



# **INSTALLATION & OPERATION MANUAL**

Digital Video Recorder  
SLD240



**security labs**








15540 Herriman Blvd. Noblesville, IN 46060, USA  
Customer support: 1-800-774-0284 [www.security-labs.com](http://www.security-labs.com)

Before trying to connect or operate this product, please read this manual completely


# SAFETY PRECAUTIONS

All of the following safety and operating instructions should be carefully read before this unit is operated to prevent harm or damage to the user and other persons.

## WARNING

-  To reduce the risk of fire or electrical shock, do not expose this appliance to rain or moisture.
-  Do not block ventilation openings.
-  Do not place anything on top of the unit that might spill or fall into it.
-  Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltages or other hazards. Please refer all servicing to qualified personnel.
-  Do not use liquid cleaners or aerosols for cleaning.
-  To prevent fire or electrical shock, do not overload wall outlets or extension cords.
-  This unit must be grounded to reduce the risk of electrical shock.

## CAUTION

-  Danger of explosion if the Lithium battery (RTC Battery) is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the battery manufacturer's instructions.

## INFORMATION

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. If not installed and used in accordance with the instruction manual, it may cause harmful interference to radio communications. Operation of this equipment in a residential area can cause harmful interference in which case the user will be required to correct the interference at his own expense.

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# **1. Introduction**

## **1.1 Overview**

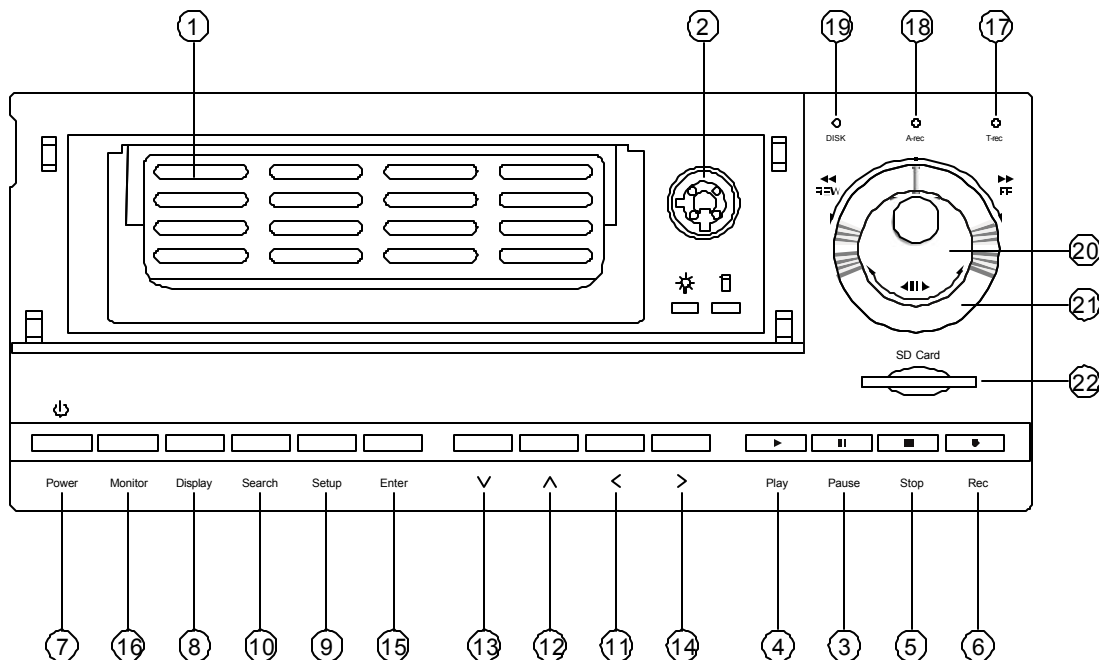
The DVR, model SLD240, is a storage media of digital video images, which uses hard disk drives instead of VCR tapes to store video. It enables you to enjoy the extreme flexibility of digital image archiving instead of clumsy tape management, and it is compatible with most multiplexers on the market. With a wide range of comprehensive features, such as playback picture-by-picture, quick search by time and event, an Ethernet connection for remote viewing, the upgradeable software of the system, the expandable capacity of the hard drive, and much more, the DVR makes your applications far more flexible and effective than ever before. The DVR is going to prove to be the timely substitute for the Timelapse VCR.

## **1.2 Product Features**

- \* Stores video in hard disk drives instead of VCR tapes.
- \* Maximum of 2 hard disk drive capability. (One removable)
- \* Hard disk drive hot-swapping capability
- \* Pre-alarm image recording.
- \* Capable of working with various known multiplexers.
- \* Time-lapse and real-time recording.
- \* Refresh rate up to 60 FPS.
- \* Image quality selectable at 4 different levels for recording.
- \* Event/Timer/Alarm recording mode.
- \* Quick search by time, alarm, event, and recording list.
- \* Fast and slow playback of recorded video at various speeds.
- \* Single-picture playback.
- \* On-screen setup menu, title, and system timer.
- \* Password protection.
- \* **Motion detection.**
- \* Disk-full warning and operation status LEDs.
- \* RS-232 and RS-485 communication ports.
- \* Remote control via RS-232, RS-485, and Ethernet ports.
- \* Power interruption recovery.
- \* Operation-status record log.
- \* Distribution of live and recorded images through TCP/IP network environment.
- \* Audio function included.
- \* Built-in SD card slot for copying images to an SD card.
- \* Supports DHCP protocol.

## 2. DESCRIPTION OF THE FRONT/REAR VIEW

### 2.1 Front View



① **Hard Disk Drive Compartment.**

This compartment allows you to install a hard disk drive mostly for backup purposes. Make sure the drive is well secured with the mounting screws in the mobile rack before you put the rack into the compartment.

② **Hard Disk Compartment Lock:**

The key lock secures a hard disk in place. Unlock the compartment before you remove the hard disk rack from the slot while the DVR is still on. After the hard disk rack is placed back in the slot, it must be locked to activate the hard disk drive.

③ **PAUSE** button:

During video playback, press this button to freeze the display. During the freeze, press this button to display one frame/field of a picture at a time in the forward direction. (Button illuminates green in PAUSE mode.)

④ **PLAY** button:

Press to play back recorded video from the hard disk. (Button illuminates green in PLAY mode.)

⑤ **STOP** button:

Press to stop playing back video or recording video onto a hard disk. (Button illuminates green in STOP mode.)

⑥ **REC** button:

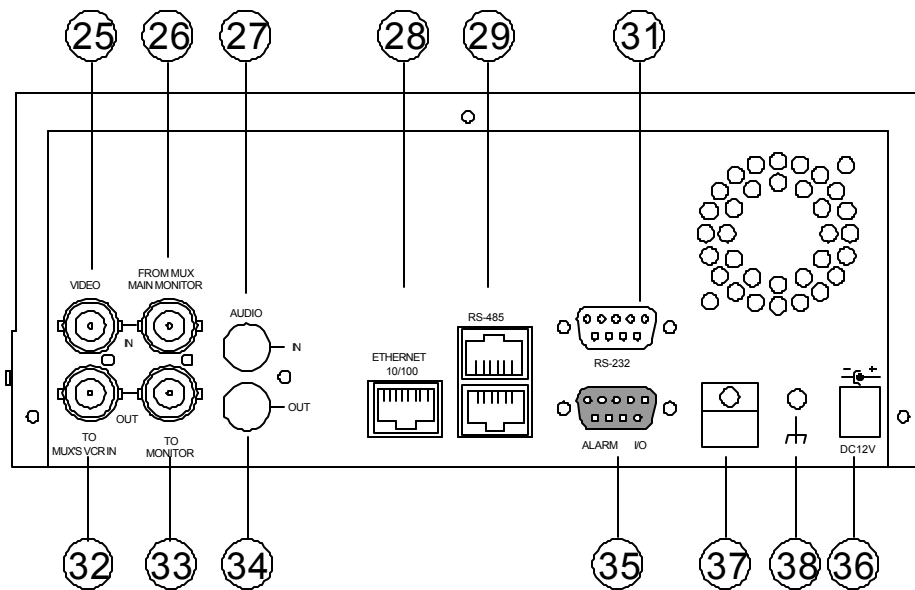
Push to start recording video onto a hard disk while in the live display mode. (Button illuminates red in REC mode.)

⑦ **POWER** button:

Press and hold this button for at least 3 seconds to power off. Press again to activate the device.

- ⑧ **DISPLAY** button:  
Press to show the system operation status on the screen.
- ⑨ **Setup** button:  
Press this to enter the setup menu. Press again to exit the setup mode.
- ⑩ **Search** button:  
Press to enter the search mode to access recorded video.
- ⑪⑭ **Left / Right** buttons:  
Press these two buttons to highlight desired items in the menu setup mode. For **Key Lock** operation, press and hold these two buttons simultaneously for at least 3 seconds; to disable **Key Lock**, press these two buttons simultaneously again.
- ⑫⑬ **Up / Down** buttons:  
Press these two buttons to select the desired contents for programming in the setup menu mode.
- ⑮ **Enter** Button:  
Press to enter a selected item and save the setting in the menu setup mode.
- ⑯ **Monitor** button:  
Press to switch between a multiplexer-decoded video and the encoded video to be displayed when connected with a multiplexer. When the button light is on, it indicates the unit is displaying the decoded video. (The images are not multiplexing.) In this mode, the unit does not display the OSD message of the unit on the screen. However, this does not affect the unit's OSD message which is recorded onto hard disk drives. When the button light is off, it indicates the unit is displaying encoded video. (The images switch swiftly).
- ⑰ **T-rec Indicator**:  
This indicator of the timer recording mode lights up to signal the scheduled record setting is on.
- ⑱ **A-rec Indicator**:  
This indicator of the alarm recording mode lights up to signal the alarm record setting is on.
- ⑲ **DISK Indicator**:  
This indicator shows the operation status of the unit's hard disk drives. The green light indicates the hard disk drive is storing or retrieving data. The red light signals the hard disk drive is filling up. The orange light indicates the hard disk is retrieving at disk-full status.
- ⑳ **Shuttle Ring**:  
The shuttle can be moved forward and backward for playback in either direction. Turn this counterclockwise to play a recorded video in the reverse direction at faster or slower speeds than the recorded speed. Turn this clockwise to play a recorded video in the forward direction at faster or slower speeds than the recorded speed.
- ㉑ **Jog Dial**:  
This dial can act in both a forward and a backward direction, as well as step by step. Turn this counterclockwise to play a recorded video in the reverse direction. Turn this clockwise to play a recorded video in the forward direction.
- ㉒ **SD CARD** Slot:  
This is used for system software updating and archiving/ accessing critical images.

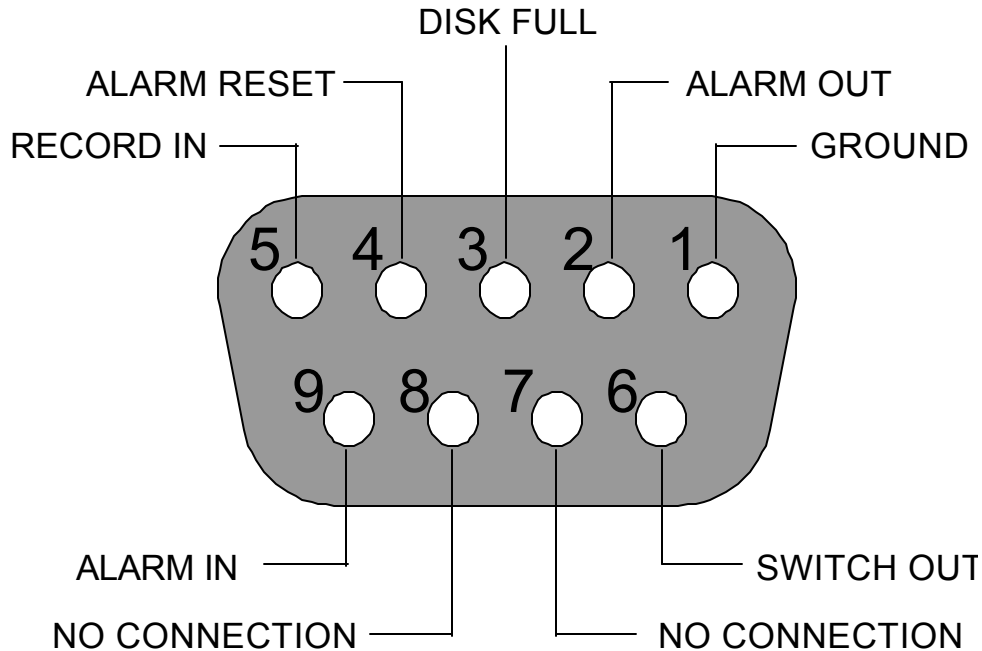
## 2.2 Rear View



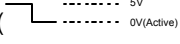
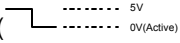
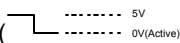
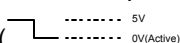
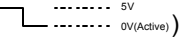
- ②5 **VIDEO IN** Connector: This BNC connector is used to connect the video output from a camera or a MUX (multiplexer) to the DVR.
- ②6 **FROM MUX MAIN MONITOR** Connector: This BNC connector is used to connect the live video output from a MUX to the DVR.
- ②7 **AUDIO IN** Connector: This connector is used to connect the audio output from a camera, a MUX, or other audio device to the DVR.
- ②8 **ETHERNET 10/100** Connector: This is one standard RJ-45 connector for 10/100 Mbps Ethernet networks.
- ②9 **RS-485** Port: The RS-485 communication ports function as connectors when two or more units are connected in series to expand the storage capacity.
- ③1 **RS-232** Port: The RS-232 communication port functions as a connector to an external control device. Please refer to for more details.
- ③2 **VIDEO OUT** Connector: This connector provides the unit's composite video signal to a MUX.
- ③3 **MONITOR** Connector: This connector provides the unit's composite video or a MUX's live signal if connected to a display device.
- ③4 **AUDIO OUT**: This provides the units audio signal to a speaker.
- ③5 **ALARM I/O**: This is a 9-PIN D-SUB connector including **SWITCH OUT, GROUND, ALARM OUT, DISK FULL, RECORD IN, ALARM RESET,** and **ALARM IN** for connecting with external devices. Please refer to the next section (2.3) for details.
- ③6 **Plug Inlet**: The inlet connects to an external power supply. Connect a 12 Vdc UL Listed Class 2 or ITE LPS Power Supply.
- ③7 **Wire Catch**: The wire catch secures the power cord and keeps it in place (so that it does not droop or hang loosely).
- ③8 **Ground Screw**: Screw used to ground the chassis.



## 2.3 ALARM In/Out



### THIS FIGURE IS FROM THE REAR VIEW

- 1. GROUND:** Ground Contact.
- 2. ALARM OUT (OUTPUT):** This is an alarm output trigger. Connect this to external devices such as buzzers or lights. (  )
- 3. DISK FULL (OUTPUT):** This is a disk full output trigger. Connect this to external devices such as buzzers or lights. (  )
- 4. ALARM RESET (INPUT):** This pin connects to an alarm-clear device for clearing an alarm. (  )
- 5. RECORD (INPUT):** This pin connects to a record trigger device for starting a record. (  )
- 6. SWITCH OUT (OUTPUT):** This pin sends out timing signals (falling / negative) to a multiplexer and connects to a multiplexer's trigger terminal so the multiplexer can switch to use the same recording speed as the DVR. (Refer to Section 4.1.1 for multiplexer configuration.)
- 7. NO CONNECTION**
- 8. NO CONNECTION**
- 9. ALARM IN (INPUT):** This is an alarm input which can be programmed in the menu system to Normally Open or Normally Closed. (  )

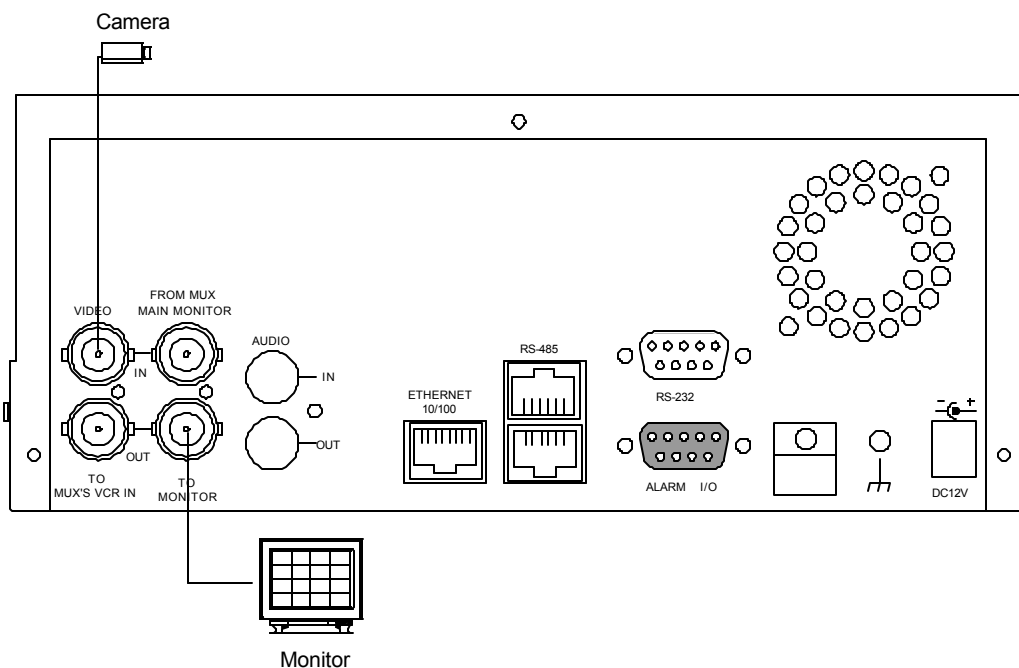
### 3. INSTALLATION

Please follow the instructions and the diagrams below to set up the system.

