System Log	
Time	Type
2007/05/04 09:00:28	Setup Begin
2007/05/04 09:00:27	Login : admin
2007/05/04 09:00:00	Boot Up
2007/05/03 18:05:50	Shutdown
2007/05/03 18:05:48	Setup End
2007/05/03 18:05:48	Logout : admin
2007/05/03 18:04:11	Setup Begin
2007/05/03 18:04:10	Login : admin
2007/05/03 18:03:31	Boot Up
2007/05/03 17:12:02	Shutdown

1 / 46 ▲ ▼

Close


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 arrow buttons, 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. Selecting Close exits the screen.

Figure 19 – System Log screen

- **Recorded Data:** Displays the time information of recorded data. Selecting **Clear All Data...** clears all video data. You will be asked to verify that you wish to clear all data before the DVR erases the video data. It will not clear the System Log.

Date/Time Setup

Select **Date/Time** in the System menu and the Date/Time setup screen appears.

Date/Tim

Figure 20 — Date/Time setup screen

- **Date:** Set the date of the system. Select the individual sections of the box and adjust numbers by using the arrow buttons. Selecting **Format** allows you to choose the date formats.
- **Time:** Set the time of the system. Select the individual sections of the box and adjust numbers by using the arrow buttons. Selecting **Format** allows you to choose the time formats.

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

- **Time Zone:** Choose your time zone from the list. Selecting **Use Daylight Saving Time** applies the daylight saving time.

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

Storage Setup

Select Storage in the System menu and the Storage setup screen appears.

Information

It displays information about the DVR's storage devices.

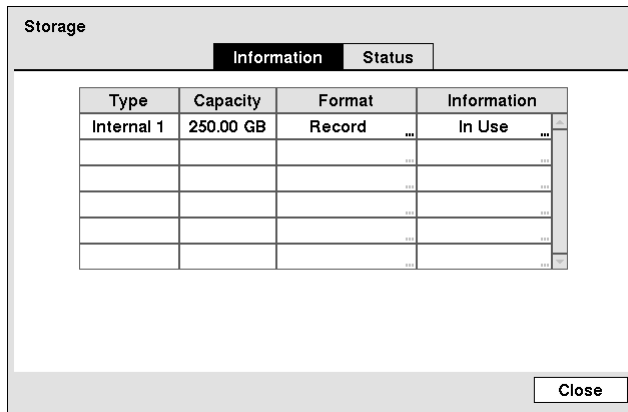
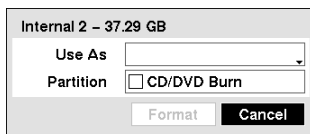


Figure 23 – Storage Information screen

- **Type:** Displays the storage device.
- **Capacity:** Displays the capacity of the storage device.
- **Format:** 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 CD-RW or DVD RW. Select the box to change the setting.



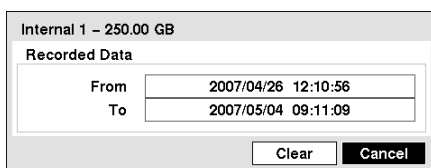
- **Use As:** Select Record to format the device for recording. Select Not Using not to use the device for recording.
- **Partition:** Select CD/DVD Burn to set aside space to store temporary files for CD or DVD burning.

Figure 24 – Device Format screen

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

NOTE: System upgrades require formatting internal hard disk drives.

- **Information:** Displays whether the device is being used or not. Other indicates the device has been used for another DVR. Select the box to change the setting.



- **Recorded Data:** Displays the time information about recorded data of the device. Selecting Clear erases recorded data on the selected device. You will be asked whether or not you want to delete the data.

Figure 25 – Device Information screen

Status

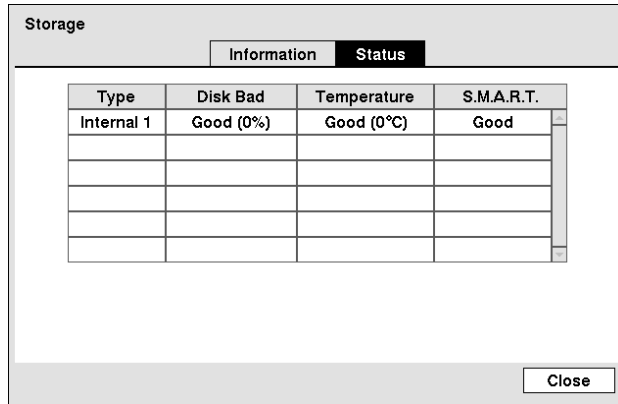


Figure 26 – Storage Status screen

- **Type:** Displays the type of storage device.
- **Disk Bad:** Displays the percentage of bad sectors. **Not Formatted** indicates the device is not formatted.
- **Temperature:** Displays the temperature of the storage device.
- **S.M.A.R.T.:** 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.

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.

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

User Setup

Select **User** in the System menu and the User setup screen appears.

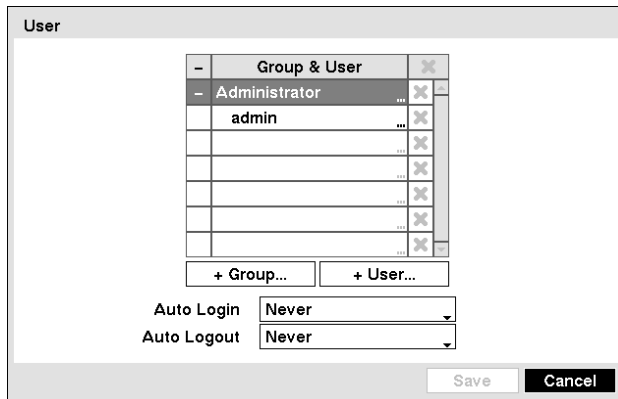


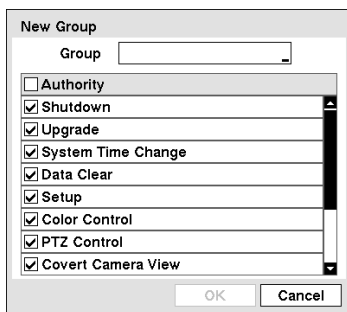
Figure 27 – User setup screen

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

- +/-: Indicates that the item is a Group Name. Select to collapse or expand the user groups. If there is a -, 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 +, it indicates that the group has been “collapsed” and all of the User Names within that group are hidden.
- Group & User: Select a Group or User Name to change the authority levels assigned to the group or user.
 - Group: Select a group to change the authority levels assigned to that group.
 - User: Select a user to add or change the password assigned to that user. You can also change the group to which the user is assigned.

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 Switch* and all data settings will be lost.

- ✕: Delete a User Name or an entire Group. You will be asked to confirm that you want to delete the User or Group when you select it. If the ✕ is grayed out, that Group or User cannot be deleted. 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.
- + Group...: Add a group and enter the group name using a virtual keyboard. Then, the New Group screen appears.



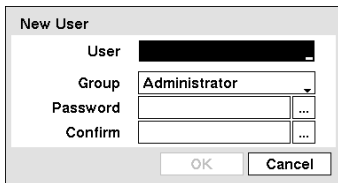
- Group: You can change the group name (max. 15 characters including spaces).
- Authority: Assign authority levels to the group. Selecting the Authority box will turn on and off all authority levels. Selecting the individual authority level boxes will turn on and off authority level.

Figure 28 — New Group setup screen

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.
- 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.
- 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.
- Color Control: The user can control brightness, contrast, hue and saturation for cameras on a local system or a PC running RAS.
- PTZ Control: The user can control the PTZ camera on a local system or 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.
- 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.

- **Record Setup:** The user can establish all Record settings 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, and save video data in an AVI, bitmap or JPEG file format.
- **+ User...:** Add a user and enter the user name using a virtual keyboard. Then, the **New User** screen appears.



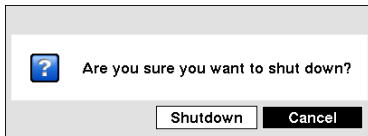
- **User:** You can change the user name.
- **Group:** Choose the group to which the new user will belong to.
- **Password:** Enter the password for the user to use when logging in the system (max. 8 digits).
- **Confirm:** Enter the password again to confirm it.

Figure 29 – New User setup screen

- **Auto Login:** Choose a User to be automatically logged in when the DVR is powered up. It can also be set to never automatically login a user.
- **Auto Logout:** Choose the time that the user will be automatically logged out.

Shutdown

Select **Shutdown...** in the System menu and the Shutdown screen appears asking you to confirm whether or not you want to shut the system down.

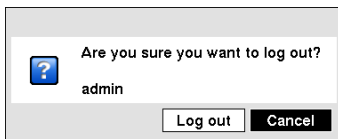


Select **Shutdown**, and a screen will appear telling you when it is safe to disconnect power.

Figure 30 – Shutdown screen

Logout

Select **Logout...** in the System menu and the Logout screen displays asking you to confirm whether or not you want to log out the current user.



Select **Log out**, and the user will be logged out.

Figure 31 – Logout screen

Network Menu



Figure 32 – Network Menu

Network Setup

Select **Network** in the Network menu and the Network setup screen appears. You will be able to change the Network, LAN, Modem and DVRNS settings.

Network

 A screenshot of the 'Network' setup screen. The title bar says 'Network'. Below the title bar are four tabs: 'Network', 'LAN', 'Modem', and 'DVRNS'. The 'Network' tab is selected. The main area contains two settings: 'Transfer Speed' with a value of '1.0 Mbps' and a unit dropdown set to '(bps)', and 'Quality' with a dropdown set to 'Standard'. At the bottom right, there are 'Save' and 'Cancel' buttons.

Figure 33 – Network setup screen

- **Transfer Speed:** Set the transfer speed by using the arrow buttons, and select the unit of measure for the transfer speed between: bps and ips.
- **Quality:** Choose the quality for transferred image.

NOTE: The higher **Quality** 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.

NOTE: The local recording speed might be affected by various network bandwidth (**Transfer Speed**) conditions.

LAN

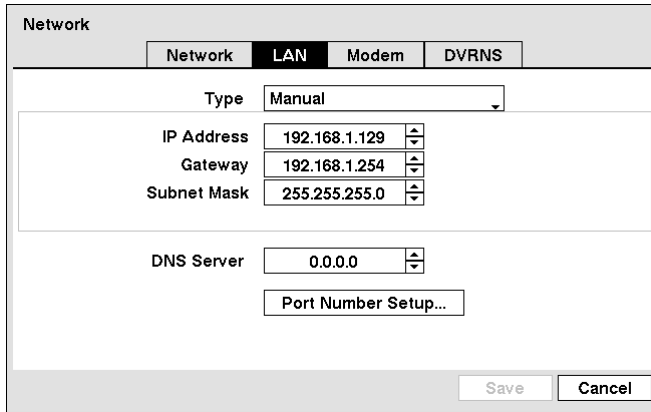


Figure 34 – LAN setup screen

- **Type:** Choose the type of network configuration from: Manual, DHCP and ADSL (with PPPoE).
 - **Manual:** Select to set up LAN parameters manually. Adjust the numbers of the IP Address, Gateway and Subnet Mask by using the arrow buttons.

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

The factory default LAN settings are:

IP Address: 192.168.1.129
 Gateway: 192.168.1.254
 Subnet Mask: 255.255.255.0

- **DHCP:** Select if the DVR is configured by DHCP (Dynamic Host Configuration Protocol) network. Selecting **Save** reads the current IP address of the DVR.
- **ADSL:** Select if the DVR is configured by ADSL network. Enter the ID and password for ADSL connection by using a virtual keyboard. Selecting **Save** reads the current IP address of the DVR.