#### 3.1 Basic Connection

##### CONNECTING WITH A SINGLE CAMERA

Please set the **MULTIPLEXER** option to **OFF** on the **REC SETTING** page in the setup menu when it is connected with a single camera. (Please refer to Section 5.1 MULTIPLEXER option)

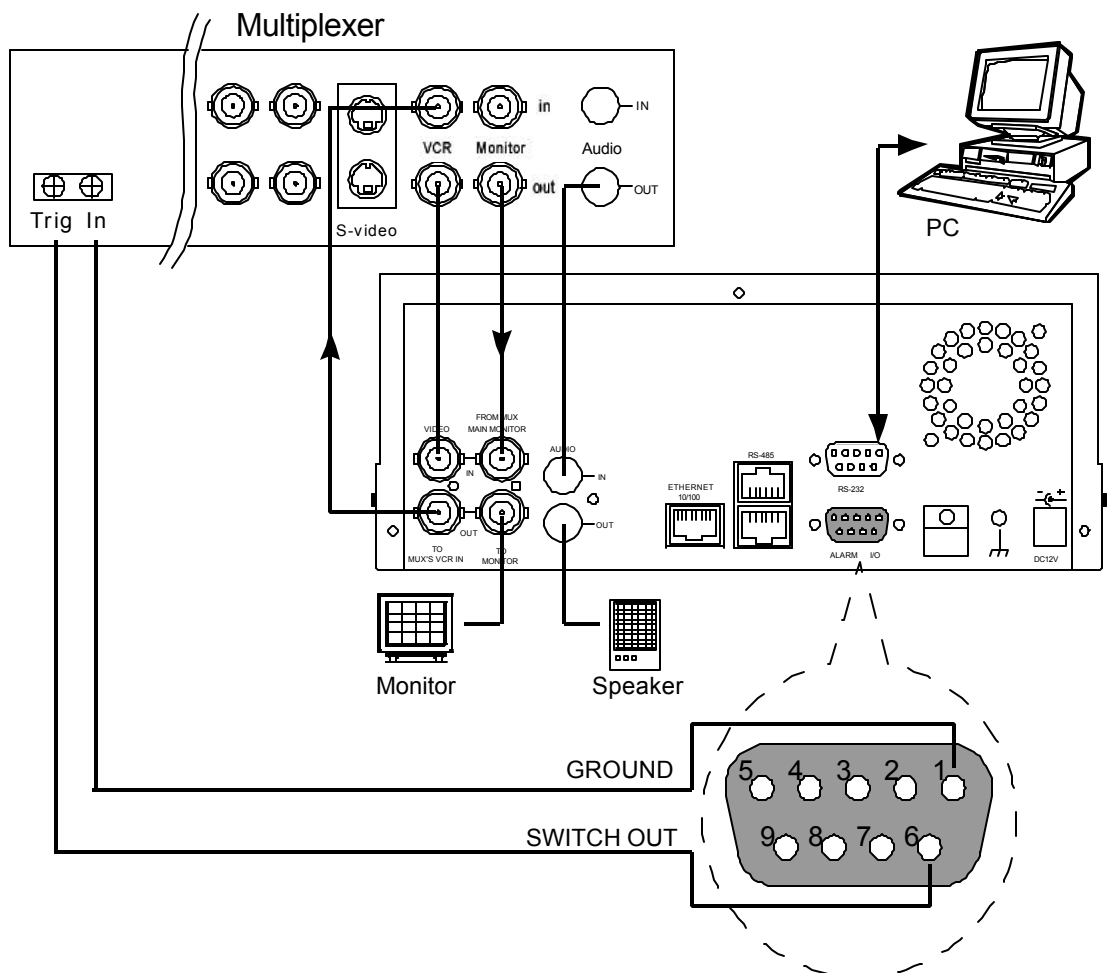


##### CONNECTING WITH A MULTIPLEXER

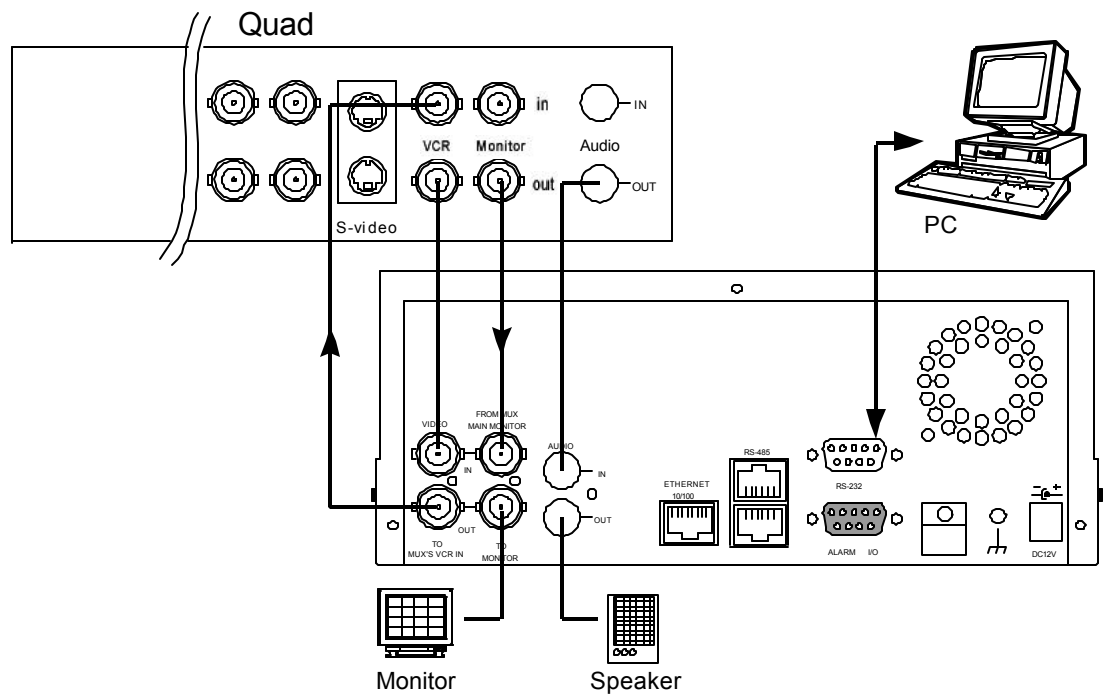
To match the multiplexer's recording speed, please set the **MULTIPLEXER** option to **ON** in the **REC SETTING** page in the setup menu when it is connected with a multiplexer. (Please refer to Section 5.1 MULTIPLEXER for the multiplexer option and Section 4.1.1 for configuration.)

##### CONNECTING WITH A QUAD

Please set the **MULTIPLEXER** option to **OFF** on the **REC SETTING** page in the setup menu when it is connected with a quad. (Please refer to Section 5.1 MULTIPLEXER for the multiplexer option and Section 4.1.1 for configuration.)

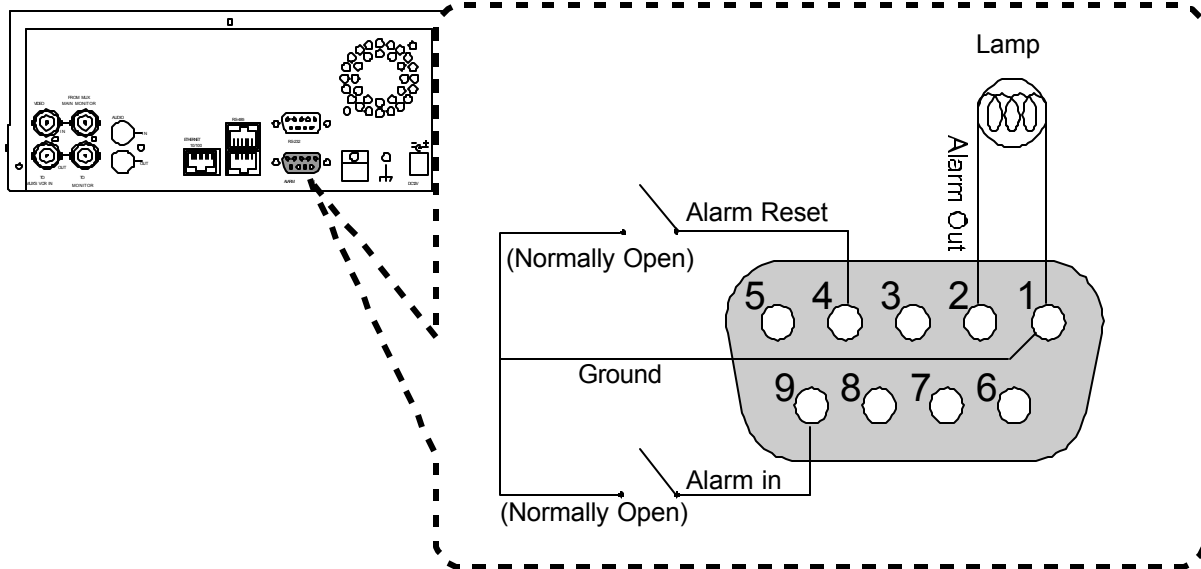


For more information on configuration, please refer to Section 4.1.1



## ATTACHING AN EXTERNAL DEVICE TO THE DVR

Connect an alarm out, alarm input, or a peripheral device as shown in the diagram below.



## 3.2 Hard Disk Drive Installation

The DVR is equipped with two compartments for hard disk drives. The unit usually comes with one hard disk drive installed in the compartment HD1, which is default-configured as a master. If you need a second hard disk drive, it should be installed in the compartment HD2 (Mobile). If there is only one hard disk drive, and it is in the mobile compartment, please set the **HD2 USAGE** option to **REC** (Please refer to Section 5.5) before proceeding to record. The jumper-settings arrangement of installed hard disk drives for the system (Table 3.2 A) is shown in the tables below.

**Table 3.2 A. The jumper settings of hard disk drives in the system**

	Location	Jumper
IDE 1	Compartment HD 1	Master (Default)
IDE 2	Compartment HD 2	Master

**Table 3.2 B. Compatible hard disk drives**

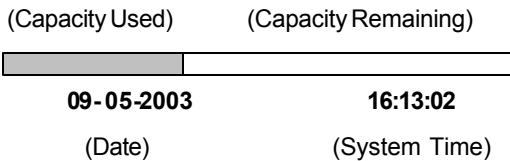
Manufacturer	Model	Capacity	Rotation
<b>Western Digital</b>	WD800AB	80GB	5400 RPM
	WD1200AB	120GB	5400 RPM
	WD800BB	80GB	7200 RPM
	WD1200BB	120GB	7200 RPM
	WD1800BB	180GB	7200 RPM
<b>Seagate</b>	ST380020A/P	80GB	5400 RPM
	ST340810A/P	40GB	5400 RPM
<b>Maxtor</b>	4A160J0-1A	160GB	5400 RPM
	4R080L0-1	80GB	5400 RPM
	6Y120L0-1	120GB	7200 RPM
	6Y200P0-1A	200GB	7200 RPM
	6Y250P0-1A	250GB	7200 RPM

**NOTE: Hard disk drives not shown on this list have not been tested by the engineering team. Alternate hard drives may work in this unit, but are not recommended unless instructed by customer service. For an updated list of the recommended hard disk drives, please contact customer service.**

### 3.3 System Information

You can display system settings information as shown on **Table 3.3 A** below at any time by pressing the **Display** button (8). In playback mode, the recorded video information is displayed. In the live or recording mode, the Manual Recording information is displayed. However, when the DVR is displaying a decoded image from a multiplexer, you must first switch the unit to the encoded image display (The pictures are switching swiftly and the light of **Monitor** button (16) is off) by pressing the **Monitor** button (16). Each sequential press of the **Display** button (8) displays a different message detailed in the following example. By default, the unit displays time, date, and an indicating bar of hard disk capacity status on a monitor as shown next.








#### Default display





Press the **Display** button (8) once; the DVR will display the following sample message plus the default display. Press the **Display** button (8) again; the unit will not display any OSD message. Press the button one more time to return to the default display.


Table 3.3 A.

Description of Table 3.3 A

<b>1+2: 59G</b>		<b>12.4 HR</b>  		(1+2: 59G): Total capacity of installed hard disk, 59 GB
<b>QUALITY: BEST</b>		<b>NTSC</b>		(12.4 HR): Total 12.4 hour recording time available
<b>MUX : OFF</b>		<b>20 F/S</b>		(  ): Timer record activated
<b>HD P</b>		<b>9K</b> 		(  ): Alarm record activated
<b>1</b>	<b>Y</b>	<b>20 G</b>	<b>39.5% P</b>	<b>QUALITY: BEST</b> ): Record quality setting, BEST
<b>2</b>	<b>Y</b>	<b>39 G</b>	<b>0.0% R</b>	<b>NTSC</b> ): NTSC system
<b>IP : 192 . 168 . 1 . 90</b>				<b>F/S</b> ): Record speed setting, 20 fields/sec
				<b>MUX: OFF</b> ): Only connected to a single camera
<b>09-05-2003 16:13:02</b>				(  ): Audio function activated

(): Indicate which HDD is activated

(): The image file size


(): Hard disk compartment


: **Y** Hard disk installed; . No hard disk installed

**SIZE 20G**): The capacity of the installed hard disk

**OS**): Percentage of system; **R**: Recording; **P**: Playback

(**IP : 192 . 168 . 1 . 90**): IP Setting of the Ethernet communication

(): External signal

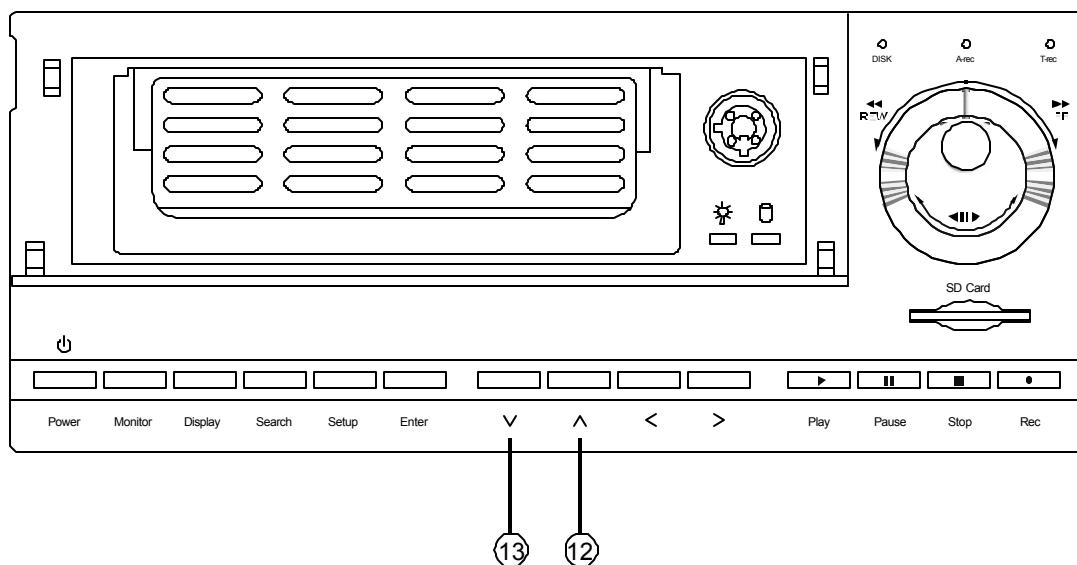
(): System Busy: Command not received

### 3.4 Updating System Software

If the system software of the DVR needs to be upgraded, please take the following steps to safely update it.

**Important: Before carrying out the following procedures, please ensure the SD card is working and the software system file on the SD card is intact.**

1. Turn off the DVR.
2. Insert the SD card into the built-in SD slot on the front of the unit.
3. Press and hold the **12 Up** and **13 Down** buttons simultaneously, and then turn on the unit.
4. Keep holding down the buttons until the DVR sounds a tone and display the message “**XXXXXX BYTES READ**” Now the DVR is updating the system software, which will take approximately 90 seconds to process.
5. Restart the unit when the device sounds a tone twice and displays the message “**PLEASE RESTART**” The process is complete.  
(If you have followed the procedures 1-5 and the unit is not able to power on, please check if the SD card you are using is functioning and the file is intact. After this has been completed, start procedures 1 - 5 over again.)
6. Verify the version of the system software. (Please refer to Section 5.6 VERSION option)



**Warning: Don't interrupt the process while the unit is updating itself or insert an SD card that contains no updated software. If these instructions are not followed, the system may freeze.**

## **4. BASIC OPERATIONS**

This section shows you how to operate and manage the DVR.

### **4.1 Configure Recording Settings**

#### **Recording Time settings (Recording Rate and Picture Quality Setting)**

Recording time will vary depending on the image size, recording rate, and the capacity of the hard disk drives. Generally, the DVR comes with a built-in hard disk drive for continuous recording from one to four weeks under most recording conditions. Table 4.1.2 shows the possible recording times based on an 80GB hard disk drive at certain refresh rates and the corresponding image quality. With one or more hard disk drive(s) in operation, please calculate the necessary recording time using the table below. For example, if the unit is set to record images with **BEST** quality at a **60 fps** record rate, normally an 80GB hard disk drive will be filled in 15 hours (See the gray area in the table). If a 240GB hard disk drive is in use under the same refresh rate and picture quality, it will be filled in 45 hours (3 times the rate of an 80GB hard disk drive).

#### **Set up the REC Time Mode when a multiplexer is connected**

If a multiplexer is connected, for optimum image recording and playback, the record speed of the multiplexer must be correctly adjusted to match the DVR and set the **MULTIPLEXER** option on the setup menu to **ON**. This can be done by the method detailed below.

#### **4.1.1 Multiplexer Setup**

Connect the SW. OUT terminal in 9-PIN D-SUB connector on the rear panel of the DVR to the multiplexer's trigger contact. The DVR will provide the timing signal to the multiplexer.

**Note: The DVR will only send out a timing signal while it is in RECORD mode.**

In the multiplexer's menu, set the recording mode to SYNC for recording in all DVR refresh rates except 60fps and 30fps. In SYNC mode, if the DVR changes the recording speed, the multiplexer will automatically adjust the recording to match. Be sure to set your multiplexer's timing signal to falling. If you wish to record in 60fps or 30fps, put the multiplexer in real-time instead of SYNC. 60fps and 30fps timing signals are constantly negative/falling.



Table 4.1.2

MUX ON												
Audio ON		Possible Recording Time HDD=80GB ( hour )										
Image Quality	BEST			26.8	44.4	95.8	208.5	380.6	598.5			
	HIGH			33.4	55.3	118.8	255.7	459.6	708.9			
	STANDARD			44.4	73.2	156.1	330.5	580.0	869.5			
	BASIC			66.1	108.4	227.6	467.3	785.9	1124.0			
Refresh Rate (Field/Sec)		60	30	20	12	5.5	2.4	1.22	0.71	1/4	1/6	1/8

MUX ON												
Audio OFF		Possible Recording Time HDD=80GB ( hour )										
Image Quality	BEST	15.0	18.0	27.1	45.1	99.3	225.9	442.7	768.0	2177.7	3262.0	4346.4
	HIGH	18.0	22.5	33.8	56.4	124.2	282.3	553.4	960.1	2722.1	4077.6	5433.0
	STANDARD	22.5	30.1	45.1	75.3	165.6	376.5	737.9	1280.1	3629.5	5436.8	7244.0
	BASIC	30.1	45.1	67.7	112.9	248.4	564.7	1106.9	1920.2	5444.3	8155.2	10866.1
Refresh Rate (Field/Sec)		60	30	20	12	5.5	2.4	1.22	0.71	1/4	1/6	1/8

MUX OFF												
Audio ON		Possible Recording Time HDD=80GB ( hour )										
Image Quality	BEST			35.6	53.1	104.2	216.2	387.2	603.9			
	HIGH			44.4	66.1	129.0	264.9	467.3	715.1			
	STANDARD			58.9	87.4	169.4	342.1	589.3	876.4			
	BASIC			87.4	129.0	246.4	482.7	797.3	1131.7			
Refresh Rate (Field/Sec)		60	30	**20	**12	**5.5	2.4	1.22	0.71	1/4	1/6	1/8

MUX OFF												
Audio OFF		Possible Recording Time HDD=80GB ( hour )										
Image Quality	BEST	15.0	18.0	36.1	54.2	108.4	234.9	451.8	777.1	2186.7	3271.1	4355.4
	HIGH	18.0	22.5	45.1	67.7	135.5	293.6	564.7	971.3	2733.4	4088.9	5444.3
	STANDARD	22.5	30.1	60.2	90.3	180.7	391.5	753.0	1295.1	3644.6	5451.8	7259.1
	BASIC	30.1	45.1	90.3	135.5	271.0	587.3	1129.5	1942.7	5466.9	8177.8	10888.6
Refresh Rate (Field/Sec)		60	30	**20	**12	**5.5	2.4	1.22	0.71	1/4	1/6	1/8

NOTE: Recording times on the tables above are estimated.

NOTE: No audio function available at refresh rates: 60 fields/sec, 30 fields/sec, 1/4 fields/sec, or 1/8 fields/sec.

\*\* : For MUX Off Mode, recording rate 20F/S would actually be 15 F/S, 12F/S would be 10 F/S, and 5.5 F/S would be 5F/S.

(This adjustment is to avoid image shaking during playback at the same speed.)

## 4.2 Recording Operations

This section details the way to record video onto hard disk drives. Before continuing with the record function, please configure the recording settings properly to your needs.





### 4.2.1 Manual Recording

When the DVR is in live display mode, take the following steps to start recording:

- (1) In live display, press the **REC** button **6** to record video onto a hard disk drive with the corresponding programmed recording settings. The monitor should display a flashing **REC** message and the **REC** button **6** will light up indicating the DVR is in the recording status.
- (2) Press the **STOP** button **5** to stop recording any time.
- (3) To access the most recent video, press the **PLAY** button or refer to Section 4.4 for more details.

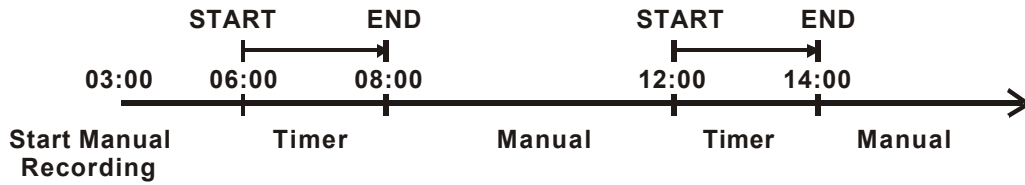
### 4.2.2 Timer Recording

Timer recording provides two periods of time each day in a weekly table which programs the DVR to turn on and off at specified times. This way the DVR will start and stop recording according to the programmed schedule. Please take the following steps to program the scheduled recording.

- (1) Press the **Setup** button **9** to enter the **MAIN MENU**.
- (2) Select the **CLOCK / TIMER** and press the **Enter** button **15** to enter the **CLOCK / TIMER** page.
- (3) Select the **TIMER** followed by **SET**.
- (4) Press the **Enter** button **15** to enter the **REC SCHEDULE** table.
- (5) You can set by using the “<” button **11** and the “>” button **14** to locate the specific day/hour/minute and use the “^” button **12** and the “v” button **13** to set the day/hour/minute.
  - a. You can also set by using the **Shuttle Ring** and the **Jog Dial**.  is the equal of the “<” button **11**,  is the equal of the “>” button **14**,  is the equal of the “^” button **12** and  is the equal of the “v” button **13**.
  - b. The time is displayed in a 24-hour clock format.
- (6) After scheduling is completed, press the **Enter** button **15** and set **OK** to save the setting or select **CANCEL** to leave the page without saving the settings.
- (7) To activate the programmed recording schedule, set the **REC ENABLE** to **ON**. As the scheduled recording is on, the red indicator of the Timer Record **17** will be on as well. To deactivate it, set to **OFF**.
- (8) Press the **STOP** button **5** during the scheduled recording to stop it at any time. If you wish to continue the scheduled recording, press the **REC** button **6** to proceed.

**NOTE:** You can proceed to start the scheduled recording from the current time if it is in the scheduled interlude as soon as setting is completed, and you exit the menu.

**NOTE:** If you activate the recording function before the scheduled recording, the unit will record as shown in the diagram below and keep those images in different files.



**MAIN MENU**

RECORD  
ALARM  
CLOCK / TIMER  
COMMUNICATION  
DISK  
SYSTEM

GOTO CLOCK / TIMER PAGE



**CLOCK / TIMER**

CLOCK : SET  
REC ENABLE : OFF  
TIMER : SET

MAIN PAGE

SET REC SCHEDULE



**REC SCHEDULE**

START END	START END
S : 00:00-00:00	00:00-00:00
M : 00:00-00:00	00:00-00:00
T : 00:00-00:00	00:00-00:00
W : 00:00-00:00	00:00-00:00
T : 00:00-00:00	00:00-00:00
F : 00:00-00:00	00:00-00:00
S : 00:00-00:00	00:00-00:00

OK CANCEL

← → TO MOVE      ↕ TO CHANGE

**MAIN MENU**

RECORD  
ALARM  
CLOCK / TIMER  
COMMUNICATION  
DISK  
SYSTEM

GOTO CLOCK / TIMER PAGE



**CLOCK / TIMER**



CLOCK : SET  
REC ENABLE : OFF  
TIMER : SET

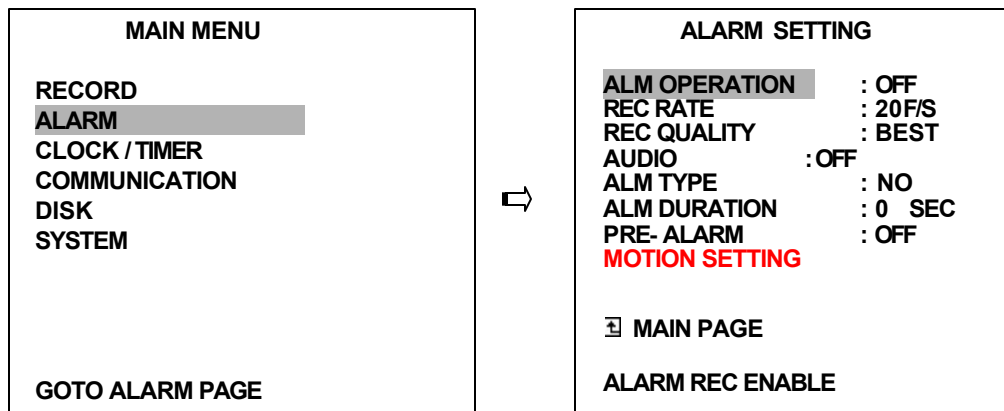
MAIN PAGE


TIMER REC ENABLE

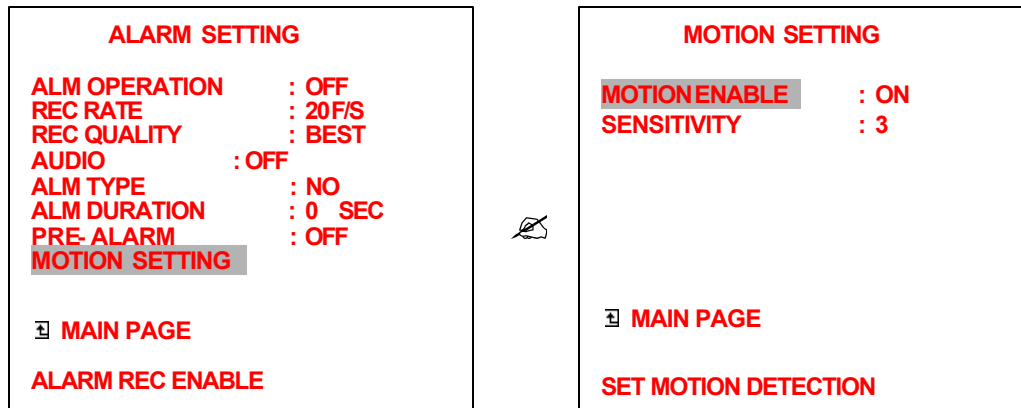
### 4.2.3 Alarm Recording

Take the following steps to activate the programmed alarm recording. For **ALM OPERATION**, **REC RATE**, **REC QUALITY**, **AUDIO**, **ALM TYPE**, **ALM DURATION**, and **PRE-ALARM** settings, please refer to Section 5.2 for more details.

- (1) Press the **Setup** button  to enter the **MAIN MENU**.
- (2) Select **ALARM** and press the **Enter** button  to enter the **ALARM SETTING**
- (3) Set the desired **REC RATE**, **REC QUALITY**, **ALM TYPE**, and **ALM DURATION** for use. If audio is required, set **AUDIO** to **ON**. If pre-alarm recording is required, set **PRE-ALARM** to **ON**.
- (4) To activate the alarm recording, set **ALM OPERATION** to **ON**. To deactivate it, set **ALM OPERATION** to **OFF**.



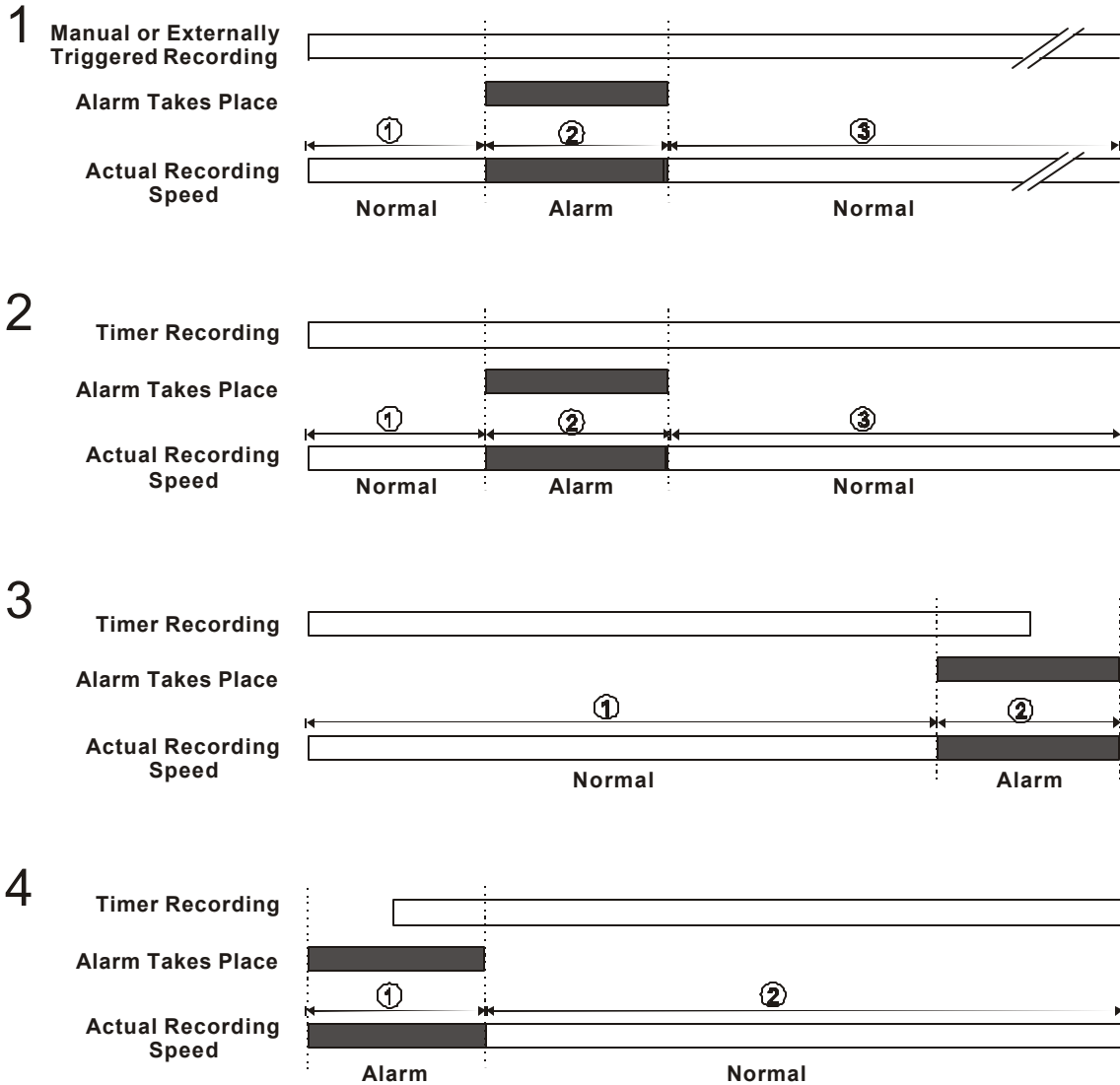
- (5) To activate the motion alarm recording, select **MOTION SETTING** and press the **Enter** button  to enter the **MOTION SETTING PAGE**. Set **MOTION ENABLE** to **ON**, and set the sensitivity level that will trigger motion alarm recording. (1 is most sensitive; 5 is least sensitive).



## 4.2.4 Externally triggered Recording

By connecting the **RECORD IN** of ALARM I/O on the rear panel of the DVR, you can activate/deactivate the recording function of a DVR. The file will be kept with a prefixed "R". Please refer to Section 2.3 for more details.

**NOTE:** The status of recording operations when an alarm takes place are shown in the diagrams below .



## 4.3 Playback Operations

This section shows you how to operate the fast, slow, and single picture playback functions, and details how the unit is to playback a file in a different operation status. Please refer to the following paragraphs specifying the relevant details. When playing a file, the monitor should display a flashing **PLAY** message and the **PLAY** button ④ will light up indicating that the DVR is in the playback status.

### Operation Status

#### A. From REC Mode to Playback Mode

(In live mode, directly press the **PLAY** button ④ to play a latest recorded video)

In recording mode, press the stop button. Press play to play back the video just recorded.

#### B. Search to Play Back a Particular Recorded Video

For this type of playback, refer to Section 4.4.

#### C. Play Back from the Oldest Data

Press and hold the stop button for 3 seconds. The “Stop” indicator will appear on the top right side of the screen. To play the oldest video, press **PLAY**.

### 4.3.1 Fast Forward/Reverse

There are 7 speeds available for playback: 1x, 2x, 4x, 8x, 16x, 30x and 100x

While playing back recorded video at recorded speed:

**Forward:** Turn the **Shuttle** dial ⑳ clockwise to view the recorded video in the forward direction at a speed faster than the recorded speed. Each subsequent turn of the shuttle clockwise increases the forward rate, as 2x, 4x, 8x, 16x, 30x and 100x.

**Reverse:** Turn the **Shuttle** dial ㉑ counterclockwise to view the recorded video in the reverse direction at a speed faster than the recorded speed. Each subsequent turn of the shuttle to the counterclockwise increases the reverse rate, as -1x, -2x, -4x, -8x, -16x, -30x and -100x.

**Normal:** Release the **Shuttle** dial ㉒ to return to the normal speed of playback.

\* You can also operate by using “<” button ⑪ and “>” button ⑭.

**NOTE:** When playing a recorded video through a multiplexer at 60 F/S or 30F/S, the playback speed is half of the recorded speed.

**NOTE:** The playback speed will be displayed on the screen. However, when playing a recorded video from a multiplexer, the playback speed will only display in encoding (multiplexing) mode. Press the **Monitor** button ⑯ to switch between decoding and encoding modes.

### 4.3.2 Slow Forward/Reverse

There are 4 speeds available for a slow playback: 1/2, 1/4, 1/8, 1/16. While playing back recorded video at the recorded speed:

- (1) Press the **PAUSE** button **3** for the slow playback mode.
- (2) **Forward:** Turn the **Shuttle** dial **20** clockwise to view the recorded video in the forward direction at a speed slower than the recorded speed. Each subsequent turn of the shuttle to the right increases the forward rate, as 1/2, 1/4, 1/8, and 1/16.
- (3) **Reverse:** Turn the **Shuttle** dial **20** counterclockwise to view the recorded video in the reverse direction at a speed slower than the recorded speed. Each subsequent turn of the shuttle to the left increases the reverse rate, as -1/2, -1/4, -1/8, and -1/16.
- (4) **Normal:** Release the **Shuttle** dial **20** and then press the **PLAY** button **4** to return to the normal speed of playback.

\* You can also operate by using "<" button **11** and ">" button **14**.

### 4.3.3 PlayBack Picture-by-Picture

While playing back recorded video at the recorded speed:

- (1) Press the **PAUSE** button **3** for the picture-by-picture mode.
- (2) There are two ways, by **PAUSE** button or by **JOG**, available to play in the picture-by-picture mode, but the **PAUSE** button **3** can only function in a forward direction; the other, **JOG** dial **21**, can act in both a forward and a backward direction, as well as picture-by-picture.

By **PAUSE** button **3** :

Press the **PAUSE** button **3** to display one frame/field of a picture at a time in the forward direction. **(When playing back video recorded by a multiplexer, each sequential press of the PAUSE button **3** will display each camera in sequence.)**

By **JOG** dial **21** :

Turn the **JOG** dial **21** clockwise to display one frame/field of a picture at a time in the forward direction. Turn the **JOG** dial **21** counterclockwise to display one frame/field of a picture at a time in the backward direction.

- (3) Press the **PLAY** button **4** to return to the normal speed of playback.

### 4.3.4 PlayBack Recorded Video from an HDD in the Mobile Rack

To play back a recorded video from HD 2, take the following steps:

- (1) Press the **Setup** button **9** to enter the setup menu.
- (2) Select **DISK** and press the **Enter** button **15** to enter the **DISK SETTING** page.
- (3) Set the **HD2 USAGE** to **REC** and then exit the setup menu.
- (4) Use the search function to access desired recorded video. For specific operation details please refer to Section 4.4 (Search Operations).

## 4.4 Search Operations

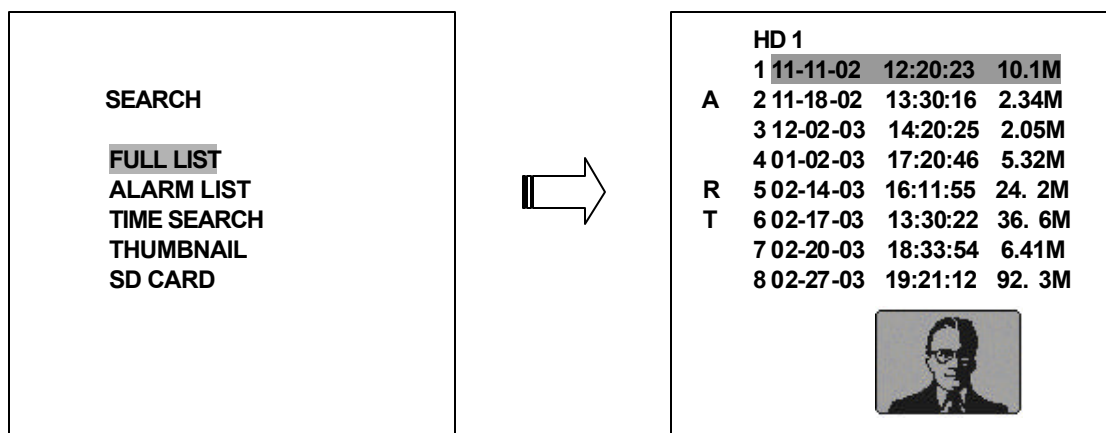
This section shows you how to access recorded video.

### 4.4.1 Full List Search

Take the following steps to proceed with the full-list search function.

- (1) Press the **Search** button **10** to enter the search mode.
- (2) Select the **FULL LIST** and press the **Enter** button **15** to access the complete list of recorded video.
- (3) Highlight the specific recorded video you wish to view and press the **Enter** button **15** to display the selected video.

(Key Operation: Press the **12** “^” and **13** “v” buttons, to select a video; press the **11** “<” and **14** “>” buttons, to flip over a page.)



**NOTE:** T: Timer recording; R: External trigger recording; A: Alarm recording.

**NOTE:** The maximum number of lists, for a respective HDD, is 3,000.

### 4.4.2 Alarm list Search

Take the following steps to proceed with the alarm list search function.

- (1) Press the **Search** button **10** to enter the search mode.
- (2) Select the **ALARM LIST** and press the **Enter** button **15** to access the complete list of alarm-event recorded video.
- (3) Highlight the specific recorded video and press the **Enter** button **15** to display the selected video.

(Key Operation: Press the **12** “^” and **13** “v” buttons, to select a video; press the **11** “<” and **14** “>” buttons, to flip over a page.)

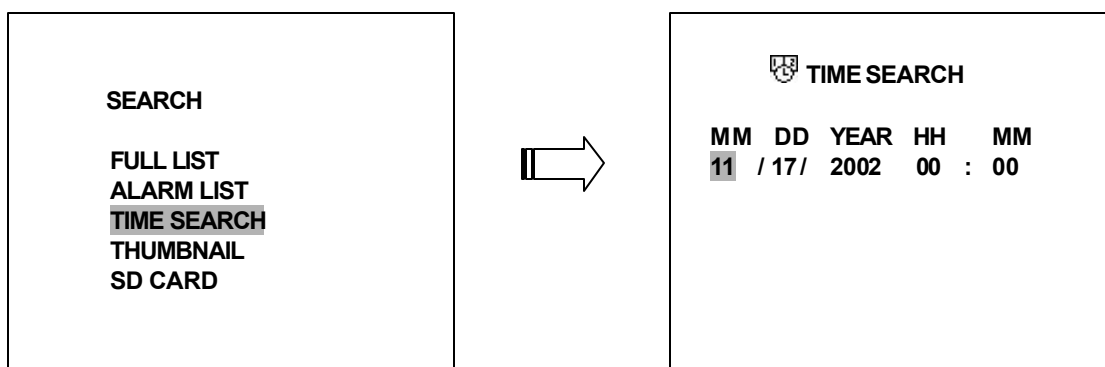




### 4.4.3 TIME Search

Take the following steps to proceed with the time-list search function.

- (1) Press the **Search** button ⑩ to enter the search mode.
- (2) Select the **TIME SEARCH** and press the **Enter** button ⑮ to access the timesetting page.
- (3) Set the time period you wish to search for the recorded video.
- (4) Press the **Enter** button ⑮ to start searching and displaying the concerned image.
- (5) If no video is found, please return to the timesetting page and repeat steps (3) and (4) again for another search.

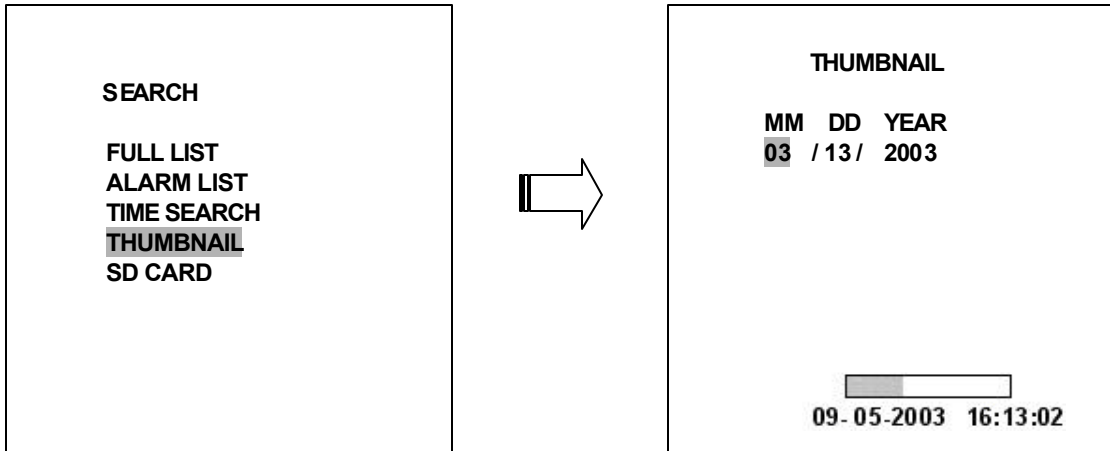


### 4.4.4 THUMBNAIL Search

Take the following steps to proceed with the time list search function.