NOTE: ADSL and modem cannot be configured at the same time. If the DVR is configured by modem, the ADSL (with PPPoE) will not be selected.

NOTE: 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.

- **DNS Server:** Set the IP address of the DNS server. If you set up the DNS Server, the domain name of the DVRNS server instead of the IP address can be used during the DVRNS Server setup. (Refer to the *DVRNS Setup* section for details of DVRNS function.)

NOTE: If the DVR is configured for DHCP or an ADSL network, you will need to get the IP Address of the DNS Server from the internet service provider to use DVRNS function. (Refer to the *DVRNS Setup* section for details of DVRNS function.)

- **Port Number Setup...:** Select to set up port numbers and the Port Number Setup screen appears.

Change the numbers by using the arrow buttons. The factory default Port settings are:

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

Figure 35 – Port Numbers setup screen

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

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

NOTE: 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.

Modem

Figure 36 – Modem setup screen

NOTE: If the RS232 port is in use for remote control, networking cannot be configured for a modem.

- **Enable:** Select if Modem is enabled.
- **Baud Rate, Data Bit, Stop Bit and Parity:** Choose the baud rate, data bit format, stop bit and parity from the drop-down list.

DVRNS

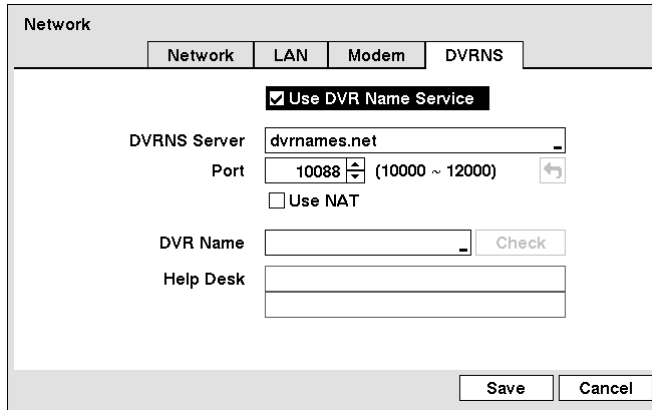


Figure 37 – DVRNS setup screen

NOTE: When LAN settings have been changed, set up the DVRNS after saving your LAN changes by selecting Save.

- Use DVR Name Service: Select to use DVR name service function.

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.

- DVRNS Server: Enter the IP address or domain name of the DVRNS server by using a virtual keyboard.

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

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

- Port: Set the port number of the DVRNS server by using the arrow buttons.
- Use NAT: Select when using NAT.

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

- DVR Name: Enter the DVR name to be registered on the DVRNS server by using a virtual keyboard. Selecting Check checks 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.

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

- Help Desk: Selecting Save registers the DVR on the DVRNS server. Proper DVRNS settings will display the help desk information of the DVRNS server.

CAUTION: If you want to use the same DVR name registered on the DVRNS server after initializing the system using the factory reset, you need to contact the DVRNS server manager. Please record and save the help desk information before factory reset.

CAUTION: The DVRNS registration will be limited to one DVRNS server. The DVR cannot be registered to multiple DVRNS servers. Please contact your network administrator when you want to register the DVR to another DVRNS server.

Notification Setup

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 appears.

Mail

Figure 38 – Notification Mail setup screen

- **Enable:** Select if Mail is enabled.
- **SMTP Server:** Enter the IP address or domain name of the SMTP server by using a virtual keyboard.
- **Port:** Set the SMTP Server port number obtained from your system administrator by using the arrow buttons.
- **Use SSL/TLS:** Select to send an email via an SMTP server requiring SSL (Secure Sockets Layer) authentication.
- **Authentication:** Select to check authentication of the e-mail, and the Authentication screen appears.

Select **Use** and enter the user ID and password by using a virtual keyboard.

Figure 39 – Authentication setup screen

- **Sender/Recipient:** Enter the sender’s/recipient’s e-mail address by using a virtual keyboard.

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

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

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

Callback

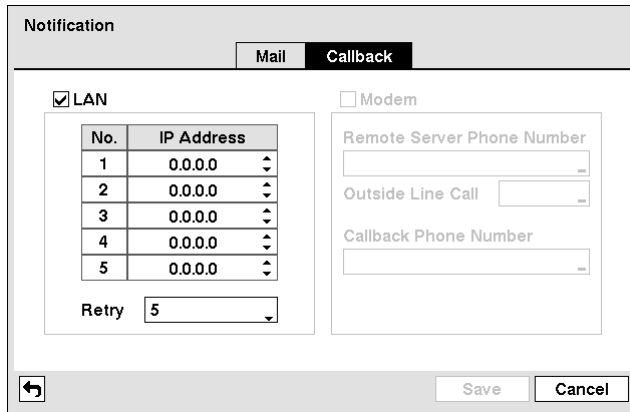


Figure 40 – Notification Callback setup screen

- LAN: Select to notify via LAN.
 - IP Address: Set the IP address of the computer you want contacted during an event by using the arrow buttons.
 - Retry: Choose the number of times you would like the DVR to try contacting the computer from the drop-down list.
- Modem: Select to notify via modem.
 - Remote Server Phone Number: Enter the telephone number of the computer running RAS.
 - Outside Line Call: Enter any numbers that must be dialed for an outside line for your telephone system; for example, “9”.
 - Callback Phone Number: Enter the telephone number of the DVR.

Configuring Devices

You can configure the video, audio, alarm, display, remote control and GPS devices connected to the DVR.

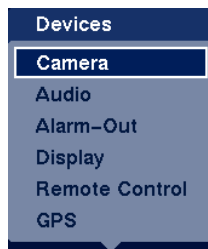


Figure 41 – Devices Menu.

Camera Setup

Select Camera in the Devices menu, and the Camera setup screen appears.

Settings

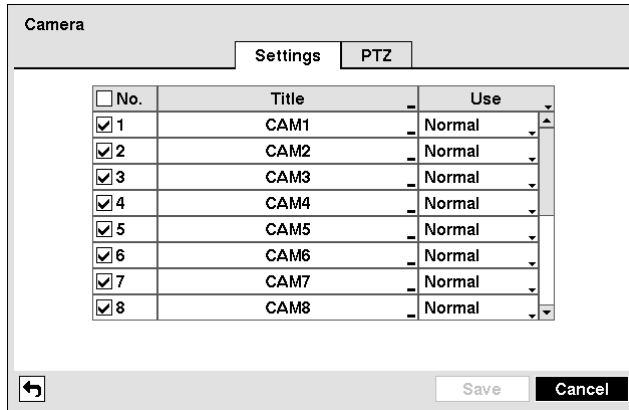


Figure 42 – Camera setup screen

- **Title:** Change the Title of each camera by using the virtual keyboard.
- **Use:** Determine which cameras will display on the monitors by selecting Normal, Covert 1 or Covert 2 from a drop-down list.

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.

NOTE: 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.

PTZ

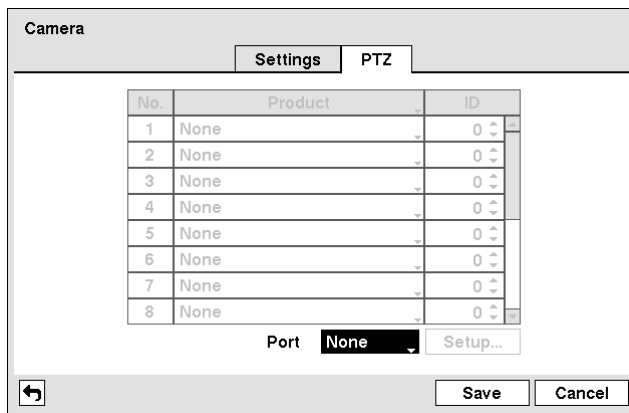
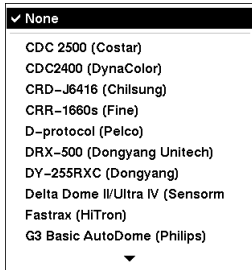


Figure 43 – Camera PTZ setup screen

NOTE: You will only be able to set up PTZ devices if the PTZ port is set to RS232 or RS485. You will not be able to use a modem if you are using the RS232 port for PTZ control.

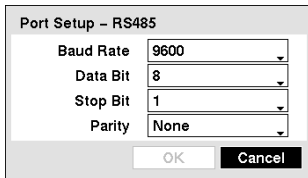
- **Product:** Choose a PTZ model, and a list of PTZ devices appears.



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.

Figure 44 – PTZ Device list

- **ID:** Assign IDs to each camera. The PTZ ID number can be set from 0 to 256.
- **Port:** Choose from None, RS232 and RS485. Selecting **Setup...** displays the Port Setup window.



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

Figure 45 – Port Setup window

Audio Setup

Select **Audio** in the **Devices** menu, and the Audio setup screen appears.

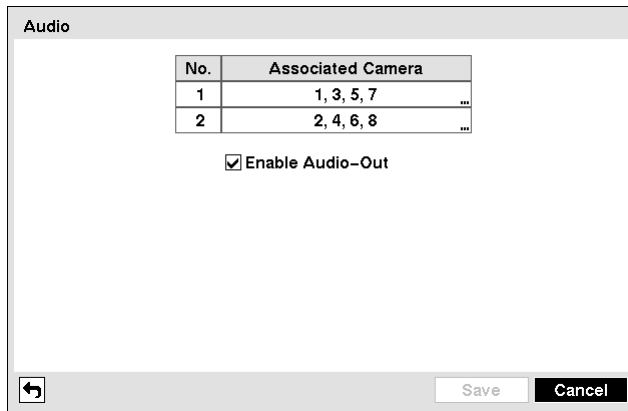


Figure 46 – Audio setup screen

- **Associated Camera:** The DVR can record up to two audio inputs. Choose cameras that you want to associate with that audio input. You cannot associate the same camera with two audio inputs.
- **Enable Audio-Out:** Select to enable audio out.

NOTE: The DVR will NOT record audio when the recording speed is set to less than 1 ips.

Alarm-Out Setup

Select Alarm-Out in the Devices menu. The Alarm-Out screen allows you to change the settings and establish a schedule for each alarm output from the DVR.

Settings

No.	Title	Type
1		NO
2		NO

Dwell Time: 5 sec.

Figure 47 – Alarm-Out Settings screen

- **Title:** Enter the title of each alarm output by using the virtual keyboard.
- **Type:** Set the alarm output for NO or NC (normally open or normally closed).
- **Dwell Time:** Set the dwell time of the alarm output.

Schedule

No.	Day	Range	Mode	Channels	✕
1	All	00:00 ~ 24:00	Event	1, 2	✕
					✕
					✕
					✕
					✕
					✕
					✕
					✕

+

Figure 48 – Alarm-Out Schedule screen

- **+**: Add an alarm outputs schedule.
- **Day:** Choose the days that the alarm schedule will be active.
- **Range:** Set the time that the alarm schedule will be active.
- **Mode:** Choose 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.

- **Channels:** Choose which alarm outputs will be active.
- **X:** Delete an alarm output schedule. You will be asked to confirm whether or not you really wish to delete the schedule.