- (1) Press the **Search** button ⑩ to enter the search mode.
- (2) Select the **THUMBNAIL** and press the **Enter** button ⑮ to access the thumbnail page.
- (3) Set the date you wish to search for the recorded video.
- (4) Press the **Enter** button ⑮ to start searching and displaying the specific images.
  - a. You can set by using the “<” button ⑪, the “>” button ⑭, the “^” button ⑫ and the “v” button ⑬ to move eye focus.
  - b. You can also set by using the **Shuttle Ring** and the **Jog Dial** to move eye focus. ⌚ is the equal of the “<” button ⑪, ⌚ is the equal of the “>” button ⑭, ⌚ is the equal of the “^” button ⑫ and ⌚ is the equal of the “v” button ⑬.

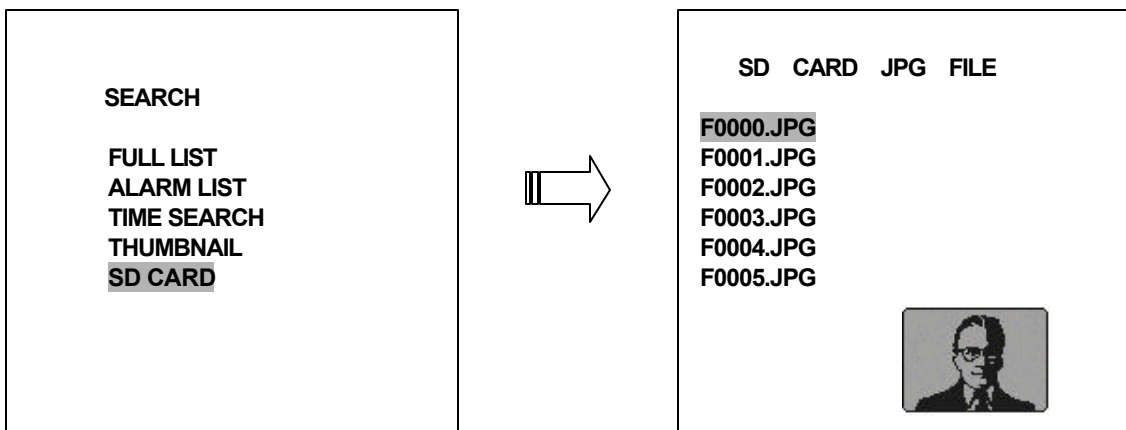
- (5) There are 5 levels of recording range modes to choose from: **1 Hour, 10 Minutes, 1 Minute, 10 Seconds** and **1 Second**. Select the specific field and press the **Enter** button **(15)** to enter the next level. If you want to return to the previous level, please press the **Setup** button **(9)**.
- (6) Once you reach the critical point at any level, the user can start playback by just clicking the **PLAY** button **(4)**.



#### 4.4.5 SD CARD Search

Take the following steps to proceed with the time-list search function.

- (1) Insert an SD Card into the SD card slot on the front of the unit.
- (2) Press the **Search** button **(10)** to enter the search mode.
- (3) Select the **SD CARD** and press the **Enter** button **(15)** to access the complete list of JPG files.
- (4) Highlight the specific JPG file and press the **Enter** button **(15)** to display the image.
- (5) If you need another, please return to the SD card JPG file list page and repeat steps (3) and (4) again for another search.



**NOTE:** If you would like to delete a JPG file in the SD card, please return to **SD CARD JPG FILE** list page and highlight the specific JPG file and press the **Setup** button **(9)** and then select the **“Yes”** to delete the image.

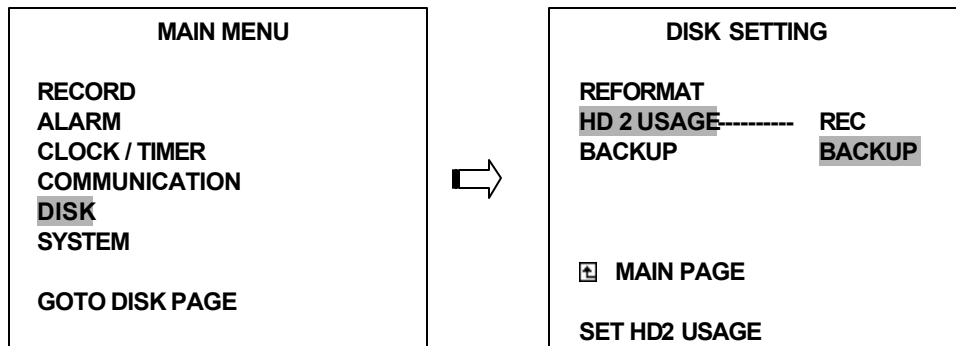
## 4.5 Data Backup

### 4.5.1 Mobile Rack HD Backup Operations

There are three ways available to duplicate the recorded video from HD 1 (Fixed HD) to HD 2 (Mobile Rack HD). Please take the following steps to proceed.

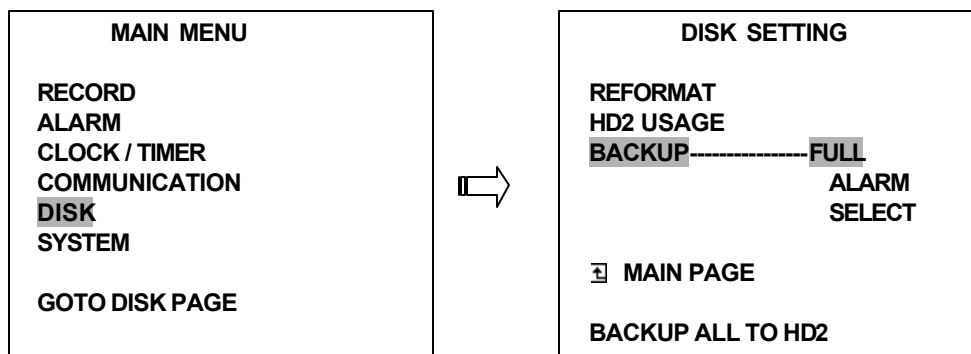
**Set HD 2 to BACKUP first. Take the following steps.**

- ✍✍ Press the **Setup** button **9** to enter the setup mode and select the **DISK**.
- ✍✍ Highlight **DISK** and press the **Enter** button **15** to enter the **DISK SETTING** page.
- ✍✍ Then set **HD 2 USAGE** to **BACKUP**.



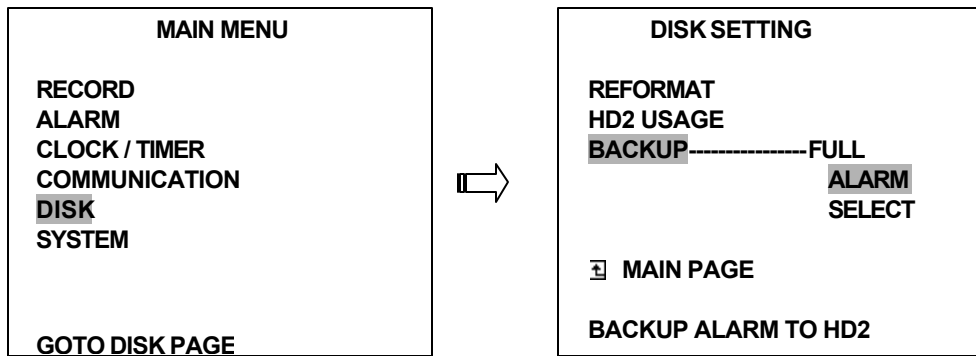
(1) **FULL**: Duplicate all the recorded video from HD1 to HD2.

- ✍✍ Stay on the **DISK SETTING** page.
- ✍✍ Use the “**^**” and “**v**” buttons, **12** and **13**, to highlight **BACKUP**, select **FULL**, then press the **Enter** button **15** to proceed.



(2) **ALARM**: Duplicate all the alarm-event recorded video from HD 1 to HD2.

- ✍✍ Stay on the **DISK SETTING** page.
- ✍✍ Use the “**^**” and “**v**” buttons, **12** and **13**, to highlight **BACKUP**; select **ALARM**, then press the **Enter** button **15** to proceed.



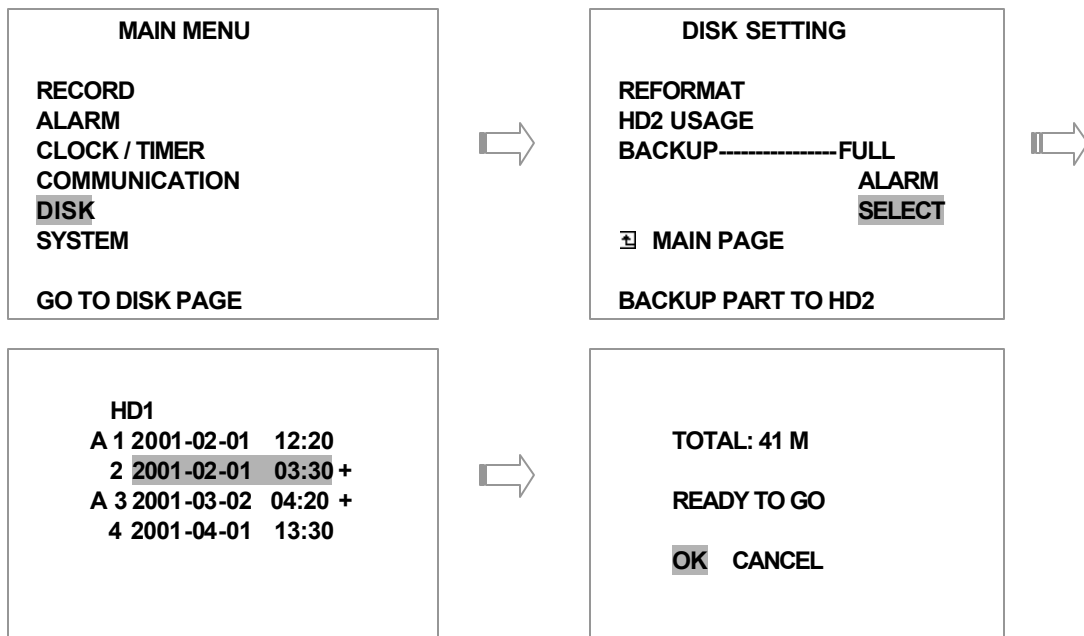
(3) **SELECT:** Duplicate a particular recorded video from HD1 to HD2.

*✂* Stay on the **DISK SETTING** page.

*✂* Use the “^” and “v” buttons, **12** and **13**, to highlight **BACKUP**, select **SELECT** and then press the **Enter** button **15** to list all the recorded video.

*✂* Press the “^” and “v” buttons, **12** and **13**, to select the desired clip and press the **Search** button **9** to mark it.

After completing the selection, press the **Enter** button **15** to proceed.



**NOTE:** If the capacity of HD 2 is not sufficient to store all selected video, a warning message “HD2 SPACE NOT ENOUGH” will be displayed on the screen. Please, insert a larger capacity of hard disk drive and start the process all over again.

## 4.5.2 Security Digital Card (SD Card) Backup Operations

The SD card slot on the front of the unit has three functions as shown below:

### 1. Archive Single image Clips into SD Card

Please take the following steps to archive a specific image on an SD card.

1. Insert an SD Card into the SD card slot on the front of the unit.
2. Start playing back the recorded video. (When playing back recorded video made by a multiplexer, you must get into the multiplexing mode and display picture by picture in order to select the desired image for archiving. Press the **Monitor** button **16** to get into the multiplexing mode so that the light of the **Monitor** button **16** is off and the pictures are switching swiftly)
3. Press the **PAUSE** button **3** to freeze the desired pictures.
4. Press the **Enter** button **15** to save the image in the SD Card.
5. The quantity of pictures that can be stored depends on the SD card capacity. You can have the saved images printed out in any computer. The image is stored in the JPEG compressed format. If more than one clip is stored in a SD card, file names will be assigned in sequence as shown below.

**SAVE TO J0000.JPG**

**SAVE TO J0001.JPG**

...

**SAVE TO J000N.JPG**

### 2. Backup the System setting info into SD Card.

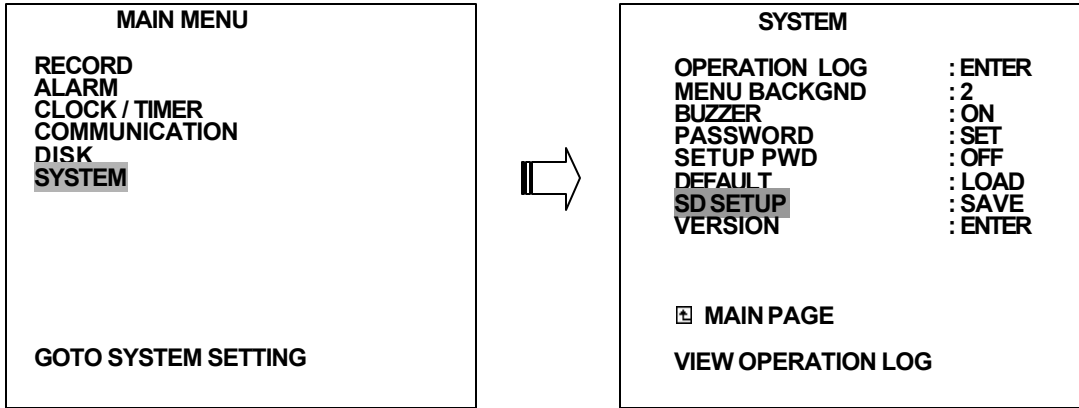
The DVR offers a quick setup method by using an SD card. If a user wants to set many DVR devices with the same settings, the DVR can save all of the settings in the SD card, then transfer it to another DVR.

#### Save all settings onto the SD card:

- ✍️ Insert an SD card into the SD card slot.
- ✍️ Press the **Setup** button **9** to enter the setup mode and select the **SYSTEM**.
- ✍️ Highlight **SYSTEM** and press the **Enter** button **15** to enter the **SYSTEM SETTING** page.
- ✍️ Set **SD SETUP** to **SAVE**. Then the system setting info will auto save into SD card.

#### Transfer the system settings info from one the DVR to another:

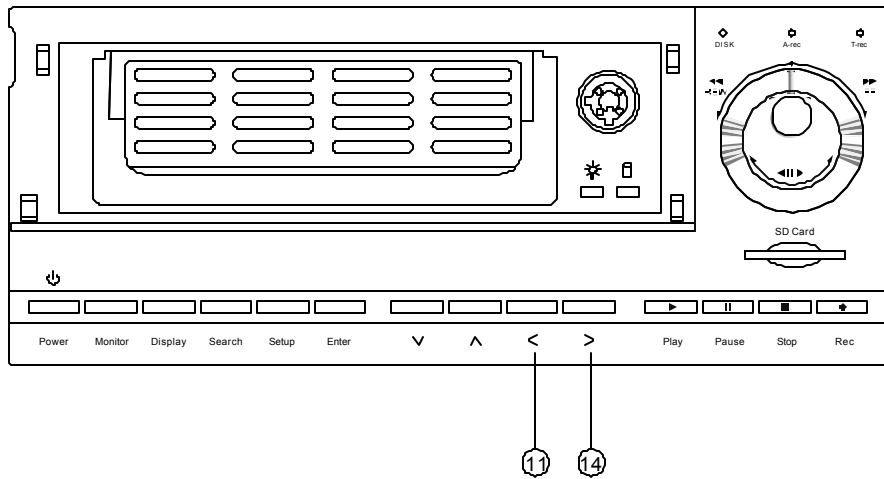
- ✍️ Insert the SD card which has stored the system settings info into the DVR.
- ✍️ Press the **Setup** button **9** to enter the setup mode and select the **SYSTEM**.
- ✍️ Highlight **SYSTEM** and press the **Enter** button **15** to enter the **SYSTEM SETTING** page.
- ✍️ Then set **SD SETUP** to **LOAD**.



### 3. Updating System Software (Please refer to Section 3.4 for more details.)

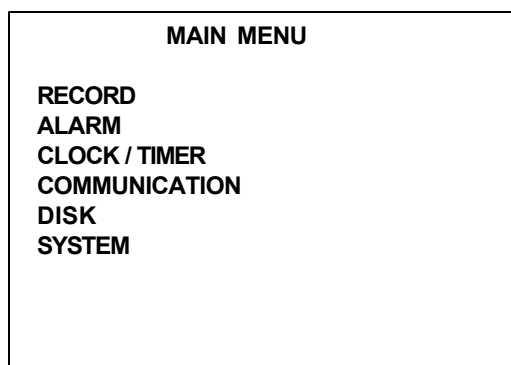
## 4.6 Key Lock Operation

The Key lock operation protects the unit against unauthorized use by disabling the entire front panel controls. Simultaneously press these two **11 Left** and **14 Right** buttons (as shown below) for at least 3 seconds to lock the unit; to release the **Key Lock**, simultaneously press these two buttons again.



## **5. MENU SETUP**

There are 6 categories for operation settings in the setup menu system as shown below. The following sections will instruct you step by step to configure the operation settings and state each menu's purpose and options. Press the **Setup** button ⑨ to access the setup menu. Once inside the menu system, the on-screen menu allows you to set up the key features of the unit. The functions of various buttons within the menu-setup mode are described in the paragraphs below.



### **KEY FUNCTIONS**

**Setup** button ⑨ :

Press to enter the setup menu. Press again to exit the setup mode.

“^” “v” buttons ⑫ and ⑬ :

Press to select the desired item or entry for setting.

“<” “>” buttons ⑪ and ⑭ :

Press to highlight the desired option or to select the context for setting.

**Enter** button ⑮ :

Press to enter the selected item and to save the setting.

**Shuttle Ring** ⑳ :

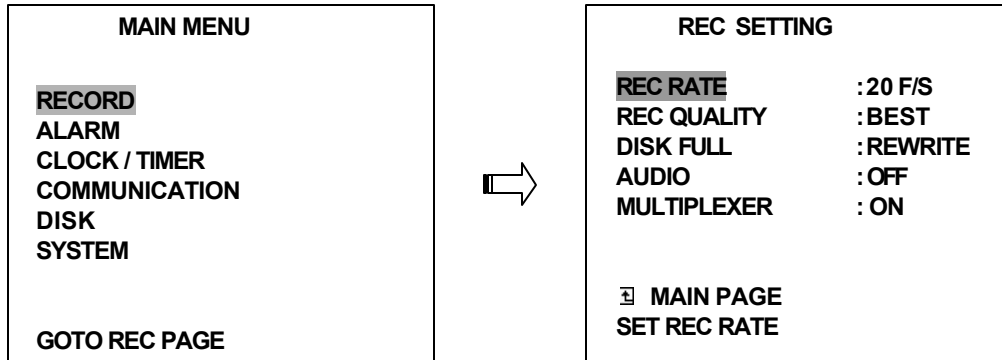
Turn to highlight the desired option or to select the context for setting.

**Jog Dial** ㉑ :

Turn to select the desired item or entry for setting.

## 5.1 REC SETTING

This page allows you to set the recording rate and recording quality, and enables you to continue recording when the disk is full.



### REC RATE:

This option is for adjusting the number of pictures recorded per second onto a storage disk. The recording rate controls the frequency at which the number of video pictures can be recorded.

? There are 11 different recording rates you can select from: **60F/S (60 Fields Per Second)**, **30F/S**, **20F/S**, **12F/S**, **5.5F/S**, **2.4F/S**, **1.22F/S**, **0.71F/S**, **1 F/4S**, **1F/6S**, **1F/8S**.

Please refer to the table in Section 4.1.2 for details on recording times.