Display Setup

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

OSD

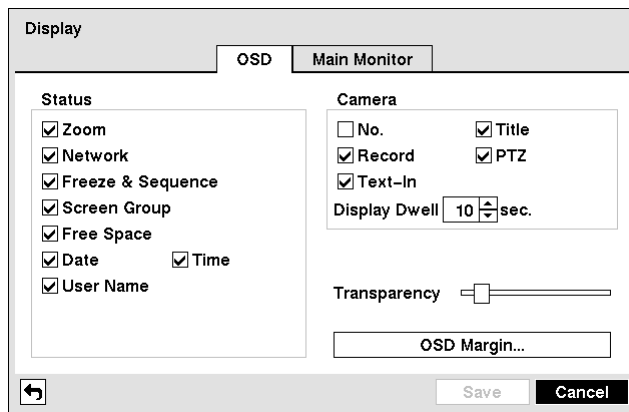
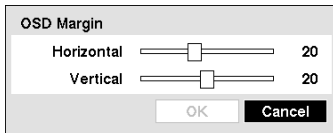


Figure 49 — Display OSD screen

- **Status/Camera:** Select the desired items to display status or camera OSD icons on the screen. 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 either Ethernet or modem.
 - **Freeze & Sequence:** The icon displays while in the Freeze mode, and the icon displays while in the Sequence mode.
 - **Screen Group:** The number of screen group displays when the DVR is not in the 3x3 mode. (2x2 for 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.
 - **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.
- **Transparency:** Adjust the transparency of the setup screens by using the slide bar.
- **OSD Margin...:** Select to change the OSD margin, and the OSD Margin screen appears.



You can adjust the horizontal and vertical margins so that text and icons will not be hidden beyond the edges of the monitor.

Figure 50 – OSD Margin screen

Main Monitor

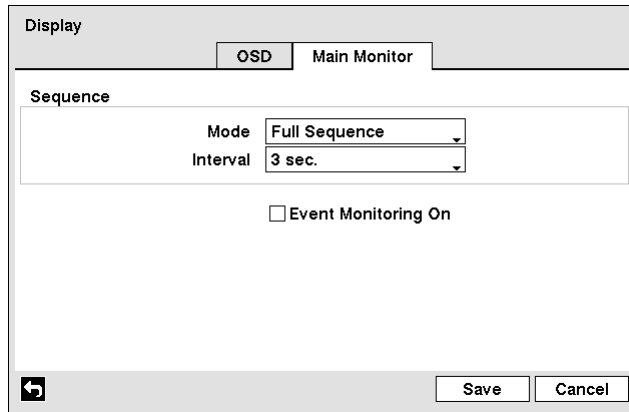


Figure 51 – Main Monitor screen

You can adjust the display dwell time for each camera displayed on the main monitor. 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 3x3 mode (2x2 for 4-channel DVR).

- **Mode:** Choose the sequence mode between Full Sequence and Cameo Sequence.
- **Interval:** Set the display dwell time.
- **Event Monitoring On:** Select to display the camera associated with the event when an event occurs.

Remote Control Setup

Select Remote Control in the Devices menu, and the Remote Control setup screen appears. You can select a port and make correct settings for a remote keyboard.



Figure 52 – Remote Control setup screen

- **Port:** Choose from None, RS232 and RS485. Select Setup... to configure port's setting for the device you are connecting to DVR (Baud Rate, Parity, Data Bits and Stop Bits).

NOTE: The remote keyboard cannot be configured if the RS232 port and RS485 port are in use for PTZ control, networking, text input or GPS.

- **Remote Control Product:** Select the device from the list.

GPS Setup

Select GPS in the Devices menu, and the GPS setup screen appears.

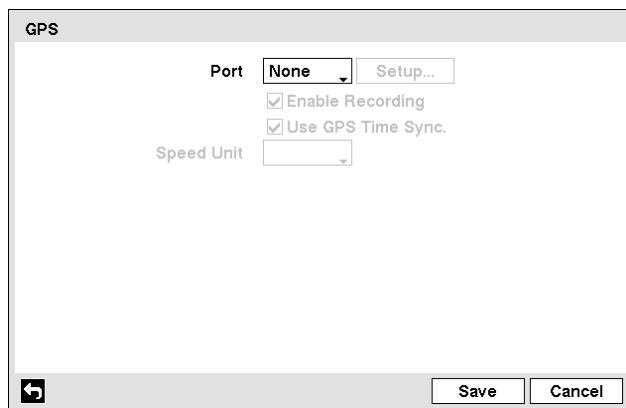
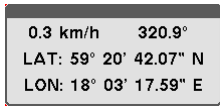


Figure 53 – GPS setup screen

- **Port:** Select from None, RS232 and RS485. Select Setup... to configure port's setting for the device you are connecting to DVR (Baud Rate, Parity, Data Bits and Stop Bits). Use the GPS manufacturer's recommended settings when configuring the RS232 or RS485 ports.

NOTE: The GPS cannot be configured if the RS232 port and RS485 port are in use for PTZ control, networking, text input or remote keyboard.

- **Enable Recording:** Select to record images with GPS information.
- **Use GPS Time Sync.:** Select to synchronize the time to the GPS satellite in the interval of 1 hour.
- **Speed Unit:** 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 Settings

Your DVR offers a variety of flexible recording modes. You can set it up to record all the time or to only record events. It can be set up to continue recording once the hard disk drive is full by recording over the oldest video, or you can set it up to alert you when the hard disk is full and stop recording.



Figure 54 – Record menu

Record Setup

Select **Record** in the Record menu, and the Record setup screen appears.

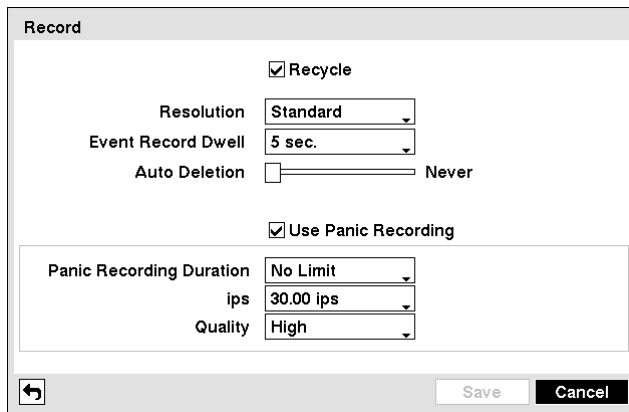


Figure 55 – Record setup screen

- **Recycle:** Select to record over the oldest video data once all available storage space has been used. When it is not selected, the DVR stops recording once all available storage space has been used.
- **Resolution:** Choose the recording resolution from High and Standard. All other variables being equal; Selecting High resolution will decrease the recording and playback speed by half that of Standard resolution.

- **Event Record Dwell:** Choose the length of time you would like to record for the associated event. Refer to *Event Actions* screen in this chapter for information regarding event recording.
- **Auto Deletion:** Adjust the length of time recorded data will be kept. 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.
- **Use Panic Recording:** Select to record images by pressing the **PANIC** button on the DCP.
 - **Panic Recording Duration:** Choose the duration of panic recording. Panic recording will stop automatically after the preset duration as long as the **PANIC** button on the DCP is not pressed to stop the panic recording. Select **No Limit** if you want to stop panic recording manually.
 - **ips:** Choose the images per second for Panic recording.
 - **Quality:** Choose the recorded image quality for Panic recording.

Schedule Setup

Select **Schedule** in the Record menu, and the Schedule setup screen appears.

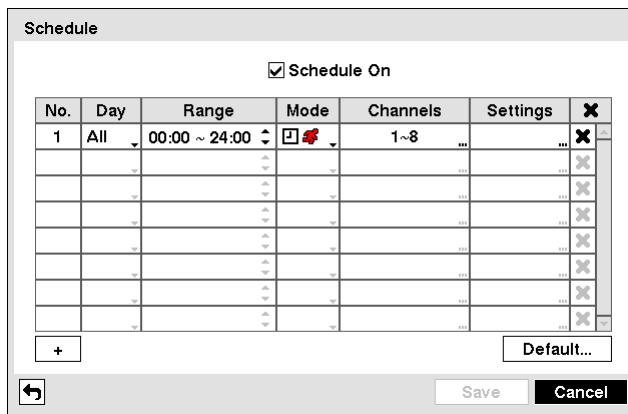
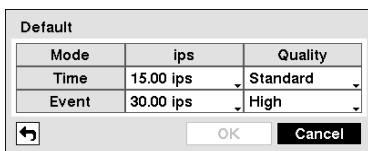


Figure 56 – Schedule setup screen

You can program the DVR to record only during certain times based on time, day of the week, and holidays.

- **Schedule On:** Select to record video based on the schedule established in the Schedule screen. When it is not selected, you will be asked to confirm your decision, and **X** displays at the top-left corner of each camera screen. Panic recording will function even when **Schedule On** is not selected. **!** appears during panic recording.
- **+**: Add a schedule item.
- **Day:** Choose the days that the scheduled recording will take place.
- **Range:** Set the time range that the scheduled recording will take place.
- **Mode:** Choose the recording mode that will be used.
 - **No record:** When the DVR is in the **No Record** mode, it will not record during the preset day and time range as long as the **PANIC** button on the DCP is not pressed. Use the **No Record** mode when you do NOT want the DVR to record during certain times.
 - **Time:** When the DVR is in the **Time** mode, the **No Record** 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.

- **Event:** 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.
- **Time & Event:** When the DVR is in the Time & Event mode, the DVR will follow the Time settings and the 📹 icon displays. The DVR follows the Event settings and the 📹 icon displays.
- **Channels:** Choose which cameras will be recorded..
- **Settings:** Define the recording settings. You can set the ips and Quality of the recording for any modes you set up in the Mode column. If you do not set the ips and Quality in the Settings column, the DVR will follow the default settings. See below for details.
- **✕:** Delete the recording settings. You will be asked to confirm that you want to delete the settings.
- **Default...:** Select to set the default value, and the Default screen appears.



- **ips:** Set the images per second for Time and Event recording
- **Quality:** Set the recorded image quality for Time and Event recording.

Figure 57 – Default setup screen

Pre-Event Setup

Select Pre-Event in the Record menu, and the Pre-Event setup screen appears. If you do not have Event set up in the Record Schedule, a message will display alerting you to this fact.

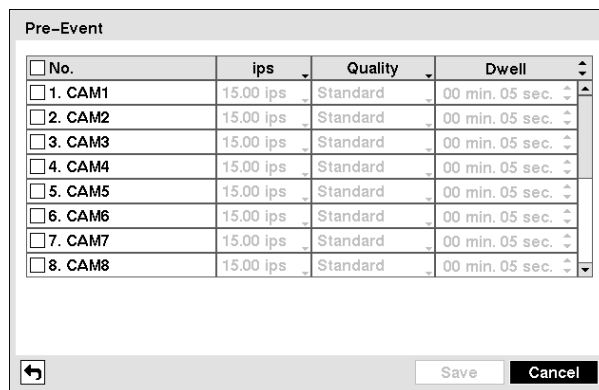


Figure 58 – Pre-Event setup screen

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.

- **No.:** Select to set the pre-event recording for entire cameras (No.) or an individual camera.
- **ips:** Choose the image speed.
- **Quality:** Choose the image quality.
- **Dwell:** Choose the amount of time to record prior to the event. 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 Settings

Your DVR can be set to detect many different events. You can also determine how it reacts to these events.

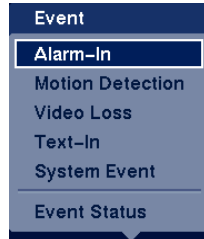


Figure 59 – Event menu

Alarm-In Setup

Select Alarm-In in the Event menu, and the Alarm-In setup screen appears.