### REC QUALITY:

This option determines the image quality to be recorded. The DVR stores images in the compressed format and allows the image quality to be altered by the image size. There are 4 levels of image quality you can select from: **BEST**, **HIGH**, **STANDARD**, and **BASIC**. Selecting the BEST image for use provides higher-resolution recorded images, and normally takes up more storage space than a HIGH, STANDARD or BASIC image does.

### DISK FULL:

This option determines the way to utilize storage media in case of a full disk.

**REWRITE:** When the hard disk is full, the device continues recording by displacing the old data.

**STOP:** When the hard disk is full, the device will stop recording.



**AUDIO:**

This option determines the way to record sound if necessary

**ON:** Enables AUDIO recording.

**OFF:** Disables AUDIO recording.

**NOTE:** Audio function can only be activated in the following refresh rates: **20, 12, 5.5, 2.4, 1.22, 0.71 fields/sec**

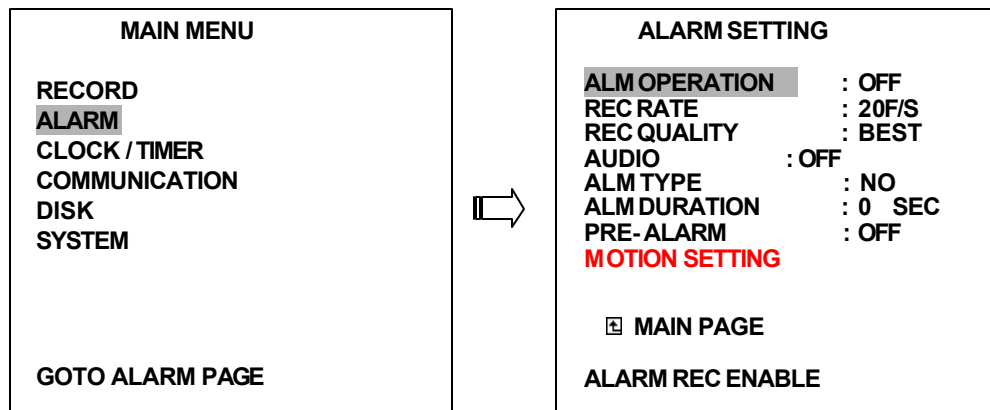
**MULTIPLEXER:**

For optimum image recording, please set this option to **ON** when the DVR is connected to a multiplexer for use. Set this option to **OFF** when it is only connected to a single camera or Quad processor.

**Note:** For multiplexer (MUX) setup, refer to Section 4.1.1

**5.2 ALARM SETTING**

This menu allows users to program the configuration of alarm recording only when an alarm input is activated. The device will record as long as the alarm input is activated.



**ALM OPERATION:**

This option determines whether to activate/deactivate the alarm recording when it detects an alarm input.

**ON:** The device activates the alarm recording when it detects an alarm input.

**OFF:** The device ignores the alarm signal when it detects an alarm input.

**RECRATE:**

This option is for the purpose of adjusting the number of pictures recorded per second onto a hard disk when an alarm input is activated. There are 5 different record speeds you can select from: **60F/S (60 fields per second)**, **30F/S**, **20F/S**, **12F/S**, and **REMAIN**. If you select **REMAIN** for use, the device will record images at the same speed as set on the **REC** page.

### REC QUALITY:

This option determines the image quality to be recorded when an alarm input occurs. There are 4 levels of image quality to choose from : **BEST, HIGH, STANDARD, and BASIC**. The table below shows the level of image quality with the corresponding compression ratio and image size.

Image Quality	Compression Ratio			
	Best	High	Standard	Basic
Image Size	48KB	32KB	21KB	16KB

### AUDIO :

This option determines the way to record sound if necessary.

**ON:** Enables AUDIO recording.

**OFF:** Disables AUDIO recording.

**NOTE: Audio function can only be activated in the following refresh rates: 20, 12, 5.5, 2.4, 1.22, 0.71 fields/sec**

### ALM TYPE:

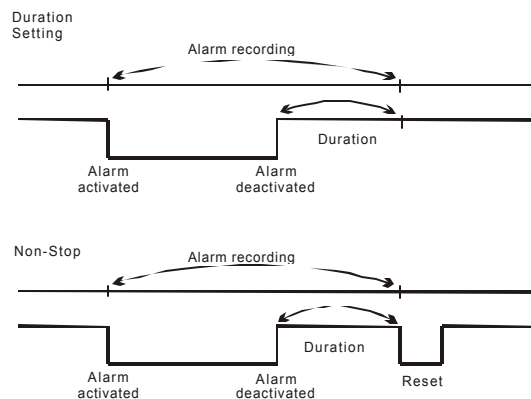
This option allows users to set a type of alarm input corresponding to the sensor signal in use.

**NO:** Normally Open. This is to be used with the type of alarm sensor whose contact remains open in normal conditions and closes in activation.

**NC:** Normally Closed. This is to be used with the type of alarm sensor whose contact remains closed in normal conditions and opens in activation.

### ALM DURATION:

This option allows users to set alarms for a certain duration. You can select one of the six following options: **0 SEC, 30SEC, 1 MIN, 5 MIN, 10 MIN, and NON-STOP**.



**NOTE: Recording may be interrupted at the time of Alarm-in or Alarm-out.  
LIVE images may be interrupted at the time of Alarm-out.**

### PRE-ALARM:

This option allows for images prior to alarm trigger to be recorded on the hard disk drive. When an alarm is triggered, the device will record the images prior to the alarm for 5 seconds. (20 fields/sec)

**ON:** Enables this function.

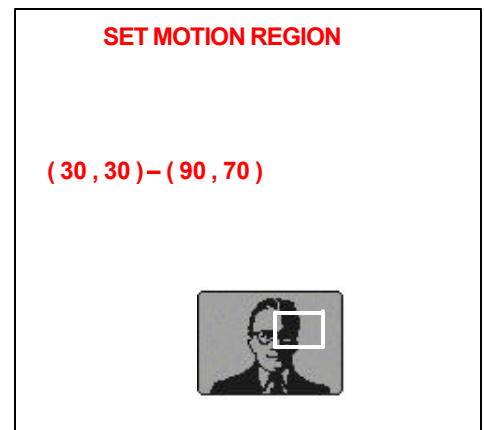
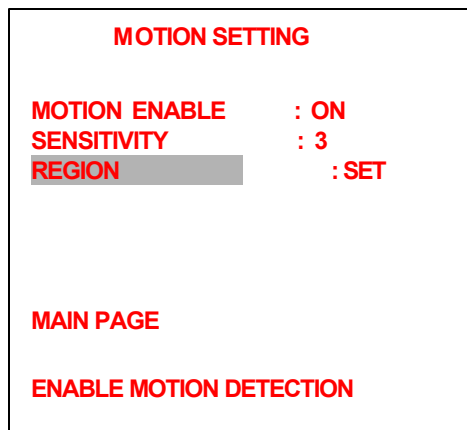
**OFF:** Disables this function.

**NOTE: If the device is already under recording mode before alarm occurs, the pre-alarm recording will not take effect.**

### MOTION SETTING:

The motion detection function is convenient for people without an alarm trigger input, but also can be used with an alarm trigger input at the same time. If this function is enabled, the object movement would trigger the alarm recording just like the outside trigger signal, such as a door switch. Before using the motion detection function, please turn the **ENABLE** option as **ON**, and set the **SENSITIVITY** (1 ~ 5) to a suitable value.

**NOTE: The MOTION ENABLE option can not be activated when the MULTIPLEXER option ( in REC SETTING page ) is set to ON. The motion detection feature is for single camera use only.**



### MOTION ENABLE:

This option enables / disables the motion detection.

**ON:** Enables the motion detection.

**OFF:** Disables the motion detection.

### SENSITIVITY:

This option allows users to set the motion sensitivity.

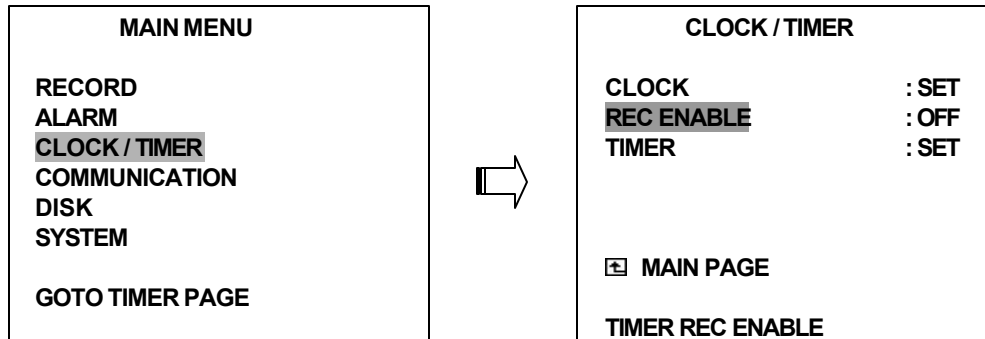
**1** is the most sensitive setting. **5** is the least sensitive setting.

### REGION

This option allows users to set the motion region.

## 5.3 CLOCK / TIMER

The DVR provides a weekly table, consisting of two periods of time each day for scheduled recording. This option allows you to set the time each day that the DVR will start and stop recording.



### CLOCK:

This entry allows users to set the system time.

**NOTE:** Clock data is retained for about 3 months after the 15-hour power supply is used up (Power On mode).

### REC ENABLE:

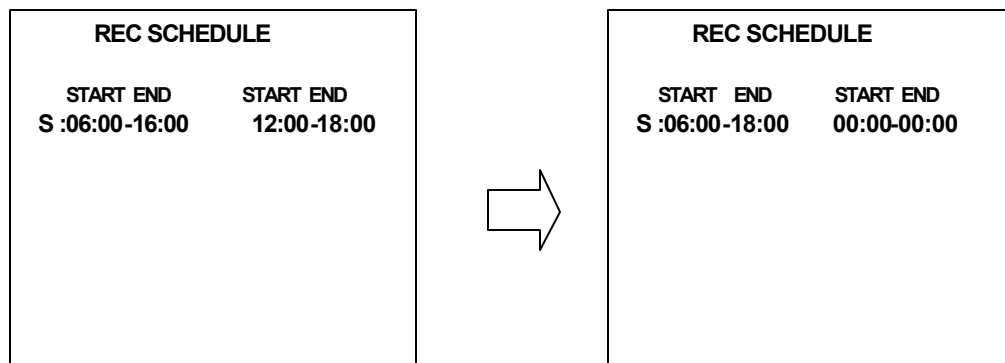
This option enables/disables the programmed scheduled recording.

**ON:** Enables the scheduled recording.

**OFF:** Disables the scheduled recording.

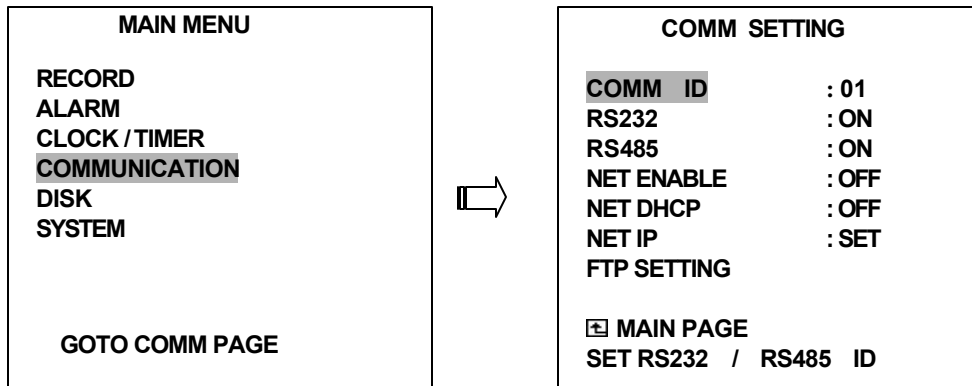
### TIMER:

This entry allows users to program the time each day that the DVR will start and stop recording. There are two time periods each day available for scheduling. The time is displayed in a 24-hour clock format. If there is a time overlapping showing between two continual time period settings, the device will automatically combine the two time-period settings into one combined time-period setting.



## 5.4 COMMUNICATION

This option allows you to configure the status of the RS-232 port and the Ethernet communications settings. (Please refer to Section 12 for advanced RS-232 and RS-485 settings.)



### COMM ID:

Communication ID for RS232 and RS485 communication. After the DVR receives an RS232 or RS485 command, it checks if the <Dest ID> within the code is the same as the COMM ID, in which case the particular command can be accepted.

**Note:** Protocol Commands can be found in Section 12.

### RS-232:

The RS-232 communication port can be either in an importing or exporting mode according to your applications.

**ON:** Enables the RS-232 communication port. When you wish the unit to be controlled by an external device, please select this entry for use.

**OFF:** Disables the RS-232 communication port.

**Note:** RS-232 advanced protocol commands can be found in Section 12.

### RS-485:

The RS-485 communication port can be either in an importing or exporting mode according to your applications.

**ON:** Enables the RS-485 communication port. When you wish the unit to be controlled by an external device, please select this entry for use.

**OFF:** Disables the RS-485 communication port.

**Note:** RS-485 advanced protocol commands can be found in Section 12.

**NET ENABLE:**

This option selects either enable or disable for the Ethernet communication port.

- OFF:** Disables it.
- ON:** Enables it.

**NET DHCP:**

This option selects enable or disable for the DHCP communication function.

- OFF:** Disables it.
- ON:** Enables it.

**NOTE: If provided with a DHCP server, the DVR can get an IP address automatically by setting this option to ON.**

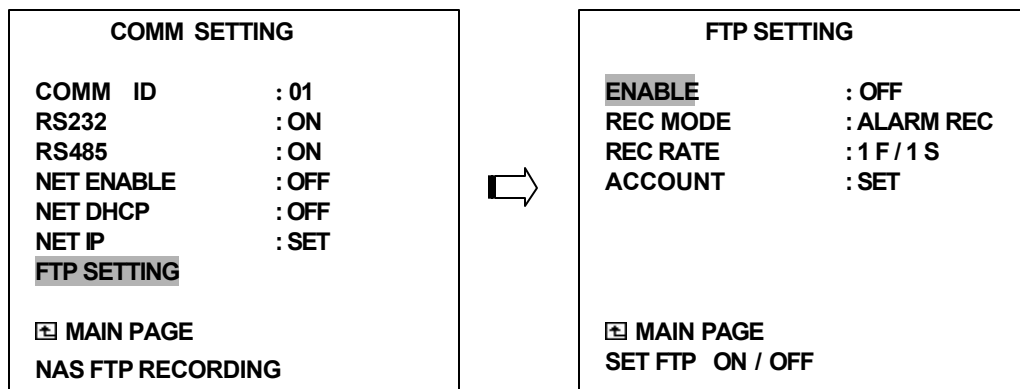
**NET IP:**

This option is used to configure the Ethernet communication settings. This is required for the purpose of making a network connection (Refer to Section 9). Please consult with a qualified MIS professional to configure it.

- IP:** XXX.XXX.XXX.XXX
- MASK:** XXX.XXX.XXX.XXX
- GATEWAY:** XXX.XXX.XXX.XXX

**FTP SETTING**

This entry allows users to set the FTP (File Transfer Protocol). With an active FTP account, a user would be able to send still frames from the DVR in intervals to a folder saved inside their FTP account for later remote viewing.



**ENABLE:**

This option is to select enable or disable for the FTP function.

- ON:** Enables it.
- OFF:** Disables it.

**REC MODE:**

This option determines the recording mode to be recorded when the FTP function occurs.

There are 2 levels of recording mode to choose: **ALARM REC** and **ALL REC**.

**ALARM REC** : Only to capture the alarm -event recorded video.

**ALL REC** : To capture all the recorded video.

**REC RATE**

This option determines the recording rate when the FTP function occurs. There are 4 levels of recording rates to choose from: **1 F / 1 S**, **1 F / 10 S**, **1 F / 30 S** and **1 F / 60 S**.

**ACCOUNT:**

This option is used to configure the FTP account settings. This is required for the purpose of making an FTP connection. Please consult with a qualified MIS professional to configure it.

FTP ACCOUNT	
FTP IP	: 192.168.001.128
USER	: [dvr ]
PASSWORD	: [00000000 ]
PATH	: [/dvrvideo ]

**FTP IP** : Every FTP server has to own an IP address to be identified on the network.

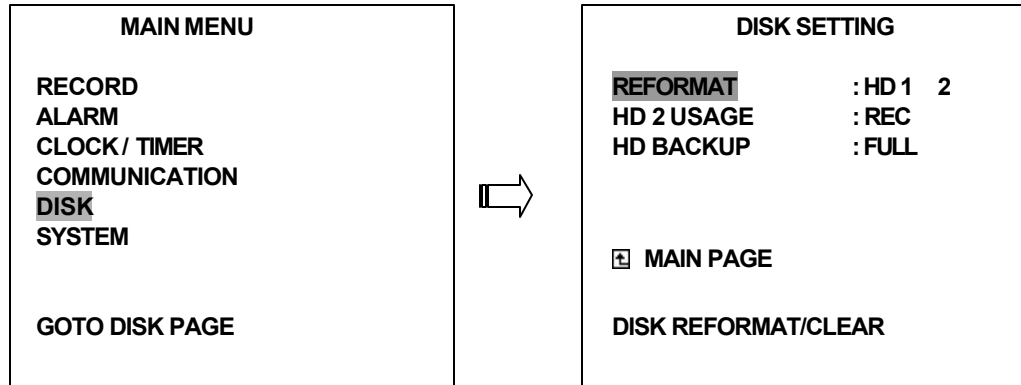
Input the IP address of the FTP server.

**USER** : Input the FTP user name (Login Name).

**PASSWORD** : Input the FTP password (Password).

**PATH** : Input the upload path while doing the FTP.

## 5.5 DISK SETTING



### REFORMAT:

This option allows you to clear out all the data in the hard disk drive. You will be required to enter the pre-set password before proceeding with clearing out the data. Enter the standard password “9999” if you don’t set your individual password. To set your individual password, please refer to Section 5.6

**HD 1 2:** Clears out all the data stored in HD 1 and HD 2.

**BACKUP HD:** Clears out all the data stored in HD2, which is set to backup purpose only.

(This function can only proceed when the **HD 2 USAGE** option is set to **BACKUP**.)

### HD2 USAGE:

This option determines the way to utilize the hard disk drive in the mobile compartment.

**BACKUP:** Used for data backup only, which will not be part of regular recording hard disk drive.

**REC:** Used as a regular recording hard disk drive.

**NOTE:** If you wish to play back a recorded video from HD2, this option must be set to REC.

For more details, please refer to Section 4.3.4.

### BACKUP:

This function allows you to duplicate data from HD 1 to HD 2. Please set HD 2 as **BACKUP** first.

(For operation details, please refer to Section 4.5.1)

**FULL:** Duplicates all the recorded video from HD1 to HD2.

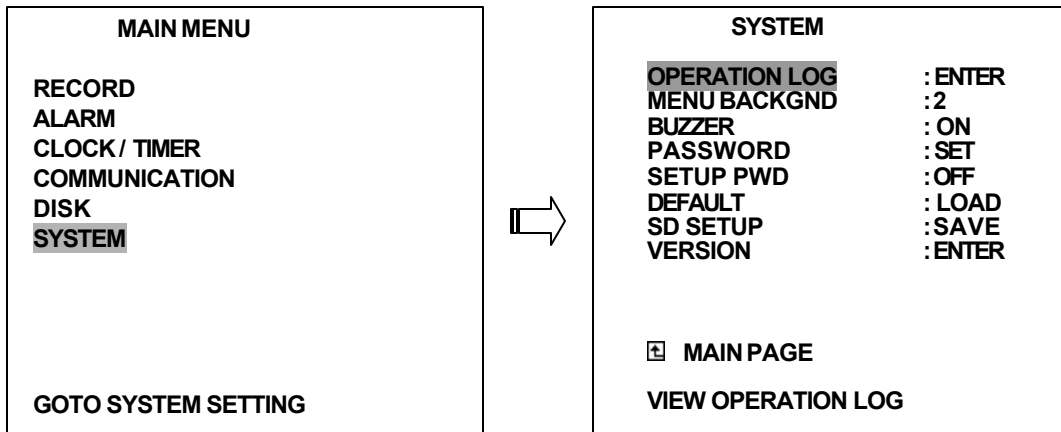
**ALARM:** Duplicates all the alarm-event recorded video from HD 1 to HD2

**SELECT:** Duplicates a particular recorded video from HD1 to HD2.



## 5.6 SYSTEM

This page is used for accessing the history of the operation status, setting the password, resuming factory default, and determining the menu display background.