Settings

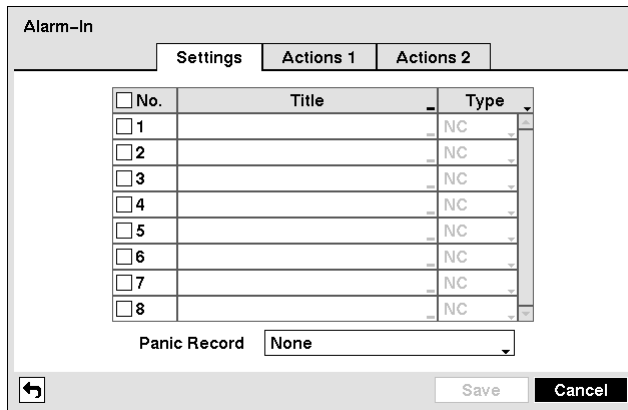


Figure 60 – Alarm-In Settings screen

The alarm terminal strip on the back of the DVR has inputs associated with each alarm.

- **No.:** Select to set alarm-in events for entire alarm-in devices (NO.) or an individual device.
- **Title:** Enter the Title of each input by using the virtual keyboard
- **Type:** Set each input as NO (normally open) or NC (normally closed).
- **Panic Record:** Choose an alarm input to be associated with panic recording. The DVR starts panic recording whenever it senses an input on the selected alarm input connector. The DVR will continue panic recording until an input on the selected alarm input is released as long as the **PANIC** button is not pressed to stop the panic recording.

Actions 1

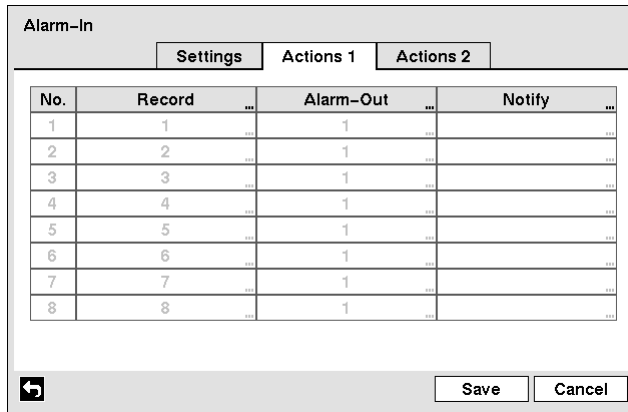


Figure 61 – Alarm-In Actions 1 screen

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

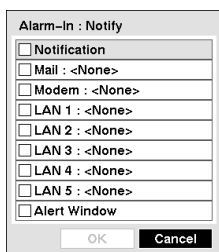
- **No.:** Indicates an alarm-in device number.
- **Record:** Choose cameras as many as you wish to be associated with the alarm-in device. When the DVR detects an input, it starts recording video from all the associated cameras.
- **Alarm-Out:** Choose alarm-outs as many as you wish to be associated with the alarm-in device. When the DVR detects an input, it triggers output signals on the associated Alarm-Out connectors.

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.

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

NOTE: An internal buzzer sounds in the DCP when the alarm output is activated.

- **Notify:** Select to notify when the DVR detects an input, and the Alarm-In Notify menu appears.



Selecting Notification selects the entire options in the list. Selecting individual items selects that item.

Figure 62 – Alarm-In Notify menu

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).

Actions 2

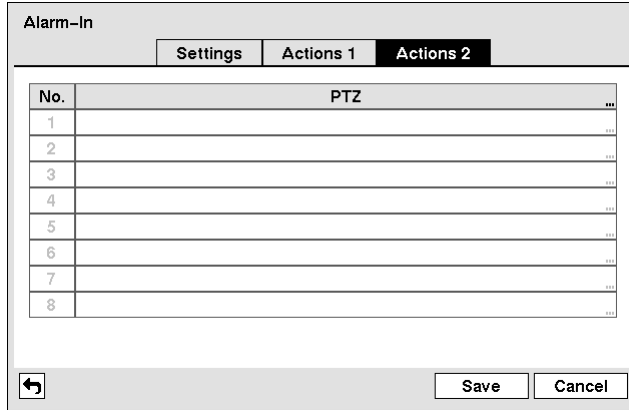


Figure 63 – Alarm-In Actions 2 screen

- **PTZ:** Choose 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 Setup

Select Motion Detection in the Event menu, and the Motion Detection setup screen appears.

Settings

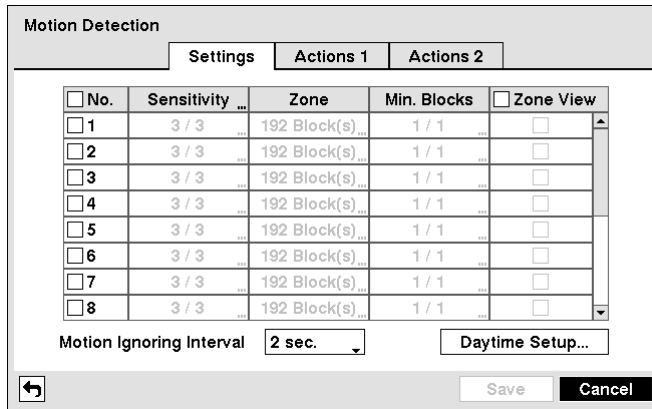
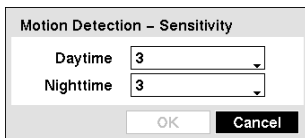


Figure 64 – Motion Detection Settings screen

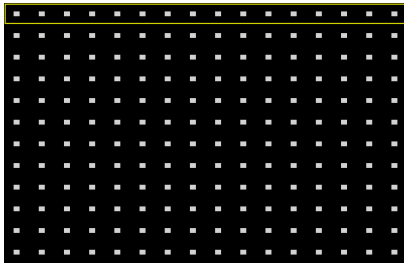
- **No.:** Select to set the video motion detection for entire cameras (**No.**) or an individual camera.
- **Sensitivity:** Adjust the DVR's sensitivity to motion for Daytime and Nighttime independently.



Select Daytime and Nighttime, and choose the sensitivity. Smaller numbers provide lesser sensitivity (1: the least sensitive, 5: the most sensitive).

Figure 65 – Motion Detection Sensitivity screen

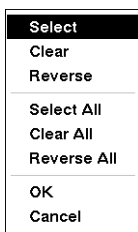
- **Zone:** Define the area of the image where you want to detect motion; e.g., a doorway, and the Motion Detection Zone screen appears.



The Motion Detection Zone screen is laid over the video for the selected camera. You can select or clear a block by clicking the mouse button to set up motion detection zones.

Figure 66 — Motion Detection Zone screen

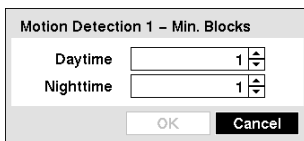
You can select or clear eight individual blocks in a group at a time. Click the right mouse button on the screen and the following menu screen appears.



- **Select:** Activate selected blocks to detect motion.
- **Clear:** Deactivate selected blocks so that they will not detect motion.
- **Reverse:** Activate inactive selected blocks and deactivates active highlighted blocks.
- **Select All:** Activate all blocks to detect motion.
- **Clear All:** Deactivate all blocks so that they will not detect motion.
- **Reverse All:** Activate inactive blocks and deactivates active blocks.
- **OK:** Accept changes and closes Zone setup.
- **Cancel:** Exit Zone setup without saving changes.

Figure 67 — Motion Detection Zone menu

- **Min. Blocks:** Adjust the minimum number of detection blocks that must be activated to trigger a motion alarm. Adjust the minimum number of detection blocks for Daytime and Nighttime independently.



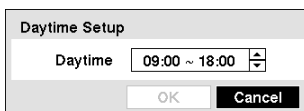
Select **Daytime** and **Nighttime**, and choose the sensitivity. Smaller numbers provide greater sensitivity because fewer detection blocks must be activated.

Figure 68 — Motion Detection Min. Blocks screen

- **Zone View:** Select to observe how the DVR is reacting to motion. When in the motion viewing mode, any detected motion within the zone will be displayed in red.
- **Motion Ignoring Interval:** Adjust the motion ignoring dwell time. The DVR will not log and notify motion events occurred during the preset interval range. You can control excessive event logging and remote notification of motions detected after the motion dwell time by adjusting the motion ignoring dwell intervals.

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

- **Daytime Setup:** Select to display the Daytime Setup screen.



- **Daytime:** Set the Daytime range. The DVR will consider the remaining time range as the Nighttime.

Figure 69 — Daytime Setup screen

Actions 1

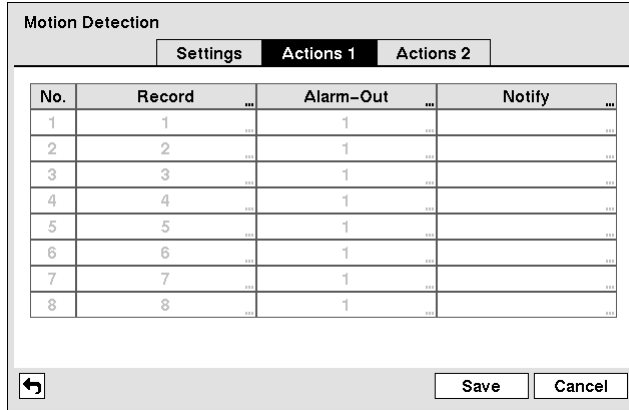


Figure 70 – Motion Detection Actions 1 screen

The DVR can be set to react to motion detection differently for each camera.

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

- **No.:** Indicates a camera number.
- **Record:** Choose cameras as many as you wish to be associated with the camera. When the DVR detects motion on the camera, it starts recording video from all the associated cameras.
- **Alarm-Out:** Choose alarm-outs as many as you wish to be associated with the camera. When the DVR detects motion on the camera, it triggers output signals on the associated Alarm-Out connectors.

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.

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

NOTE: An internal buzzer sounds in the DCP when the alarm output is activated.

- **Notify:** Select to notify when the DVR detects motion on the camera, and the Motion Detection Notify menu appears. You can select the entire options in the list by selecting Notification, or you can select individual items by selecting that item.

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).

Actions 2

No.	PTZ
1	
2	
3	
4	
5	
6	
7	
8	

Figure 71 – Motion Detection Actions 2 screen

- **PTZ:** Choose 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 Setup

Select **Video Loss** in the Event menu, and the Video Loss setup screen appears.

Settings

Figure 72 – Video Loss Settings screen

The DVR checks to see if anything is obscuring the camera. Select the **Check Obscuration** slider bar, and move it to the Left and Right to adjust the setting. Smaller numbers provide lesser sensitivity.

Actions 1

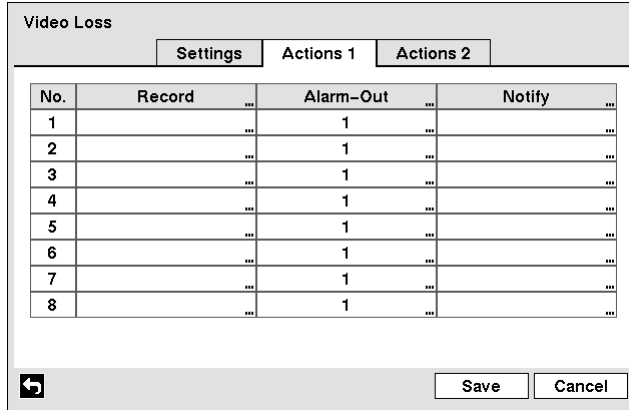


Figure 73 – Video Loss Actions 1 screen

The DVR can be set to react to video loss differently for each camera.

- **No.:** Indicates a camera number.
- **Record:** Choose cameras as many as you wish to be associated with the camera. When the DVR detects video loss on the camera, it starts recording video from all the associated cameras.
- **Alarm-Out:** Choose alarm-outs as many as you wish to be associated with the camera. When the DVR detects video loss on the camera, it will trigger output signals on the associated Alarm-Out connectors.

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.

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

NOTE: An internal buzzer sounds in the DCP when the alarm output is activated.

- **Notify:** Select to notify when the DVR detects video loss on the camera, and the Video Loss Notify menu appears. You can select the entire options in the list by selecting Notification, or you can select individual items by selecting that item.

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).

Actions 2

No.	PTZ
1	...
2	...
3	...
4	...
5	...
6	...
7	...
8	...

Figure 74 – Video Loss Actions 2 screen

- **PTZ:** Choose 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.

Text-In Setup

Select **Text-In** in the Event menu, and the Text-In setup screen appears.

Settings

No.	Setup	Title
1
2
3
4
5
6
7
8

Figure 75 – 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.

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

- **No.:** Indicates a text-input device number.
- **Setup:** Change all the parameters excluding Port settings of the text input channel and the Text-In screen appears.

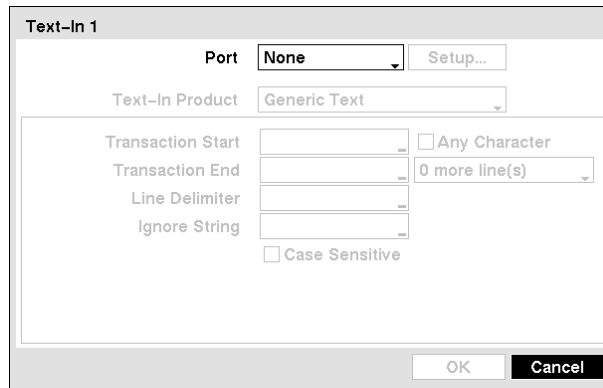


Figure 76 – Text-In Device Settings screen

- **Port:** Choose from None, RS232, RS485 and USB-Serial (1~8). Select **Setup...** to configure port's setting for the device you are connecting to the DVR (Baud Rate, Parity, Data Bits and Stop Bits). Use the ATM or POS manufacturer's recommended settings when configuring the RS232, RS485 or USB-Serial ports.

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

NOTE: 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 Product:** Choose 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.

- **Transaction Start:** 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. Select **Any Character** if you want the DVR to react to any character sent from the text input device.

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

- **Transaction End:** Enter the Transaction End string by using the virtual keyboard. Refer to the device manufacturer's documentation for the text string that the device sends when a transaction ends. Select **More line(s)** to choose the number of additional lines of text that you want the DVR to record.
- **Line Delimiter:** Enter the character(s) that the device uses to indicate the end of a line. 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).
- **Ignore String:** Enter any strings of text that you want the DVR to ignore. 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.
- **Case Sensitive:** Select **Case Sensitive** if the device distinguishes between upper and lower case letters. Refer to the device manufacturer's documentation to determine if the text strings are Case Sensitive.

Actions 1

Text-In

Settings Actions 1 Actions 2

No.	Record	...	Alarm-Out	...	Notify	...
1		...	1	...		...
2		...	1	...		...
3		...	1	...		...
4		...	1	...		...
5		...	1	...		...
6		...	1	...		...
7		...	1	...		...
8		...	1	...		...

Save Cancel

Figure 77 – Text-In Actions 1 screen

The DVR can be set to react to text input.

- **No.:** Indicates a text-input device number.
- **Record:** Choose cameras as many as you wish to be associated with the text-input device. When the DVR detects a text input, it starts recording video from all the associated cameras.
- **Alarm-Out:** Choose alarm-outs as many as you wish to be associated with the text-input device. When the DVR detects a text input, it triggers output signals on the associated Alarm-Out connectors.

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.

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

NOTE: An internal buzzer sounds in the DCP when the alarm output is activated.

- **Notify:** Select to notify when the DVR detects a text input, and the Text-In Notify menu appears. You can select the entire options in the list by selecting Notification, or you can select individual items by selecting that item.

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).

Actions 2

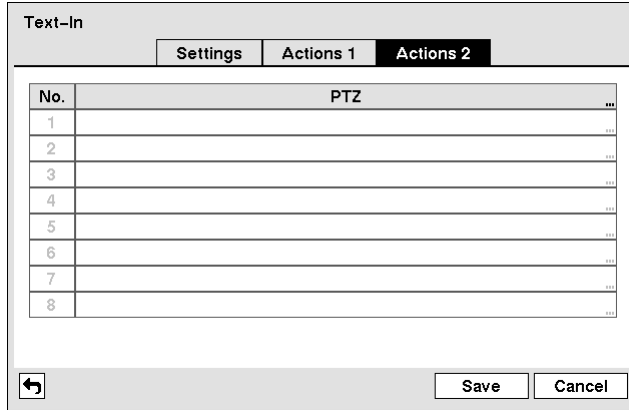


Figure 78 – Text-In Actions 2 screen

- **PTZ:** Choose the preset positions for each PTZ camera, where you want PTZ cameras to move to when the DVR detects text input.

System Event Setup

Select System Event in the Event menu, and the System Event setup screen appears.

Health Check

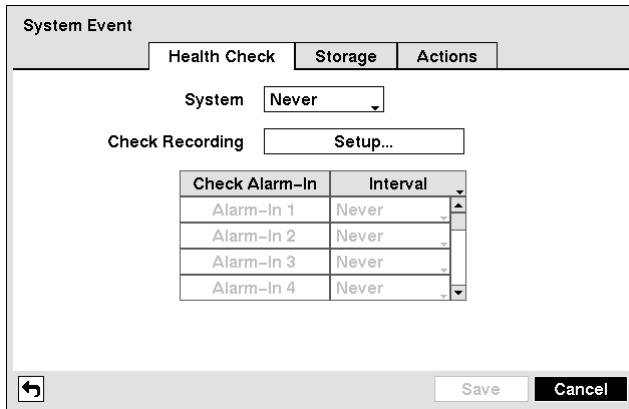
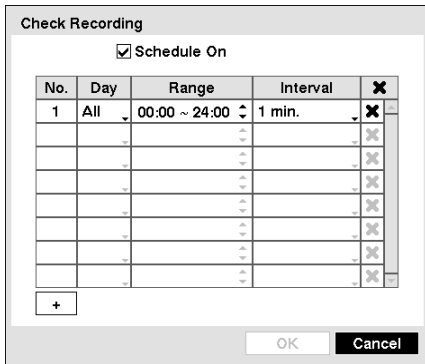


Figure 79 – Health Check screen

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

- **System:** Choose the interval that you want the DVR to run self-diagnostics on the system.
- **Check Recording:** Select **Setup...** to set the day, time range and interval that you want the DVR to run self-diagnostics on the recorder. The Check Recording screen appears.



- **Day:** Choose the days that the DVR will run self-diagnostics.
- **Range:** Set the time range that the DVR will run self-diagnostics.
- **Interval:** Choose the time interval that the DVR will run self-diagnostics.
- **X:** Delete a check recording schedule.

Figure 80 – Check Recording screen

- **Check Alarm-In – Interval:** Choose the time interval that you want the DVR to run self-diagnostics on the alarm input.

Storage

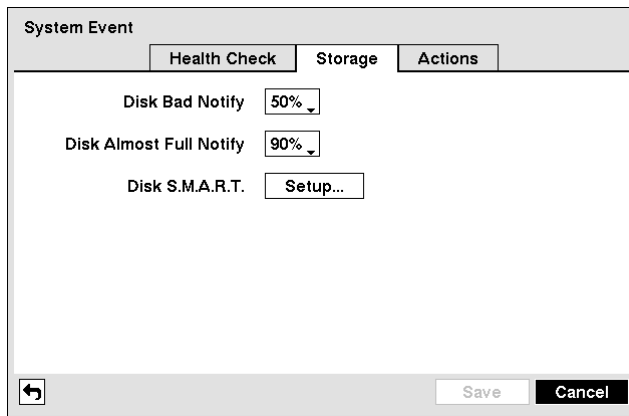


Figure 81 – Storage screen

- **Disk Bad Notify:** Choose the percentage level of bad disk sectors at which you want the DVR to trigger an alert.
- **Disk Almost Full Notify:** Choose the percentage level of disk usage at which you want the DVR to trigger an alert.
- **Disk S.M.A.R.T.:** Select Setup... to run S.M.A.R.T. and the S.M.A.R.T. Setup screen appears.

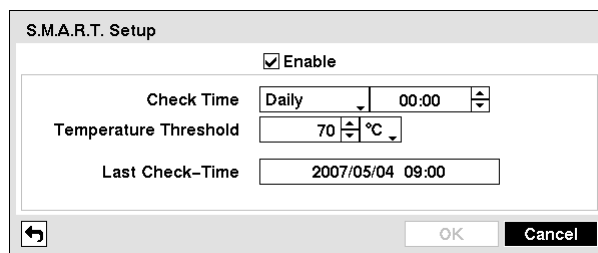


Figure 82 – S.M.A.R.T. Setup screen

- Enable: Select to run S.M.A.R.T.

NOTE: If *Enable* is turned Off, you will not be able to make changes to any of the boxes.

- Check Time: Choose the time interval from Monthly, Weekly and Daily. If you select Monthly, you will be asked to set the Day of the Month and Time. If you select Weekly, you will be asked to set the Day of the Week and Time. If you select Daily, you will be asked to set the Time.
- Temperature Threshold: Set the temperature for S.M.A.R.T by using the arrow buttons. 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.
- Last Check-Time: Displays the Date and Time of the last S.M.A.R.T. check.

Actions

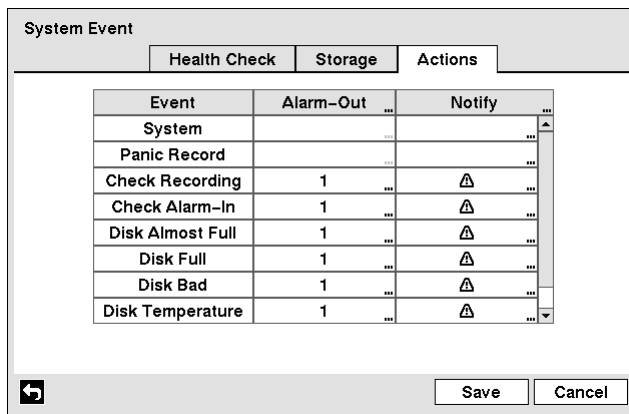


Figure 83 – System Event Actions screen

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.

- Alarm-Out: Choose alarm-outs as many as you wish to be associated with the event. If the DVR detects that event, it triggers output signals on all the associated Alarm-Out connectors.

NOTE: *Alarm-Out* action cannot be set to *System* and *Panic Record* events.

- Notify: Select to notify when the DVR detects the event, and the System Event Notify menu appears. You can select the entire options in the list by selecting Notification, or you can select individual items by selecting that item.

NOTE: *Mail* notify is the only option available for the *System* event.

NOTE: For the Notify action to work, the DVR should be registered in the RAS (Remote Administration System).

NOTE: An internal buzzer sounds in the DCP when the alarm output is activated.

Event Status Setup

Select **Event Status** in the Event menu, and the Event Status screen appears.

Event Status

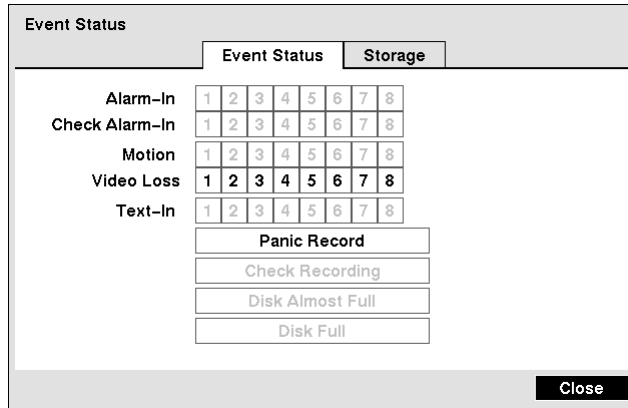


Figure 84 — Event Status screen

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 and Text-In:** The camera number is highlighted when each event is detected based on the settings you made in the Alarm-In, Motion Detection and Text-In setup screen on the Event menu.
- **Check Alarm-In and Check Recording:** The camera number or the box is highlighted when each event is detected based on the settings you made in the System Event setup screen on the Event menu.
- **Panic Record:** The box is highlighted while the DVR is in the panic recording mode.
- **Disk Almost Full:** The box is 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:** The box is highlighted when the DVR is not in the Recycle mode and all available storage space has been used.