### OPERATION LOG:

This log shows the history of the operation status in chronological order. What the following entries represent is detailed below.

- ON:** Powers up the device.
- OFF:** Powers off the device.
- REC:** Starts recording.
- STOP:** Ceases recording.
- PLAY:** Shows recorded video.
- V-IN:** Video input is connected.
- V-LOSS:** Video loss occurs.
- P-LOSS:** Power interruption occurs.
- A-IN:** Detects an alarm input.
- LOCK:** Disables the entire front panel controls.
- UNLOCK:** Releases the key lock.
- UPDATE:** Updates system software.

05/15/03	18:19:32	ON
05/15/03	18:19:32	OFF
05/15/03	18:19:32	REC
05/15/03	18:19:32	STOP
05/15/03	18:19:32	PLAY
05/15/03	18:19:32	V-IN
05/15/03	18:19:32	V-LOSS
05/15/03	18:19:32	P-LOSS

**Note:** The log keeps an operation history on a revolving basis because of a limit of 3,000 records. When the log is full, the newly registered record of an operation will replace the existing records from the oldest one.

**MENU BACKGND:**

There are 3 levels of background color transparency you can choose from : level 1 is totally transparent, level 3 is opaque, and level 2 is between level 1 and 3. The background color is used in the setup menu and search function.

**BUZZER:**

This option determines the embedded buzzer sounding a tone to signal the following situations. A tone lasts about two seconds long.

**ON:** Enables buzzer.

**OFF:** Disables buzzer.

Situation
Alarm occurs
Video loss occurs
Disk is full
Load factory default
Buzzer set to ON
Enable/disable key lock function
Power on /off mobile rack HDD
Backup operation complete
Timer activate/deactivate
Recording switching between HDD

**PASSWORD:**

This option allows you to set a password to prevent any unauthorized re-formatting of the hard disk drives or use by a network viewer. The standard password is "9999".

**OLD PASSWORD:** Enter the pre-set password (or the standard password if this is the initial setting) to access the password setting system.

**NEW PASSWORD:** Enter a 4-digit-number password of your choosing which will replace the pre-set password (or the standard password "9999").

***Important: Do not forget the password you create as the process can not be reversed without the proper password. Write down your password and save it in a secure location, if necessary.***

**SETUP PWD:**

When this option is on, the user must clear the password check before entering the setup menu.

**ON:** Enables it.

**OFF:** Disables it.

**DEFAULT:**

This option allows you to reload the factory default settings. Please do note that the password can not be changed in the factory default setting.

**SD SETUP :**

The DVR offers a quick setup method by using an SD card. If the user wants to set up many of the same devices with the same settings, they can save all settings to an SD card and load the settings into each device.

**SAVE:** Saves all settings to the SD card.

**LOAD:** Loads all settings to the SD card.

**VERSION:**

This item is in the setup menu to reveal network MAC, BIOS version, and software version, and the last updated version date.

```
MAC   : 00 : 0c : 0c : 00 : 00 : 07
BIOS  : 1.03
SW    : 0.01
DATE  : Mar 10 2003
```

## 6. IDE Hard Disk Installation

Usually, the unit comes with one hard disk drive installed in compartment HD 1, which is default-configured as a master. The jumper settings configuration of the installed hard disk drives for the unit and compatible drives which can be used with this unit are listed in the table below. To install two hard disk drives in compartment HD 1 and HD 2, please use the following steps.

### The jumper settings of hard disk drives for the system

	Location	Jumper
IDE 1	Compartment HD 1	Master
IDE 2	Compartment HD 2	Master

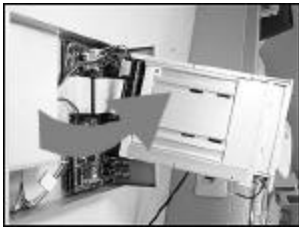
### 6.1 Built-in Hard Disk

1.



1. Unscrew all of the mounting screws on the mobile rack of the unit and detach it.

2.



3.



2. Carefully lift the mobile rack to a vertical position.

3. Unscrew the secured screws to detach the hard disk rack.

4.



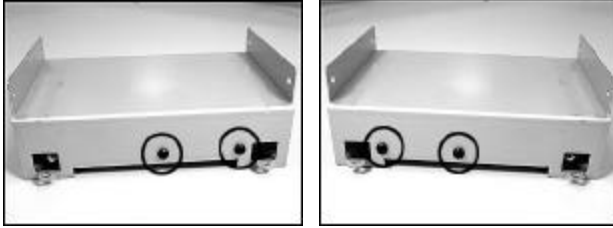
5.



4. Set the jumper of your hard disk driver. The way to set the jumper of the drive varies between manufacturers; please refer to the instructions on the driver to set the jumpers in the master position.

5. Place the hard disk in the rack.

6.



6. Secure the driver in the rack using two mounting screws in both the side-mounting holes. Please don't tighten the screws too much, otherwise that may damage the driver.

7.



8.



7. Screw the rack into the device, screwing in all the four screws.

8. Attach the interface connector and the power connector to the drive. Please note the red lining of the IDE cable must be facing the 4-pin power connector.

10.



Place the mobile rack back onto the device and screw it in.

## 6.2 Mobile Rack



1. Make sure that the key is unlocked.



2. Pull the active-handle outward to remove the carrier body away from the mobile rack.



3. Slide the top cover backward and remove.



4. Set the jumper of your hard disk driver. The way to set the jumper of the drive varies between manufacturers; please refer to the instructions on the driver to set the jumpers in the master position.



5. Attach the interface connector and the power connector to the drive. Please note the red lining of the IDE cable must be facing the 4-pin power connector.



6. Place the HDD inside mobile rack. Use four of the provided screws.



7. Place the top cover back to the carrier body by sliding forward to secure.



8. Slide the carrier body back into the mobile rack.



9. Push the carrier body further into the mobile rack until fully inserted.



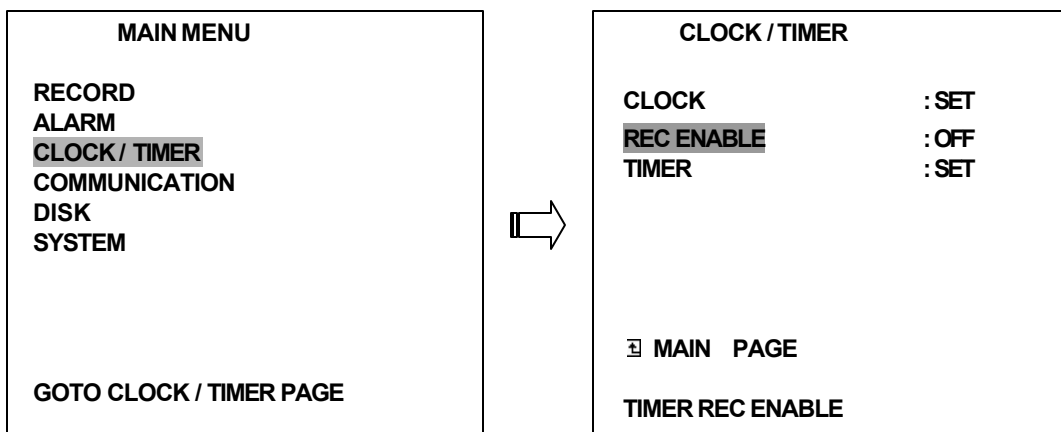
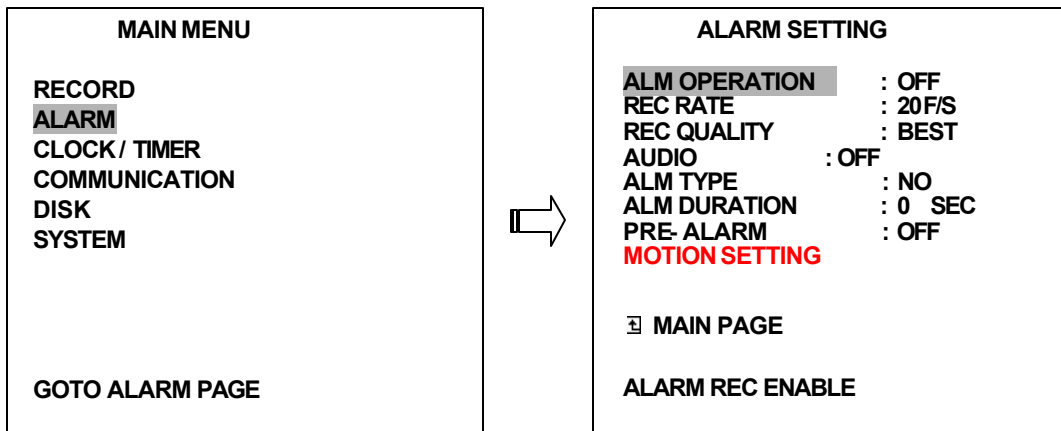
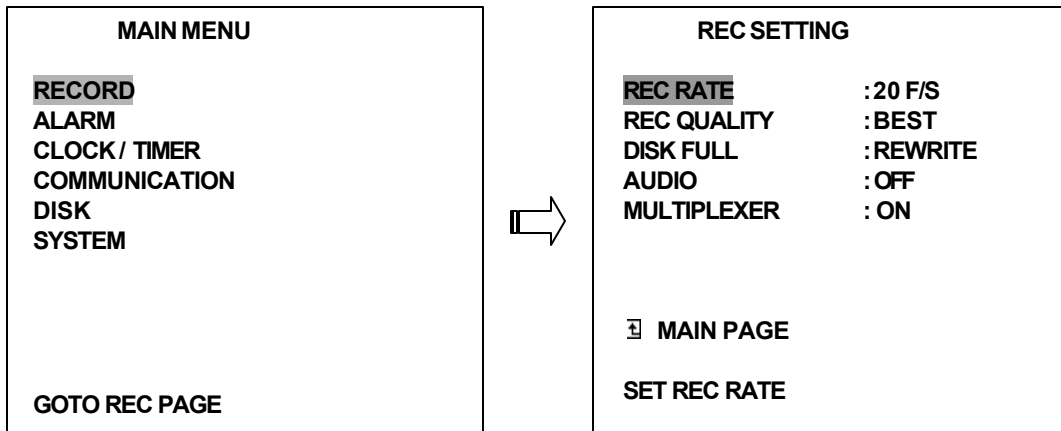
10. Push the active-handle inward.



11. Lock the Key.

---

## 7. System Default





**MAIN MENU**

RECORD  
 ALARM  
 CLOCK/ TIMER  
 COMMUNICATION  
 DISK  
 SYSTEM

GOTO COMM PAGE



**COMM SETTING**

COMM ID : 01  
 RS232 : ON  
 RS485 : ON  
 NET ENABLE : OFF  
 NET DHCP : OFF  
 NET IP : SET  
 FTP SETTING

MAIN PAGE

SET RS232/ RS485 ID

**MAIN MENU**

RECORD  
 ALARM  
 CLOCK/ TIMER  
 COMMUNICATION  
 DISK  
 SYSTEM

GOTO DISK PAGE



**DISK SETTING**

REFORMAT : HD 1 2  
 HD 2 USAGE : REC  
 BACKUP : FULL

MAIN PAGE

DISK REFORMAT/CLEAR

**MAIN MENU**

RECORD  
 ALARM  
 CLOCK/ TIMER  
 COMMUNICATION  
 DISK  
 SYSTEM

GOTO SYSTEM SETTING



**SYSTEM**

OPERATION LOG : ENTER  
 MENU BACKGND : 2  
 BUZZER : ON  
 PASSWORD : SET  
 SETUP PWD : OFF  
 DEFAULT : LOAD  
 SD SETUP : SAVE  
 VERSION : ENTER

MAIN PAGE

VIEW OPERATION LOG

## **8. O.S.D Message**

<b>No.</b>	<b>O.S.D Message</b>	<b>Meanings</b>
1	<b>NO DISK</b>	No hard disk detected after power activated
2	<b>BATTERY LOW</b>	Suggest change of battery and reset the system time
3	<b>LOADING</b>	System Boot up
4	<b>VIDEO LOSS</b>	Video loss
5	<b>VIDEO IN</b>	Video input source
6	<b>KEY LOCKED</b>	Key lock function is on
7	<b>KEY UNLOCKED</b>	Key lock function is off
8	<b>n1 OF n2 ITEMS PROGRESS n3 %</b>	BACKUP n1/n2 NOW
9	<b>BACKUP COMPLETE</b>	Backup complete
10	<b>HD2 SPACE NOT ENOUGH</b>	HD2 has not enough space for backup
11	<b>NO ENTRY FOR BACKUP</b>	No backup is possible.
12	<b>BACKUP INCOMPLETE</b>	Backup incomplete, since the user has pressed the STOP button to stop it
13	<b>NOT FOUND</b>	The system cannot find a video in the Search function.
14	<b>END</b>	Playback of recorded video has reached the end point
15	<b>DISK FULL</b>	Hard disks are full; this happens only when the DISK FULL item in the setup menu is set to STOP.
16	<b>EMPTY</b>	The user presses the PLAY button or uses the SEARCH function, but no video can be played.
17	<b>SET TO NTSC, PLS RESTART</b>	System has to be set to NTSC, please reboot
18	<b>SOFTWARE UPDATE</b>	Software update
19	<b>PLEASE RESTART</b>	The system should be rebooted after the software has been updated
20	<b>NO DISK</b>	The user has pressed the Save key without putting in a SD card, or there is a disk error.
21	<b>DATA NOT CONTINUOUS</b>	The system finds data in installed HDs cannot be used contiguously. Suggest you remove HD2 from the system.
22	<b>DISK ATTACHED</b>	HD2 has been attached.
23	<b>DISK REMOVED</b>	HD2 has been removed.
24	<b>FAN STOPPED</b>	The chassis fan has stopped for over 30 seconds.
25	<b>HDn ERROR AT xxxxx</b>	There is a hard disk error during recording, where n is the hard disk number and xxxxx is the hexadecimal location.
26	<b>NOT PRESENT</b>	When the user tries to clear a disk that was not attached in the setup menu.
27	<b>SAVE TO DISK</b>	Start saving to the JPEG file.
28	<b>SAVE TO Fnnn. JPG</b>	Save to Fnnn.JPG (where nnn= 0..999)
29	<b>SAVE OK</b>	Save to the JPEG is ok.
30	<b>SD CARD WRITE PROTECT</b>	An SD card is write-protected; or there is an error

## 9. Network Configuration

### 9.1 Cable Connections

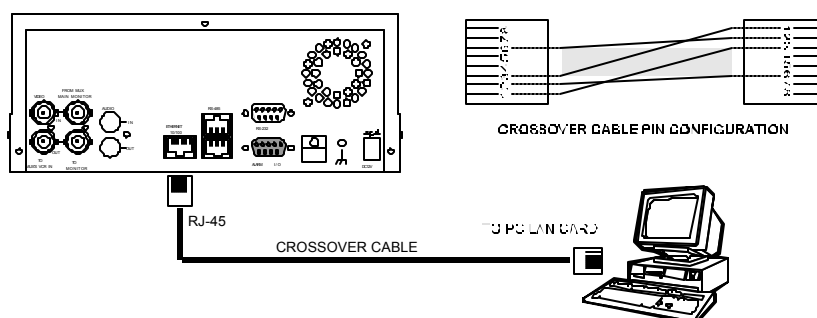
Please follow the instructions below to connect your DVR to a computer or a network and to choose a proper RJ-45 cable configuration for connections.

#### Physical specification of RJ-45 cable for Ethernet

Wire Type	Cat. 5
Connector Type	RJ-45
Max. Cable Length	30 m
Hub Wiring Configuration	Straight Through
PC Wiring Configuration	Cross Over

#### 9.1.1 Connect to a computer

Use this option to control and view the DVR from a nearby computer. Connect a crossover LAN cable from the DVR's ETHERNET port directly to the jack on a computer's LAN card.



**NOTE:** In order for the DVR to communicate with the computer, determine the internal IP address of the computer. This can be done in a couple of ways depending on your operating system.

#### Windows XP users:

1. Click the START menu and click on CONTROL PANEL, open the NETWORK CONNECTIONS page.
2. Click on the Local Area Connection icon.
3. Click on the SUPPORT tab inside the Local Area Connection window.
4. An automatic private address should have been created. Take note of the IP address.

### All other Windows systems:

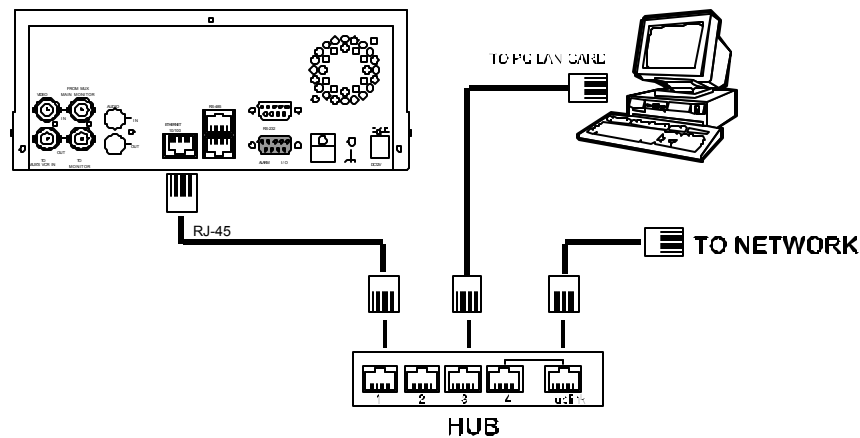
1. Open the START menu and click on the RUN tab.
2. In the RUN menu, type “winipcfg”.
3. The resulting window should display the IP address of your system. Please take note of this address.

### Setting the DVR

1. On the DVR, press the SETUP button and select the COMMUNICATION tab.
2. In COMMUNICATION, select NET IP, then SET.
3. In the NET SETTING window, enter the IP address you identified on your computer in the step above for all numbers except the last 3 digits. You may assign these last 3 digits for any number between 001 and 255 (xxx.xxx.xxx.001 to xxx.xxx.xxx.255) but may not be identical to the last 3 digits of your computer's IP address. It is not necessary to change the MASK or GATEWAY settings.
4. Press enter to save these changes.

To view the DVR from your computer, refer to Section 11.1 or 11.3.

### 9.1.2 Connect to a LAN Hub (INTRANET)

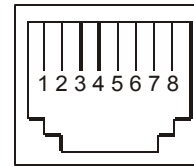


**NOTE:** When connecting to a LAN, each connected DVR must be assigned a unique IP, which must be in the same class type as your network address. IP addresses are written as four sets of numbers separated by periods; for example, 192.168.0.1. Therefore, if the connected network is identified as Class C, for example, the first three sets of numbers of the DVR IP address must be the same as the network address. If the connected network is identified as Class B, the first two sets of numbers of the DVR IP address must be the same as the network address. If you have any questions regarding these settings, please contact a qualified MIS professional or your ISP.

## RJ-45 PIN configuration for LAN Hub

PIN NO.	PIN Assignment
1.	TX +
2.	TX -
3.	RX +
4.	Not Connected
5.	Not Connected
6.	RX -
7.	Not Connected
8.	Not Connected

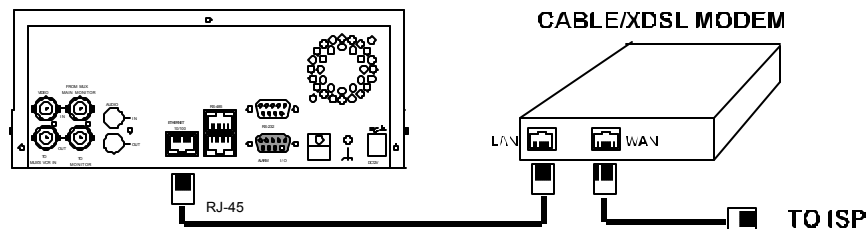
RJ-45 socket



### 9.1.3 Connect to WAN (INTERNET)

This feature is used to connect your DVR to the internet for remote access.

The RJ-45 PIN configuration for connecting to a WAN is the same as connecting to a LAN.