Storage

It displays the hard disk drive status. Refer to the **Storage Screen** 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.

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 Power LED on the front panel will illuminate, and this action signifies the DVR has been turned on properly.

NOTE: The DVR doesn't operate below 0°C. If the temperature falls to below 0°C while the system is working, the unit will turn off, and will turn on again when the temperature rises above 0°C.

Live Monitoring

As soon as the DVR completes its initialization process, it will begin showing live video on the attached monitor. The default mode is to display all cameras at once. Live audio will be played when the DVR displays a camera in full screen mode.

When in one of the multi-view formats (e.g., PIP, 2x2 or 3x3), clicking the left mouse button on a camera image switches that camera to full screen. Clicking the left mouse button again returns to the previous multi-view format.

When in one of the multi-view formats, scrolling the mouse wheel up and down switches the screen format between PIP, 2x2 and 3x3.

Clicking the right mouse button while in the Live Monitoring mode displays the Live Monitoring menu:

Display	▶
Color Control	
Sequence	
Freeze	
Zoom	
PTZ...	
Show GPS	
Setup Menu...	
Search	

- Display — Displays the Display menu. (see below for more details)
- Color Control — Adjust the image. (see below for more details)
- Sequence — Enters the Sequence mode. (see below for more details)
- Freeze — Enters the Freeze mode. (see below for more details)
- Zoom — Zooms in on the live image. (see below for more details)
- PTZ... — Enters the PTZ mode. (see below for more details)
- Show/Hide GPS — Shows or hides the GPS information box on the screen if the DVR has GPS data.
- Setup Menu... — Enters the setup screen.
- Search — Enters the Search mode.

Figure 85 — Live Monitoring menu

Display Menu



- **Camera:** Displays the selected camera full screen. When in the PIP display mode, clicking the right mouse button and selecting PIP changes the location and the size of the PIP.
- **PIP:** Select in the single-screen mode to enter PIP mode and a Picture-in-Picture displays. You can change the location and size of the PIP by clicking the right mouse button in the PIP mode.
- **2x2 and 3x3:** Displays the cameras in the selected multi-view screen mode.
- **Previous Group/Next Group:** Moves to the previous page/next page.
- **Edit Group:** Enters the Active Cameo mode. The yellow outline surrounding the video indicates the active cameo. 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 select another camera in the menu (e.g., Camera B), the screen displays Camera B instead of Camera A. When in the 3x3 format (2x2 for 4-channel DVR), Camera A and Camera B will switch positions. You can change the screen layout in this way, and the change will remain during the playback mode. Selecting **Exit Group Edit** in the cameo menu displayed when clicking the right mouse button exits the Active Cameo mode. The active cameo mode will remain in effect for 15 seconds if there is no further operation.

NOTE: A cameo is defined as any cell within multi-screen display. The cameo mode allows you to change the screen layout by editing the cameo.

Figure 86 — Display menu

Color Control

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

NOTE: The *Color Control* function is not supported in the multi-view formats.

If a user who has Color Control authority logs into the system, the user can adjust the image. Selecting Color Control in a full screen mode enters Image Adjustment mode and displays an image adjustment dialog. You can control brightness, contrast, hue and saturation for each camera.


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

Sequence Mode


Selecting **Sequence** enters the Sequence mode and displays cameras sequentially. When in one of the multi-view formats, entering Sequence mode causes the DVR to go through predefined screen layouts (Full Sequence). Or, the bottom, right screen will display live cameras sequentially (Cameo Sequence). Selecting **Sequence** again exits the Sequence mode. When in one of the multi-view formats, entering Sequence mode will cause the DVR to go to the next page. If all the cameras in a page are Off, 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 (Sequence tab).



Freeze Mode

Selecting **Freeze** enters the Freeze mode and freezes the current image on the screen. Selecting **Freeze** again exits the Freeze mode. While in the Freeze mode, the icon  displays in bottom-left corner if **Freeze** is selected in the Display setup screen (OSD tab).

Zoom Mode

Selecting **Zoom...** enters the Zoom mode and enlarges an area of the video. For a few seconds after entering the Zoom mode, a rectangle is displayed on the screen. A rectangle shows the area that will be enlarged. You can move the rectangle around using the mouse. Selecting **Exit ZOOM** in the menu displayed when clicking the right mouse button exits the Zoom mode. 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. The icon  displays on a PTZ camera screen if the PTZ camera are installed and set up properly in the Camera setup screen (PTZ tab). Selecting **PTZ...** in the Live Monitoring menu displays the PTZ camera menu. Select the PTZ camera you wish to control and the icon  flickers on the PTZ camera screen in the PTZ mode. Selecting **Exit PTZ...** in the menu displayed when clicking the right mouse button exits the PTZ mode.

Clicking the right mouse button in the PTZ mode displays the following PTZ menu.

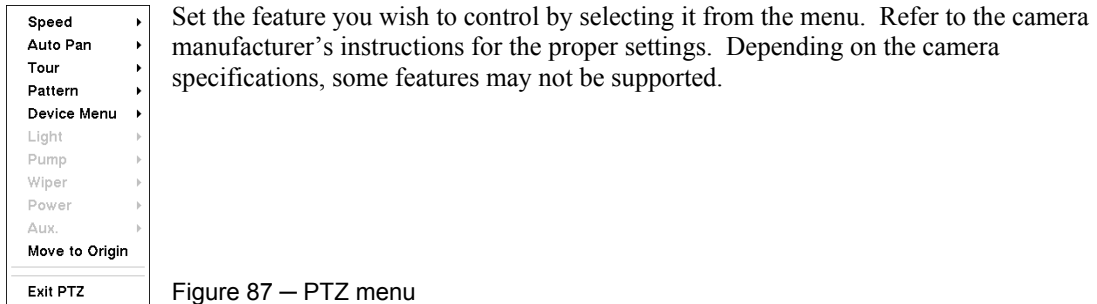



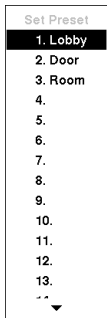
Figure 87 – PTZ menu

You can control PTZ cameras by using PTZ toolbar. Position the mouse pointer on the bottom of the screen, and the following PTZ toolbar will display.



Clicking  on the left side exits the toolbar. 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.

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




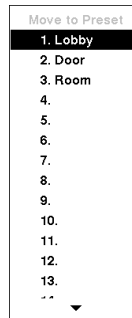
Once you have the camera at the desired settings, press the  button on the PTZ toolbar, and the PTZ Preset dialog box will appear. Select the number you want to assign to the preset and enter the preset name by using the virtual keyboard.

Figure 88 — PTZ Preset screen




Press the  button on the PTZ toolbar to load the PTZ preset and the Preset View dialog box will appear. Select the desired preset to load the preset.

Figure 89 — Preset View screen

GPS Information

If the DVR has GPS data, you can select Show GPS in the Live Monitoring menu to display GPS information on the screen.

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 (OSD tab). Video from the lowest camera number associated with the event sensor will be displayed, and the DVR will return to the previous screen format unless another event has occurred after event monitoring dwell time expires. While the event monitoring is activated, the monitoring for all other subsequent events will be ignored.

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 eight cameras are associated with the event, the DVR will display the cameras on a 3x3 screen.

Clicking the left mouse button during event monitoring releases the current event monitoring and displays the selected camera or returns to the previous screen format.

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.

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 *Chapter 3 – 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 or High. The factory default resolution is **Standard**. When set to **Standard**, the DVR has a maximum recording speed of 120 ips. When set to **High**, the DVR has a maximum recording speed of 60 ips.

Pressing the **PANIC** button on the DCP starts panic recording of all cameras, and pressing the button again stops panic recording. If you set the **Panic Recording Duration** in the **Record Screen**, panic recording will stop automatically according to the preset duration as long as the **PANIC** button is not pressed.

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

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.

Recording Audio

If the DVR was set up to record audio, it will record audio from up to two inputs when video is recording. The DVR will not record audio when the recording speed is set to less than 1 ips.

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 in the screen format set during the live monitoring mode. 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: While recording video, the playback speed might decrease.

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.

You can control playback by using the following playback toolbar displayed when positioning the mouse pointer on the playback screen.



Figure 90 – Playback toolbar

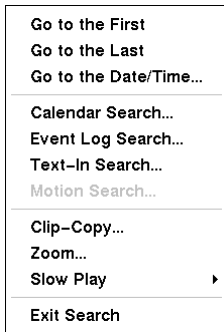
Clicking **X** on the left side exits the toolbar. If you want to display the toolbar again, position the mouse pointer on the screen. Change the toolbar location by clicking the empty space on the right side of the toolbar and dragging it to where you want it located on the screen.

The individual controls on the toolbar perform the following functions as described below:

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

Searching Video

Clicking the right mouse button while in the Playback mode displays the Search Menu.

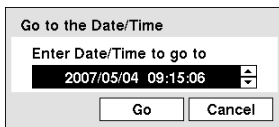


- **Go to the First** — Displays the first recorded image.
- **Go to the Last** — Displays the last recorded image.
- **Go to the Date/Time...** — Searches by date and time. (see below for more details)
- **Calendar Search...** — Searches using a calendar. (see below for more details)
- **Event Log Search...** — Selects video from the event log. (see below for more details)
- **Text-In Search...** — Searches text input strings. (see below for more details)
- **Motion Search...** — Searches motion events. (see below for more details)
- **Clip-Copy...** — Clips a video segment and saves it. (see below 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)
- **Exit Search** — Exits the Search Menu.

Figure 91 – Search menu

NOTE: While recording video, the playback speed of searched data might decrease.

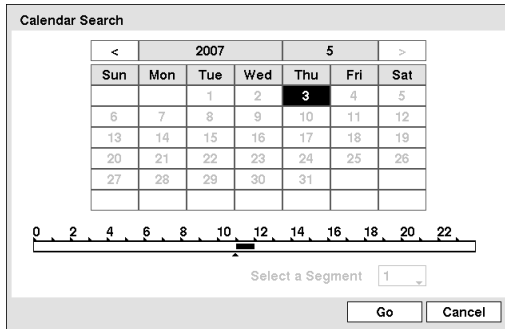
Go to the Date/Time



Adjust the date and time by using the arrow buttons and 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). You can use the playback toolbar to review the surrounding video.

Figure 92 – Go to the Date/Time screen

Calendar Search



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. Once the time bar is highlighted, you can select the time.

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. Move to **Select a Segment**, and select the video stream you want to search. Refer to the *Appendix D – Time Overlap* for further information on searching time-overlapped video streams.

Once you have set the date and time you want to search, Select **GO**. The selected date and time will display. You can use the playback toolbar to review the surrounding video.

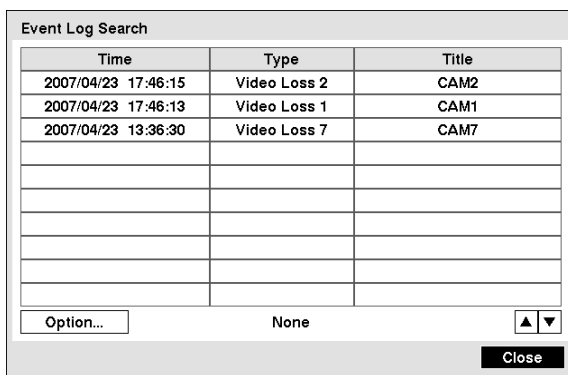
Figure 93 – Calendar Search screen

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.

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

NOTE: It is possible that no recorded image displays on the current screen. Click the left mouse button on the screen to change the screen mode to 3x3 (2x2 for 4-channel DVR). You will be able to easily see the camera have recorded video during target time.

Event Log Search



The DVR maintains a log of each time the Alarm Input port is activated. The **Event Log Search** screen displays this list. Select the event for which you would like to see video, and the screen will extract selected event video and display the first image of the event.

The Event Log Search screen can also be accessed by pressing the **ALARM RESET** button on the DCP unless there is an alarm. 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.

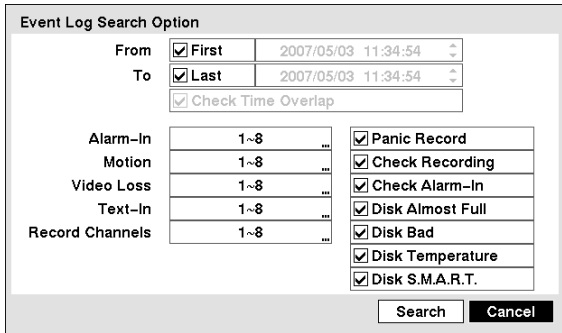
Selecting the ► icon on the playback toolbar will start playing the “event” video segment.

Clicking the right mouse button and selecting **Exit Search** returns to live monitoring.

Figure 94 – Event Log Search screen

NOTE: It is possible that no recorded image displays on the current screen. Click the left mouse button on the screen to change the screen mode to 3x3 (2x2 for 4-channel DVR). You will be able to easily see the camera have recorded video during target time.

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



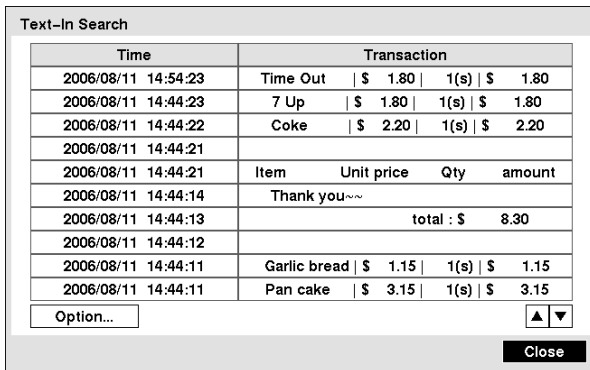
- **From:** Select First to search from the first recorded image. When it is not selected, you can enter a specific Date and Time.
- **To:** Select Last to search until the last recorded image. When it is not selected, you can enter a specific Date and Time.
- **Check Time Overlap:** Select if there is overlapping data. 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.

- **Alarm-In:** Choose the alarm inputs that you want to include in your search.
- **Motion:** Choose the cameras for which you want any reports of motion detection.
- **Video Loss:** Choose the cameras for which you want any reports of lost video.
- **Text-In:** Choose the text-in devices which you want any report of text input.
- **Record Channels:** Choose 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.
- **Panic Record, Check Recording, Check Alarm-In, Disk Almost Full, Disk Bad, Disk Temperature and Disk S.M.A.R.T.:** Select to include self-diagnostic events as part of your search.

Figure 95 – Event Log Search Option screen

Text-In Search



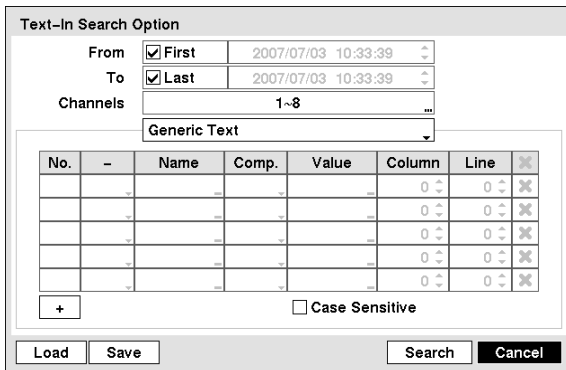
The DVR maintains a log of each time there is Text Input. The Text-In Search screen displays this list. Select the event for which you would like to see video, and the screen will extract the video associated with the Text Input and display the first image of the event. Selecting the ► icon on the playback toolbar will start playing the “event” video segment. Clicking the right mouse button and selecting Exit Search returns to live monitoring.

Figure 96 – Text-In Search screen

NOTE: It is possible that no recorded image displays on the current screen. Click the left mouse button on the screen to change the screen mode to 3x3 (2x2 for 4-channel DVR). You will be able to easily see the camera have recorded video during target time.

NOTE: 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 **Option...** and setting up the new search condition.



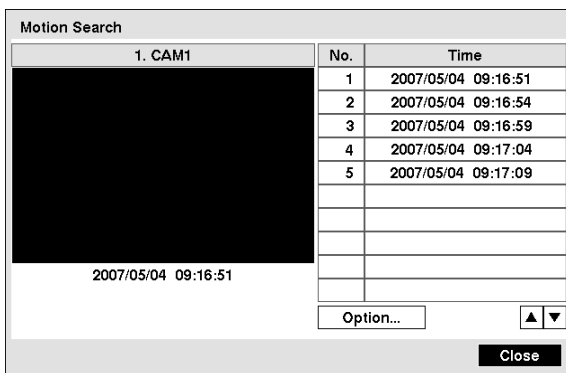
- **From:** Select **First** to search from the first recorded image. When it is not selected, you can enter a specific Date and Time.
- **To:** Select **Last** to search until the last recorded image. When it is not selected, you can enter a specific Date and Time.
- **Channel:** Choose the text-in devices that you want to search for text input.
- **Text Input Device:** Choose your Text Input Device from the list.

Figure 97 – Text-In Search Option screen

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.

- **+**: Add a search condition up to 5.
- **No.:** Select to move the location of the search condition in the list.
- **–:** Choose **AND** to search for the text-in data satisfying all conditions or **OR** to search for the text-in data satisfying at least one of the conditions.
- **Name:** Enter the text to search by using the virtual keyboard.
- **Comp.:** Enter the comparison operator by using the virtual keyboard.
- **Value:** Enter the comparison value by using the virtual keyboard.
- **Column:** Set the location of each individual category for more specific search of the text-in data.
- **Line:** Set the line where the category is located for more specific search of the text-in data.
- **✕:** Delete the search condition.
- **Case Sensitive:** Select to find only those text strings in which the case matches.

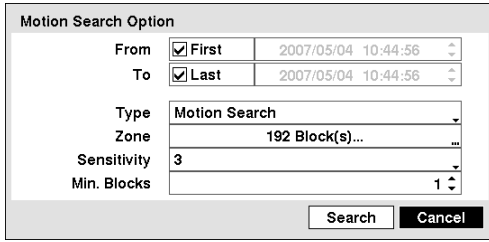
Motion Search



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, and the screen will extract the video associated with the selected event on the small search screen and display the first image of the event. Selecting **Close** will extract the video associated with the Motion event and display the first image of the event. Selecting the **▶** icon on the playback toolbar will start playing the “event” video segment. Clicking the right mouse button and selecting **Exit Search** returns to live monitoring.

Figure 98 – Motion Search screen

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



- **From:** Select **First** to search from the first recorded image. When it is not selected, you can enter a specific Date and Time.
- **To:** Select **Last** to search until the last recorded image. When it is not selected, you can enter a specific Date and Time.
- **Type:** Choose search type. **Motion Search** detects motion in the defined area. **Museum Search** detects if a defined object has moved.

- **Zone:** Select to display an image from the video 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. The zone should be placed or focused on the centre or, at least, within the outline of targeted object
- **Sensitivity:** Choose sensitivity from **1** (low sensitivity) to **5** (high sensitivity). Smaller numbers provide lesser sensitivity..
- **Min. Blocks:** Set the number of sensor blocks that must be activated. Setting the Min Blocks will only be available if Motion Search is selected.

Figure 99 – Motion Search Option screen

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.

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.

NOTE: 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 boarder line, the sensitivity of the Museum Search may decrease.

Clip-Copy Screen

The Clip-Copy screen can be used to copy video clips to external storage devices. The copied video clips can be viewed on computers running Microsoft Windows 98, ME, 2000, XP or Vista. Refer to the *Appendix B – USB Hard Disk Drive Preparation* for information on preparing the external drive for clip copy. Select Clip-Copy... in the Search menu and the Clip-Copy screen appears to allow clip copy setup.

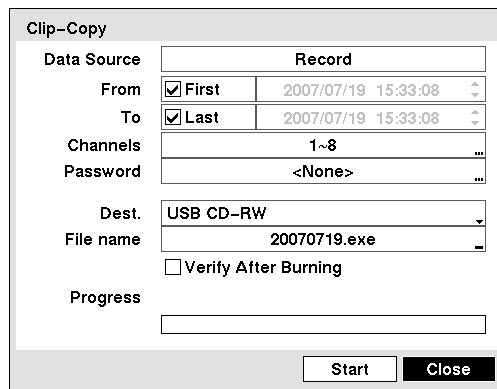


Figure 100 – Clip-Copy screen

- **From:** Select **First** to search from the first recorded image. When it is not selected, you can enter a specific Date and Time.
- **To:** Select **Last** to search until the last recorded image. When it is not selected, you can enter a specific Date and Time.
- **Channels:** Choose the cameras that you would like to include in your video clip.
- **Password:** Enter the password for reviewing the video clips using the virtual keyboard.
- **Dest.:** Choose the storage device on which you would like to record the video clip.
- **File Name:** The DVR automatically assigns a file name to the video clip. However, you can give the video clip file a different name. 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.
- **Verify After Burning:** Select to verify that the data is written on the CD-RW or DVD RW properly.

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

NOTE: While copying video clips on the CD-RW or DVD RW, the recording speed might decrease.

NOTE: When the error message “Firmware update of the optical drive is required” displays, update the firmware of the connected CD-RW drive or DVD RW drive. Please follow the instructions described in *Chapter 3 – Configuration – System Information* section.

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

Once you have given the video clip a file name, select **Start**. 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 **Continue** 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: Only 4.7GB DVD media is available. To clip copy video on the DVD media using remaining space, the size of previously recorded data on the DVD media should be less than 4GB.

NOTE: The file size for clip copy is limited to 2GB.

You can use other functions on the DVR while video is being backed up. To do this, select **Close**. 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 the 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-IDE 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 A – Power Conditioner

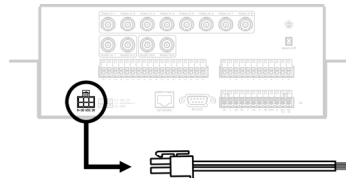
The power conditioner prevents the DVR from damage caused by a surge or a reverse voltage when the power supply does not meet the requirement (9 ~ 30VDC, 10A) during operation. Check the power supply status during the vehicle's starting and operation before installing the DVR and install the power conditioner when there is any possibility that the power supply does not meet the requirement.

NOTE: The power conditioner is not supplied with the DVR. Ask your dealer or distributor about the purchase of the power conditioner.

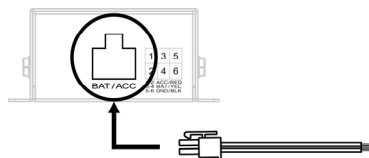
NOTE: Use the enclosed screws to make the power conditioner immovable and install it closely enough to the DVR for the cables to reach the connectors.