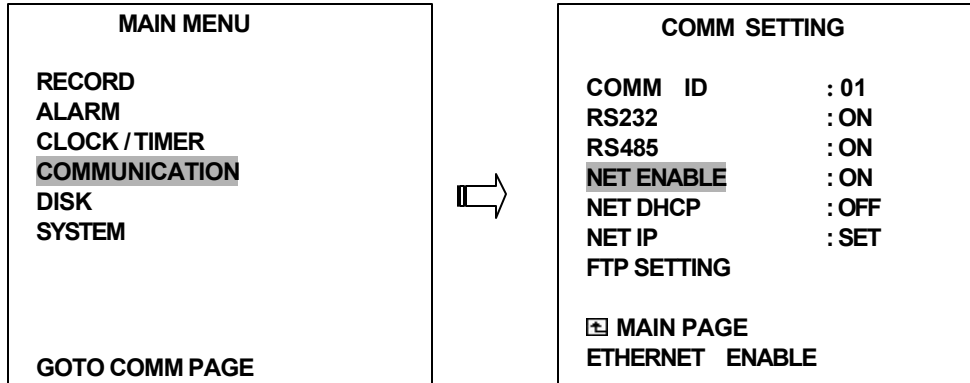


When a DVR is connected to a WAN, you must acquire a unique, permanent IP address and correctly configure the MASK and GATEWAY settings according to your network architecture. If you have any questions regarding those settings, please contact a qualified MIS professional or your ISP.

## 9.2 Configure Your DVR Network Settings

Upon network hardware connection, you need to activate the network function and configure the proper network settings of the DVR.

### 9.2.1 Enable DVR Network Function

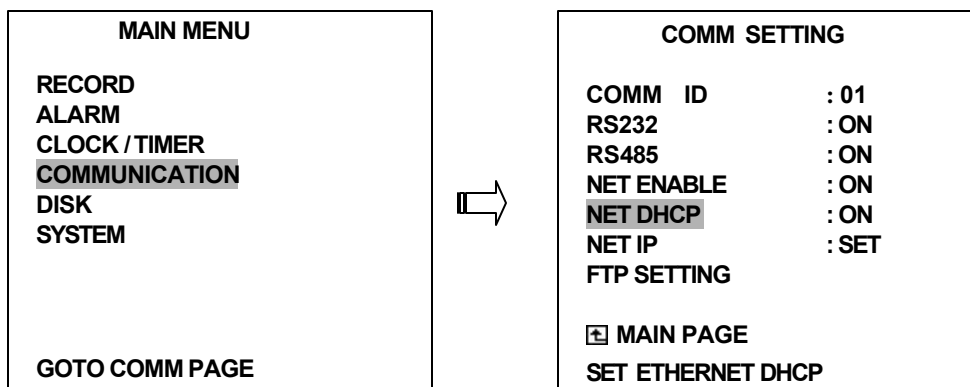


?? Press the **Setup** button to enter the OSD MAIN MENU. Please use the “<” “>” buttons **11** and **14** to highlight COMMUNICATION; then press the **Enter** button to enter the COMM SETTING page.

?? Use the “^” “v” buttons **12** and **13** to highlight NET ENABLE; select ON. Then press the **Enter** button to proceed.

### 9.2.2 Enable DHCP Function

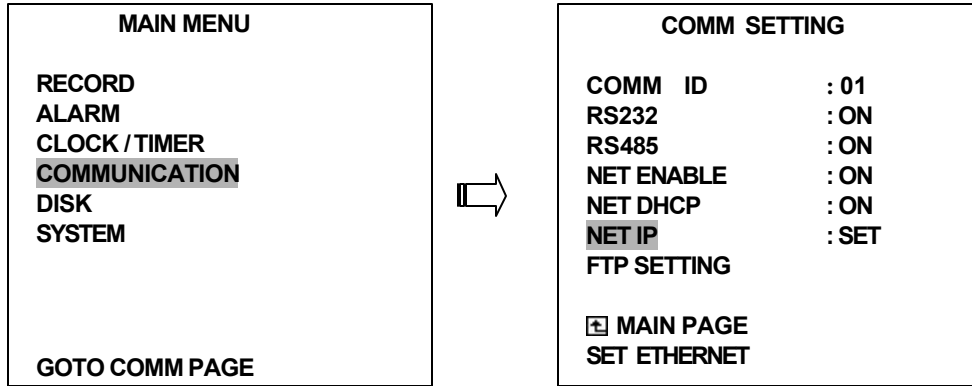
*LL* Use the “^” and “v” buttons **12**, and **13**, to highlight NET DHCP; select ON. Then press the **Enter** button to proceed.



**NOTE:** This function can only work if the LAN which the unit is connected to has a DHCP server. If the DHCP server is working, the DVR will obtain an IP address automatically from the DHCP server. In that case please skip the Section 9.2.3 (Set IP address) and follow Section 9.3. (TCP/IP Communication Software).

### 9.2.3 Set IP Address

You don't need to set a NET IP for the unit if the LAN which the unit is connected to has a DHCP server. Otherwise, please follow the instructions given below:



Use the “▲” and “▼” buttons **12**, and **13**, to highlight the NET IP. Press the **Enter** button to enter the NET IP page

1. Set the IP, MASK and GATEWAY. Then press the **Enter** button to proceed. The following is a sample setting.

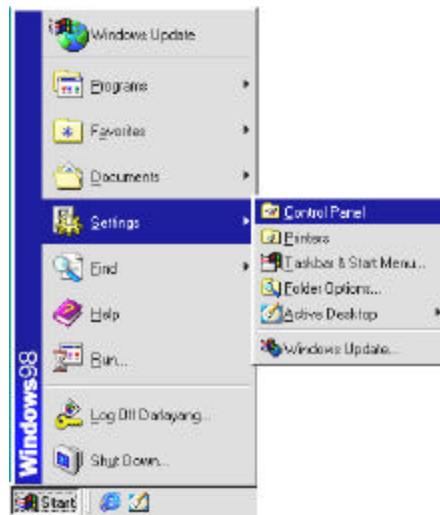
```
IP:          192.168.0.1
MASK:        255.255.255.0
GATEWAY:     0.0.0.0
```

### 9.3 TCP/IP Communication Software

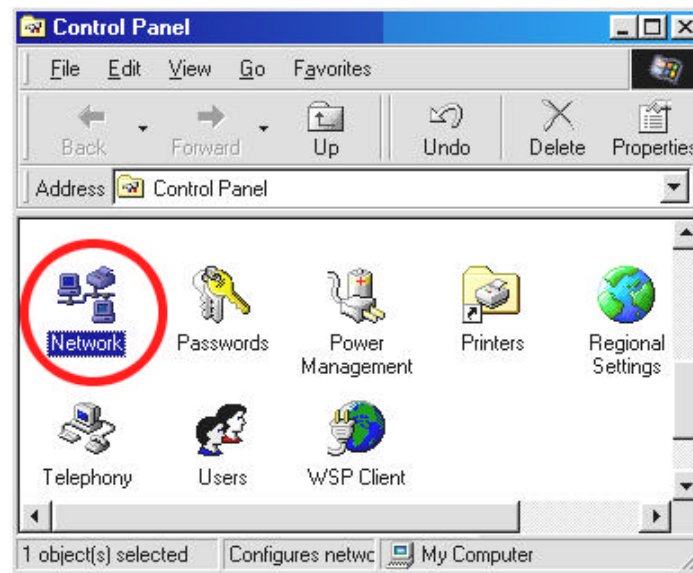
**NOTE:** The following guidelines were designed specifically for Windows 98. Your specific operating system may vary slightly from this navigation. For more TCP/IP installation information on your system, consult the help section in the START menu of your computer.

Follow the instructions below to install the TCP/IP communication program into your computer for Windows 98.

- ?? Click the **Start** Menu from your computer, and point to the **Settings/Control panel**.

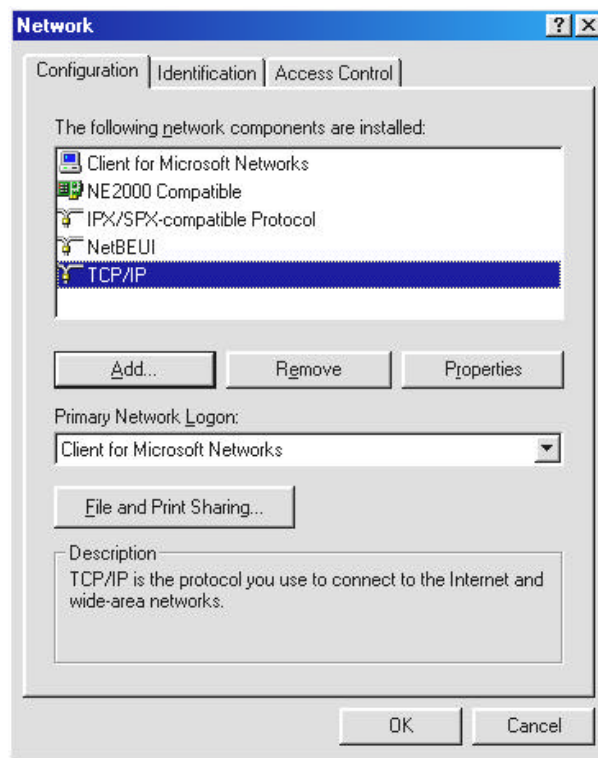


?? Click the **NETWORK** icon twice to enter the **NETWORK** setting windows.

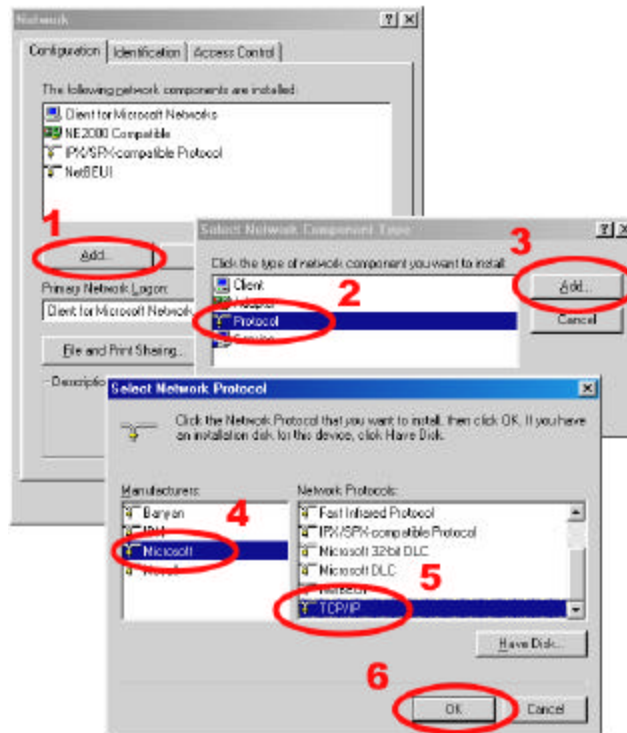


?? Click on the **Configuration** tag; check if the TCP/IP is included among the network components list. If the TCP/IP is included, please process step 5. If it is not included, please follow step 4 to install the TCP/IP.





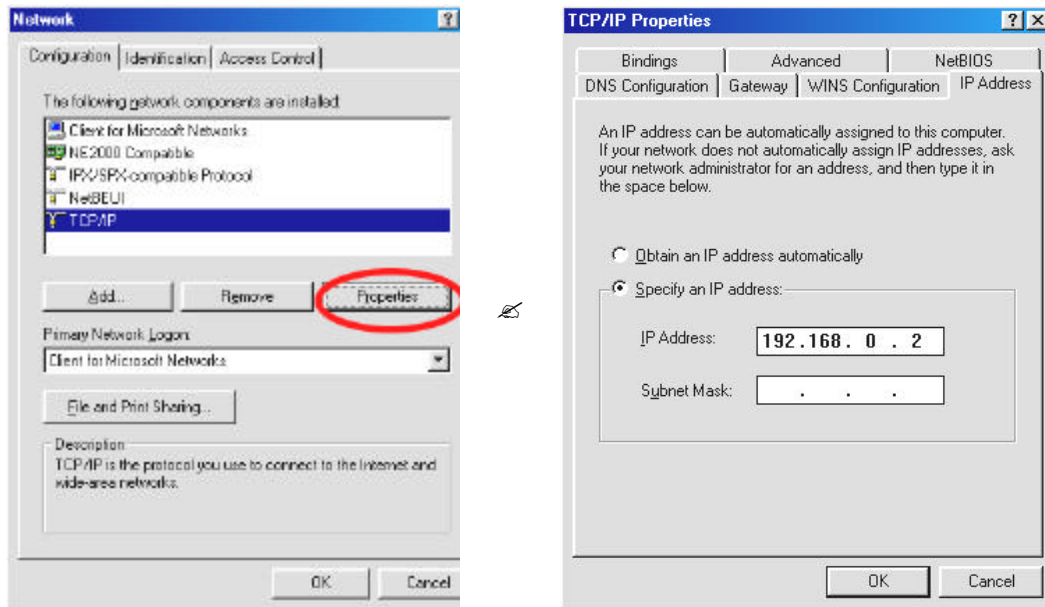
## 9.4 TCP/IP Installation



During the installation, you will be requested to insert the Windows 98 CD ROM. After installation, the PC will be restarted.

## 9.5 TCP/IP Configuration Setting

- ?? Click **Start**  $\llcorner$  **Settings**  $\llcorner$  **Control Panel**  $\llcorner$  **Network**.
- ?? Select **TCP/IP**, and then click **Properties**.
- ?? Before processing the DVR installation in a WAN, please make sure the Internet connection works properly. If not, please contact your ISP provider.



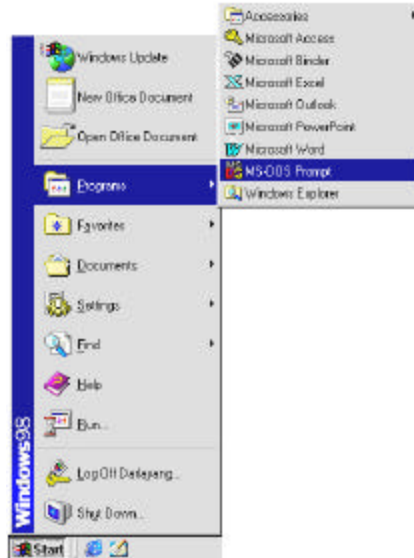
If you are using a DHCP server, please select **Obtain an IP address automatically**. Any assigned IP address for the connected DVRs must be in the same class type as the server. If there is no DHCP server, please select **specify an IP address** and type in the IP address of your PC. This IP address must be different from the DVR IP but in the same class type.

**NOTE: The IP address of a DVR in a network must be unique to itself as opposed to those of the other chosen PCs, but in the same class type.**

## 9.6 Connection Testing

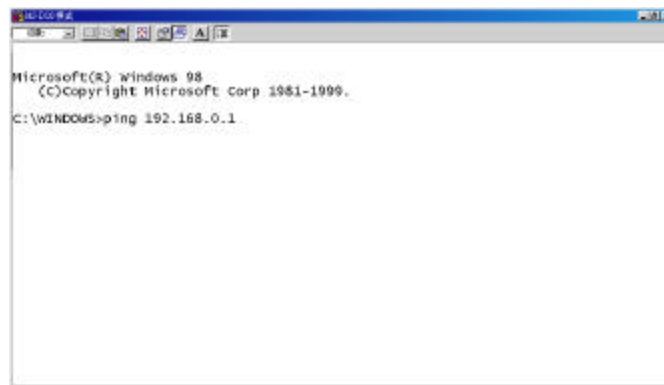
With the previous settings, follow the instructions below to ensure whether you have established the connection successfully.

☞ Click **Start** ☞ **Programs** ☞ **MS-DOS Prompt**



☞ Type in **ping 192.168.0.1** then Enter. (See the sample screen below)

**\*\* This IP is the example DVR IP address that is assigned for the connected DVR in step 2.**



☞ If you receive a response as in the sample screen below, the connection hasn't been successfully established. Please re-check all the hardware and software installation by repeating steps 1 to 5. If you still can't establish the connection after rechecking, please contact customer service.

```
Microsoft(R) Windows 98
(C)Copyright Microsoft Corp 1981-1999.
C:\WINDOWS>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Destination host unreachable.
Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\WINDOWS>
```

type DVR IP address

connection error

✍ If you receive a response as in the sample screen below, you have successfully made the connection.

```
Microsoft(R) Windows 98
(C)Copyright Microsoft Corp 1981-1999.
C:\WINDOWS>ping 192.168.0.1
Pinging 192.168.0.1 with 32 bytes of data:
Reply from 192.168.0.1: bytes=32 time<10ms TTL=128
Reply from 192.168.0.1: bytes=32 time<10ms TTL=128
Reply from 192.168.0.1: bytes=32 time<10ms TTL=128
Reply from 192.168.0.1: bytes=32 time<10ms TTL=128
Ping statistics for 192.168.0.1:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 0ms, Maximum = 0ms, Average = 0ms
C:\WINDOWS>
```

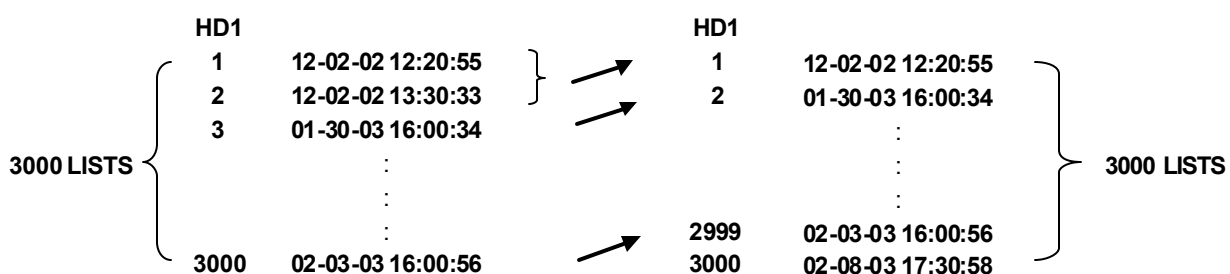
type DVR IP address

connection is successful

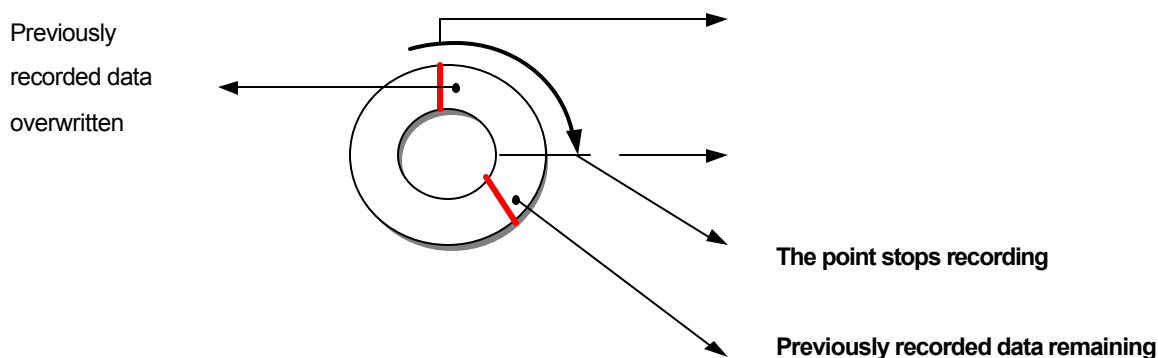
## 10. Index Table

The following description details how the DVR manages an index table issue.

The DVR will generate a time index table indicating recorded data kept on a particular HDD. This allows the user to individually select the recorded data to be displayed via the alarm list search and full list search. The maximum number of lists for a given HDD is 3,000. When the list of any given HDD is used up and the disk is not full, the unit will still use the rest of the space for recording. In such a case, an index for the recent recorded data will be generated, and the index of the next oldest data will be erased so that the list does remain 3,000 in total. For any newly-recorded data, this approach will be applied until the disk becomes full.



In the rewrite recording mode, when the archived hard disk drive is full, the DVR will start overwriting the oldest data recorded. As the previous recorded data was partially overwritten by the recent recording, the indicating time index of that data will be changed corresponding to the starting time of the remaining session. The index of the session will be deleted from the table when it is fully overwritten.



## **11. Network Viewer and Image Viewer**

This section provides instructions for installing and using the Network Viewer and Image Viewer, which are included with the DVR. It will also discuss remote viewing without the software package. These programs can be operated by a selected PC equipped with the following requirements.