NOTE: The power conditioner complies with the ISO 7637-2 standard and operates over an input voltage range of 12VDC to 24VDC at 10A.

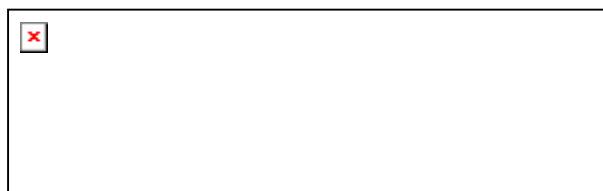
1. Remove the power cable from the DVR.



2. Connect the removed power cable to the BAT/ACC port of the power conditioner.



3. Connect one connector of the power cable provided with the power conditioner to the MDR port of the power conditioner, and connect the other connector of the power cable to the power port of the DVR.



WARNING: Incorrect connection of the power cables may result in serious damage to both the DVR and the power conditioner.

Appendix B – USB Hard Disk Drive Preparation

Preparing the USB-IDE hard disk drive in Windows 2000

NOTE: Preparing a USB-IDE hard disk drive under Windows XP is almost identical to Windows 2000.

1. Connect the USB-IDE 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-IDE 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-IDE hard disk drive using the FAT32 format.
5. If the USB-IDE 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-IDE 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-IDE hard disk drive will be added to *My Computer*.

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

Preparing the USB-IDE hard disk drive in Windows 98

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

1. Connect the USB-IDE 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-IDE 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-IDE 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-IDE 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-IDE 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-IDE hard disk drive to the DVR.

Appendix C – Text-In Query Examples

Query Example I

1 2 3 4 5 6
 123456789012345678901234567890123456789012345678901234567890

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.

Text-In Search Option

From First 2007/07/12 12:17:16

To Last 2007/07/12 12:17:16

Channels 1~8

Generic Text

No.	-	Name	Comp.	Value	Column	Line	X
1		Coke	>	1	28	0	X
2	AND	Hotdog	>	8	40	0	X
					0	0	X
					0	0	X
					0	0	X

Case Sensitive

Query Example II

1 2 3 4 5 6
 123456789012345678901234567890123456789012345678901234567890

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.

Text-In Search Option

From First 2007/07/12 12:17:16

To Last 2007/07/12 12:17:16

Channels 1~8

Generic Text

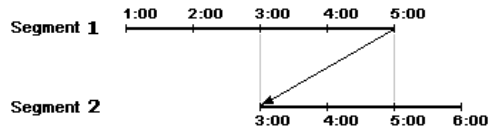
No.	-	Name	Comp.	Value	Column	Line	X
1		Coke	>	1	28	0	X
2	AND	Hotdog	>	8	40	1	X
					0	0	X
					0	0	X
					0	0	X

Case Sensitive

Appendix D – Time Overlap

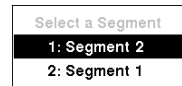
If the DVR's time and date have been reset to a time that is earlier than the existing recorded video, it is possible for the DVR to have more than one video stream in the same time range. In this case, you can search overlapping video streams individually by selecting a specific segment.

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.

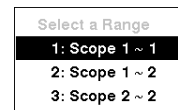


You can search overlapping video streams by selecting a specific time or time range.

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:

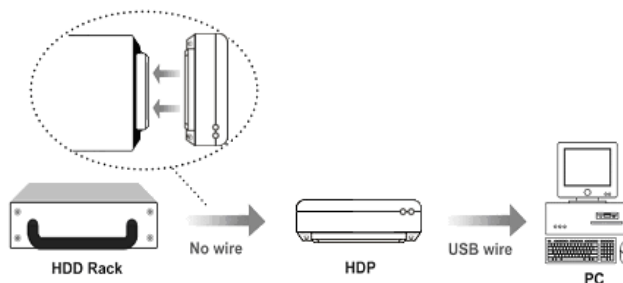



- From four o'clock of the first segment to five o'clock of the first segment
- From four o'clock of the first segment to five o'clock of the second segment
- From four o'clock of the second segment to five o'clock of the second segment

Appendix E – 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 need to use the dedicated IDE to USB2.0 Converter and Hard Disk Player (HDP) program (optional).

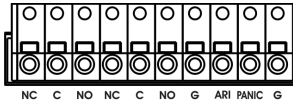
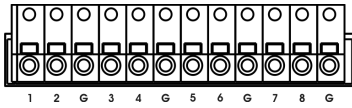
For more detailed usage, please refer to the HDP Installation and Operating Instructions.



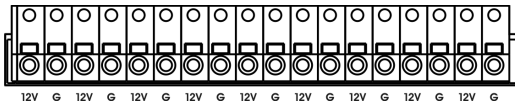
CAUTION: Make sure that all removable hard disk drives and IDE to USB 2.0 converters have labels displaying  before using the USB converter. The device might be damaged if they do not have labels displaying .

Appendix F – Connector Pin Outs

I/O Connector Pin Outs



1 to 8	Alarm Inputs 1 to 8
G	Chassis Ground (6 connectors)
NC	Relay Alarm Outputs (Normally Closed)
C	Relay Common
NO	Relay Alarm Outputs (Normally Open)
ARI	Alarm Reset In
PANIC	Panic Recording








12V	VDC Outputs
G	Chassis Ground (9 connectors)

RS485 Connector Pin Outs

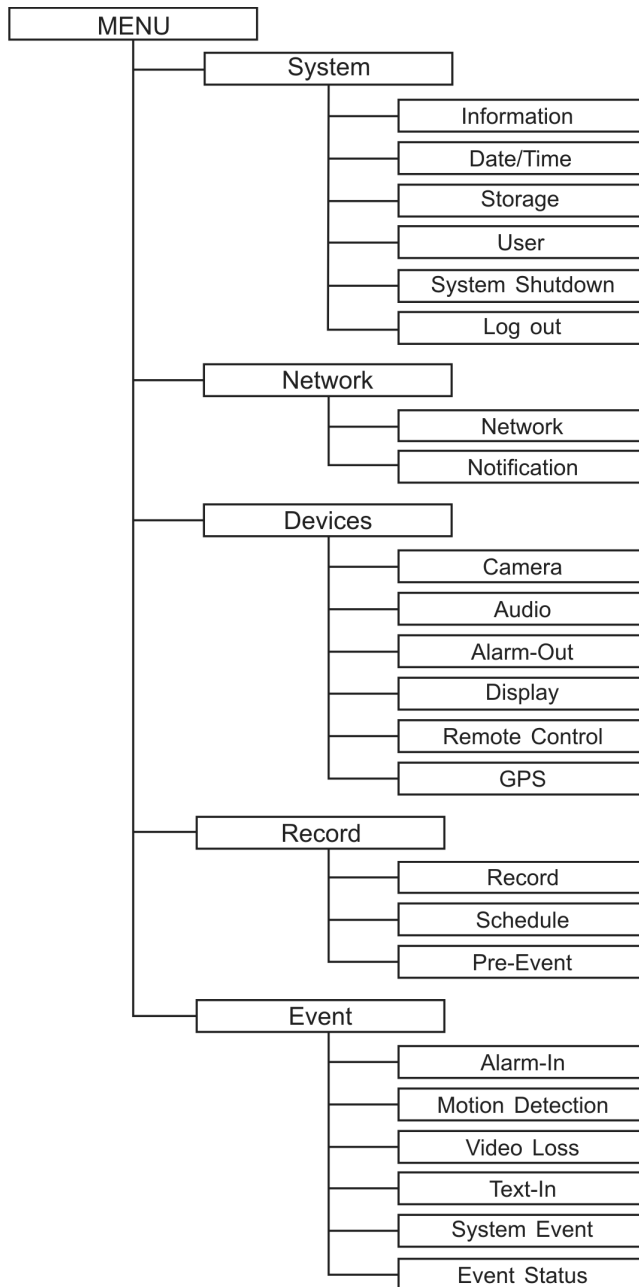


Master Unit	Slave Unit
RX+/TX+ → To	→ TX+/RX+
RX-/TX- → To	→ TX-/RX-

Appendix G – Troubleshooting

Problem	Possible Solution
No Power	Check power connections.
No Live Video	<ul style="list-style-type: none"> • 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.

Appendix H – Map of Screens



Appendix I – System Log Notices

Boot Up	Remote Setup Change	Auto Deletion
Shutdown	Remote Setup Fail	Search Begin
Restart	Setup Imported	Search End
Upgrade	Setup Import Failure	Clip-Copy Begin
Upgrade Fail	Setup Exported	Clip-Copy End
Power Failure	Setup Export Failure	Clip-Copy Cancel
Time Change	Setup Export Cancel	Clip-Copy Fail
Time Zone Change	Schedule On	Callback Fail
Time Sync	Schedule Off	Clip-Copy User:
Time Sync Fail	Panic On	Clip-Copy From:
Disk Bad	Panic Off	Clip-Copy To:
Login	Clear All Data	Clip-Copy Duration of Video:
Logout	Clear Disk	Clip-Copy Camera:
Setup Begin	Format Disk	Callback Fail
Setup End	Disk Full	

Appendix J – 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.
106	ODD firmware upgrade failed.	11	Appending failed.
300	Remote connection failed.	12	Bad sector.
301	Remote network error.	13	No executable file.
302	Remote upgrade is not authorized.	14	Opening executable file failed.
303	Saving remote package failed.	15	Writing executable file failed.
304	Remote upgrade is cancelled by the user.	16	Creating image failed.
400	USB device mounting failed.	17	Burning failed.
401	Reading upgrade package on the USB device failed.	18	Burning is out of time.
402	Copying upgrade package on the USB device failed.	19	Connecting device failed.
500	System is busy clip copying.	20	Device is busy.
		21	Unsupported file system.
		22	Verify failed.

Appendix K – Specifications

VIDEO	
Signal Format	NTSC or PAL (Auto Detect)
Video Input	Composite: 4 or 8 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) VGA: 800x600 @ 60Hz
Playback/Record Speed (images per second)	120/120ips (NTSC), 100/100ips (PAL)
INPUTS/OUTPUTS	
Alarm Input	4 or 8 TTL, programmable as NC or NO, 4.3V threshold
Alarm Output	2 relay outputs, terminal blocks, programmable as NC or NO, 0.5A@125VAC, 1A@30VDC
Alarm Reset Input	1 TTL, terminal block
Buzzer (In DCP)	80dB at 10cm
Network Connectivity	10/100 Mbps Ethernet (RJ-45), RS232C for external modem
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 or 8 BNC
Monitor Output	Composite: 1 BNC
Audio In	2 BNC connectors
Audio Out	1 BNC connector
Alarm Input/Output	Terminal blocks (Removable)
Ethernet Port	RJ-45
RS232C Serial Port	DB9 (P)
RS485 Serial Port	Two-connector terminal block
USB Port	2 (USB 2.0)
STORAGE	
Primary Storage	Removable hard disk
Secondary Storage	USB hard disk drive, CD-RW drive or flash drive
GENERAL	
Dimensions (W x H x D)	11.8" x 4.8" x 14.6" (300mm x 121mm x 372mm)
Unit Weight	18.2 lbs. (8.3kg)
Shipping Weight	25.6 lbs. (11.6kg)
Shipping Dimensions (W x H x D)	16.1" x 9.8" x 19.8" (410mm x 250mm x 502mm)
Operating Temperature	5°C – 40°C
Operating Humidity	0% to 90%
Power	9 ~ 30VDC, 10A
Power Consumption	Max. 70W
Approvals	FCC, CE (E-Mark)

Specifications are subject to change without notice.

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.