1. Intel Pentium 233MHz (minimum).
2. 32 MB RAM
3. Window 95, 98, NT, ME, or XP.
4. 4 MB Video card capable of 24-bit true color display.
5. 5 MB free hard disk space for software installation.
6. 10-base T network for LAN operation.

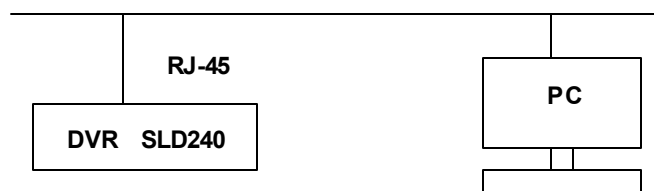
### **11.1 The Network Viewer**

#### **11.1.1 Introduction to Network Viewer**

The Network Viewer allows you to potentially access 16 units of the DVR from a remote desktop or a laptop in a TCP/IP networking environment. It can perform the following functions.

- ~~✂~~ View live images from the DVR
- ~~✂~~ Store, search, and review recorded video from the DVR HDD.
- ~~✂~~ Change the regular record, event record, and timer properties.

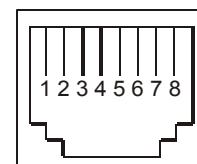
Before you are ready to view images from a desktop, you need to have your DVR networked by obtaining a 10 base Ethernet data cable (Standard RJ-45) to connect the DVR to your LAN/WAN. Now enter the main menu to set the IP address.



#### **RJ-45 PIN configuration for Ethernet**

<b>PIN NO.</b>	<b>PIN Assignment</b>
<b>1.</b>	TX +
<b>2.</b>	TX -
<b>3.</b>	RX +
<b>4.</b>	Not Connected
<b>5.</b>	Not Connected
<b>6.</b>	RX -
<b>7.</b>	Not Connected
<b>8.</b>	Not Connected

#### **RJ-45 socket**



#### Physical specification for Ethernet

<b>Wire Type</b>	Cat. 5
<b>Connector Type</b>	RJ-45
<b>Max. Cable Length</b>	30 m
<b>Hub Wiring Configuration</b>	Straight Through
<b>PC Wiring Configuration</b>	Cross Over

### 11.1.2 Install the Network Viewer in your PC

**Install the Network Viewer automatically from the supplied Network Viewer CD.**

1. Exit all applications currently running on the selected PC.
2. Insert the supplied CD in the CD-ROM drive. The program will execute the installation automatically. Follow the on-screen instructions to proceed with the rest of the installation procedure.
3. After the installation is complete, pop up the **START** menu from your computer, and point to **Programs / security labs NetViewer** to open up the program selection page as shown below. Click the **Network Viewer** tag to start the **Network Viewer** program .

**Install the Network Viewer manually.**

1. Click the START button.
2. Click on RUN.
3. In the RUN menu, choose BROWSE.
4. Locate your CD-ROM drive and open the folder.
5. Open the file SETUP (setup.exe)
6. After the installation is complete, pop up the **START** menu from your computer, and point to **Programs / security labs NetViewer** to open up the program selection page as shown below. Click the **NetViewer** tag to start the program.



**NOTE: Please make sure the TCP/IP communication software has been properly set and configured in your computer.**

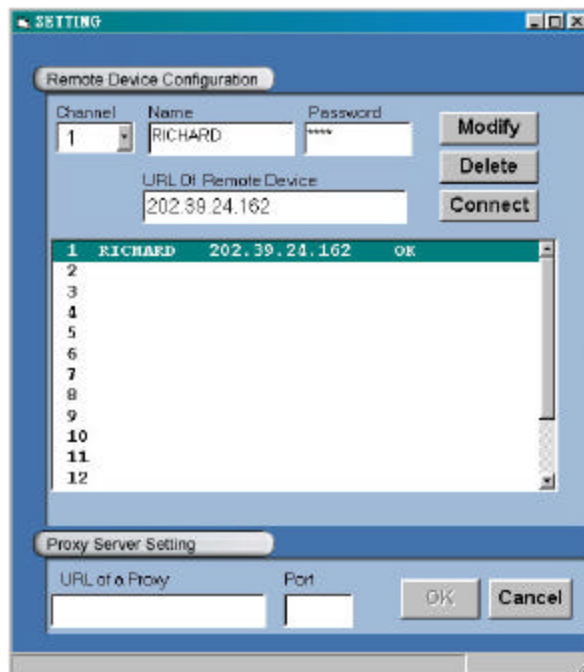
### 11.1.3 View the DVR video from a remote PC

Follow the instructions below to use the Network Viewer to browse a DVR video from a remote location.

1. Upon entering the Network Viewer, the connection box will appear as follows.
2. Choose a channel number from the Channel drop-down list.
3. Assign a name for the chosen DVR.
4. Type in the password (Section 5.6) and IP address of the device and click the **Add** tag to add the device to the connection list.
5. Click the **Connect** tag to establish the connection between the devices and the computer.  
Click OK to begin viewing images.

**NOTE:** Upon connection, the connection status box indicates the name and IP address of the selected device. If there's a failure to connect, a "Fail" message appears on the screen right after the device IP address; otherwise an "OK" appears. To add more connections, please repeat the above instructions.

**NOTE:** Multiple computer systems may watch the Viewer simultaneously. Viewer refresh rate greatly depends on the available resources on the LAN. With each connection to the Viewer or excessive strain on the LAN system such as network dependent software programs, the refresh rate will suffer. The remote viewer will function best when only one computer is directly linked to the DVR.



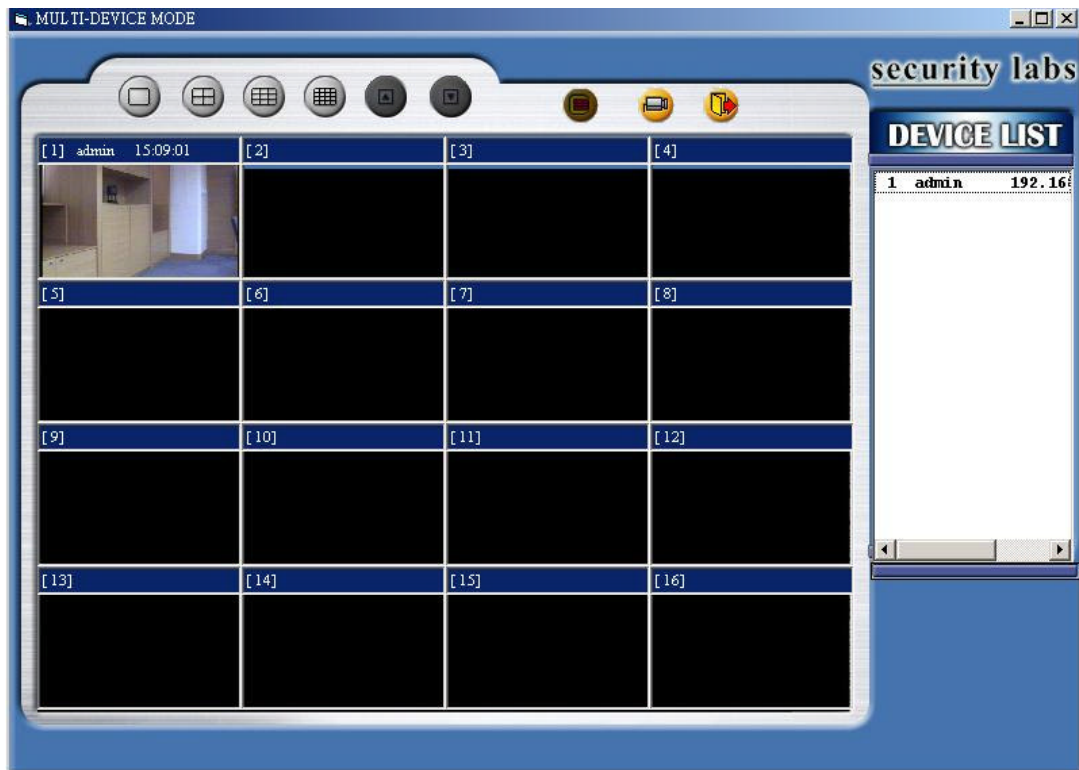








Functions	Description
Channel	Assigns a display location when you have multiple devices connected.
Name	This box allows you to assign a name to the chosen device.
Password	Type the preset password for making a connection.
URL of the Remote Device	Type the IP address which you preset for the device
URL of a Proxy	Type your proxy server address when accessing the Internet via a proxy server.
Port	Enter the designated port setting of your proxy server.
Modify	Click to change the settings of a chosen device.
Delete	Click to remove the connection of a chosen device
Connect	Click to establish the connection between the devices and the computer.
OK	Click to access the display page of the Network Viewer
Cancel	Click to exit the Network Viewer.

### Viewing images

#### View all of the connected devices


Once the connection has been established, click **OK** to enter the Multi-device mode window. (See the sample screen below) This window displays all the connected devices in the sequence which has been arranged when you established the connection.









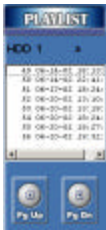





Function Buttons	Description
	Split-Screen display function bar. This allows you to display the connected device in multi-format screens of 1, 2x2, 3x3, and 4x4.
	Press to enter the selected device (the Single DVR/Multiplexer display mode). Select a device from the DEVICE LIST box to enable this button.
	Press to open the device setting page to add more devices for viewing.
	Press to leave the Network Viewer program.
	Connected devices display box. This box indicates the title and IP address of all connected devices.
	Device title and image display area. Displays the title of each connected device and the time/day information of each displayed image on the top blue bar.

### View Single DVR/ Multiplexer

Follow any one of the instructions below to get into the Single DVR/Multiplexer mode.

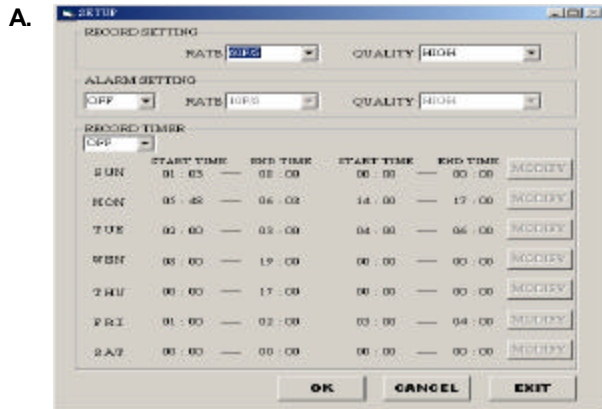
1. Select the desired device from the DEVICE LIST box on the Multi-device Mode. The  button will enable.
2. Click the button to view the image of the selected device and have access to certain functional operations of the device via the network. (See the sample screen below.)
3. Double click the image display area of each screen.




Function Buttons	Description
	<p>Playback function bar.</p> <ul style="list-style-type: none"> <li>☞ Play- Click to a recorded video from the PLAY LIST.</li> <li>☞ Pause- Click to freeze the image.</li> <li>☞ Stop- Click to stop playing back the recorded video or cease recording.</li> <li>☞ REC- Click to activate the recording function of the device.</li> <li>☞ Step- Click to view images picture-by-picture.</li> </ul>
	<p>Click to return to the Multi-Device mode.</p>
	<p>Click to save a viewing image in the local computer.</p>
	<p>Click to enter the <b>SETUP</b> page, which allows you to program the recording time, recording quality, and schedule recording.</p>
	<p>Click to exit the Network Viewer program.</p>
	<p>Multiplexer format list box.  Select a MUX (multiplexer) from the drop-down list which is connected with the DVR, so the Network Viewer will be able to display cameras corresponding to the camera input of the Multiplexer. If you own a Security Labs SLX950, please choose it from the list. If your MUX isn't available, please select the <b>Others</b> option for use. The Viewer will display cameras in the thumbnail format. (Sequentially displaying images will appear one after another in the adjacent display window)</p>
	<p>Recorded video list box. This box allows you to access all recorded video, which are stored in the HDD of the connected devices. To review a recorded video, just click an entry from the list and click the  button.  PgUp/PgDn: To scroll up and down the list.</p>
	<p>DVR Status Box. This box indicates the selected device status.  <b>PLAY:</b> The device is in the playback mode.  <b>LIVE</b> The device is in the live display mode.  <b>WAIT:</b> The device is processing the command.  <b>PAUSE</b> Pauses the image.</p>
	<p>This allows you to search a recorded video kept in the HDD of the device. Enter the MONTH/DAY/YEAR HOUR: MINUTE you wish to search and click GO to proceed.</p>
	<p>Split-Screen display function bar. This allows you to display the selected device in multi-format screens of 1, 2x2, 3x3, and 4x4.</p>
	<p>Image display area. Displays the images of each camera and the title and time/date information on the top blue bar. Double click the image to view a full screen of the camera.</p>

## 11.1.4 Change the Record & Timer Properties Via the Network


Follow the instructions below to reconfigure the record and schedule recording settings via the network.




### Set the regular record options

1. When in the Single DVR/Multiplexer mode, click  enter the SETUP page. (See the sample screen as in A above)
2. Select a desired recording rate and quality from the corresponding drop-down list.
3. Click the **OK** tag to proceed.

### Set the Alarm record settings

1. When in the Single DVR/Multiplexer mode, click  enter the SETUP page. (See the sample screen as in A above)
2. Set the ALARM SETTING to ON to enable the drop-down list in the ALARM SETTING area.
3. Select a desired recording rate and quality from the corresponding drop-down list.
4. Click the **OK** tag to proceed.


### Set the record timer

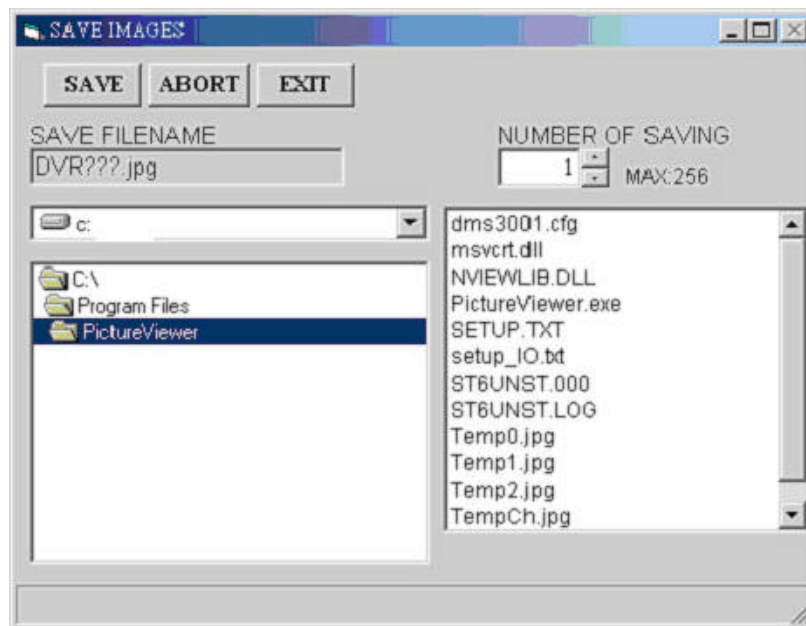
1. When in the Single DVR/Multiplexer mode, click  enter the SETUP page. (See the sample screen as in A above)
2. Set the **RECORD TIMER** to **ON** to enable the **RECORD TIMER** setting area. The **MODIFY** button will appear.
3. Click the **MODIFY** button to set the schedule for recording for each day. (See the sample screen below) Go to both the **START TIME & END TIME** boxes, enter a specific **Hour: Minute** and click **OK** to return to the **SETUP** page.
4. When all required settings are completed, click **OK** to proceed.



### 11.1.5 Archive Images to the Computer

Playback images can be stored in a local PC in the JPEG format. Follow the instructions below to save the images to your PC.

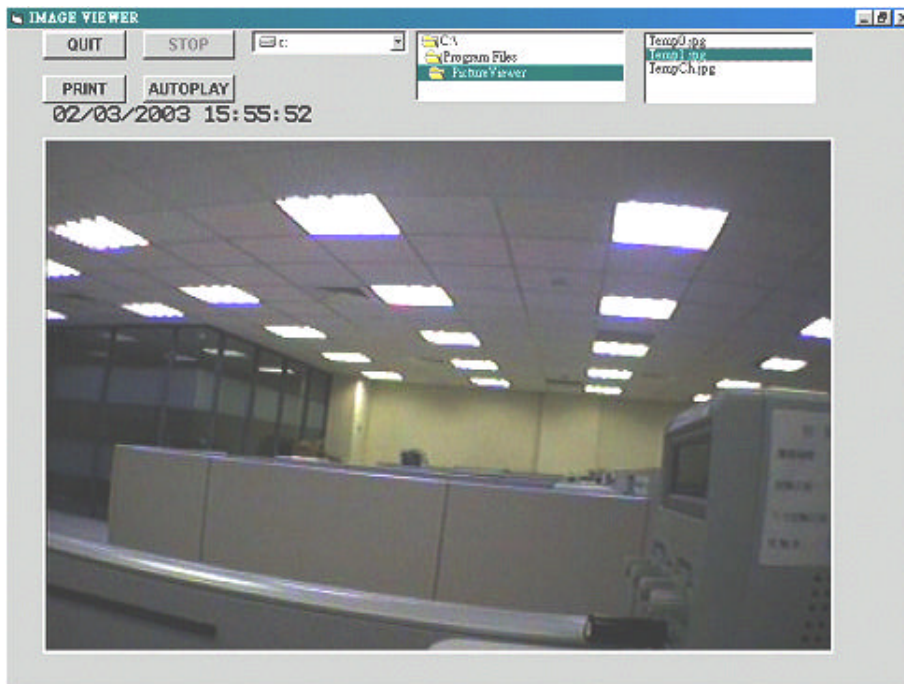
1. Select a stored video from the play list on the right side of the screen. Begin the video playback by pressing the PLAY button. Press PAUSE to freeze an image. The  button will appear on the top panel. Press this button to save the image to your computer.
2. Select a folder in the computer for copying images.
3. Enter the number of consecutive images into the **NUMBER OF SAVING** box you wish to save. The number of images you choose will be the consecutive images following the initially selected still frame.
4. Click the **SAVE** tag; the program will automatically copy the displayed images into the designated folder. The images are saved in the DVRxxx.jpg file name, which is displayed in the box on the right-hand side. To view a saved image, please follow the instructions in the next section to proceed.



## 11.2 The Image Viewer

This is image integrity protected software. It not only allows you to view an archived image from the SD card or HDD of a computer, but also protects an archived image from reproduction or corruption. If an image isn't in the original format made by a DVR, the Image Viewer won't display the image and instead will send a warning message "Wrong File, Can't Open". Follow the instructions below to open an archived image from a SD card or an HDD.

1. Pop up the **START** menu from your computer, and point to **Programs / security labs NetViewer** to open up the program selection page. Click the **Image Viewer** tag to start the **Image Viewer** program. (See a sample screen below.)
2. Select a folder where the files are kept and click a file you wish to display from the upper-right box or click the **AUTOPLAY** tag to display automatically all the files in the selected folder. Each file will be displayed for 2 seconds on the screen.
3. Click the **PRINT** tag to get a displayed image printed out from a printer.



## 11.3 Internet Browser Viewer

The DVR can be viewed from a PC without the use of the included NetViewer software. The only requirement for this viewing option is that the computer used for viewing must have Microsoft Internet Explorer 5.0 or later. Most systems come with this software included. If it is not already on your system, a free download can be found on Microsoft's website.

### Internet Browser:

1. Open Internet Explorer
2. On the "address" line, type in the IP address assigned to the DVR in Section 9.  
?? Example (<http://xxx.xxx.xxx.xxx>)  
?? If the login screen fails to load, click on the REFRESH button at the top of the screen.
3. The DVR login screen will come up.
4. In the USER NAME box, type "admin"
5. In the PASSWORD box, type the password you assigned to the DVR in Section 5.6.
6. Once the program has started, the DVR can be controlled by clicking on the functional buttons on the bottom of the screen.
7. Under the DVR menu, click on the tab SETUP to change the DVR's recording properties.
8. When finished with the viewer, click LOG OUT and exit the browser.  
\* While multiple systems are logged onto the Viewer, if one user clicks LOG OUT, all connections will be lost. If this occurs, start the above process again.

**NOTE: Multiple computer systems may watch the Viewer simultaneously. Viewer refresh rate greatly depends on the available resources on the LAN. With each connection to the Viewer, or other excessive strain on your LAN connection such as network dependent software programs, the refresh rate will suffer.**

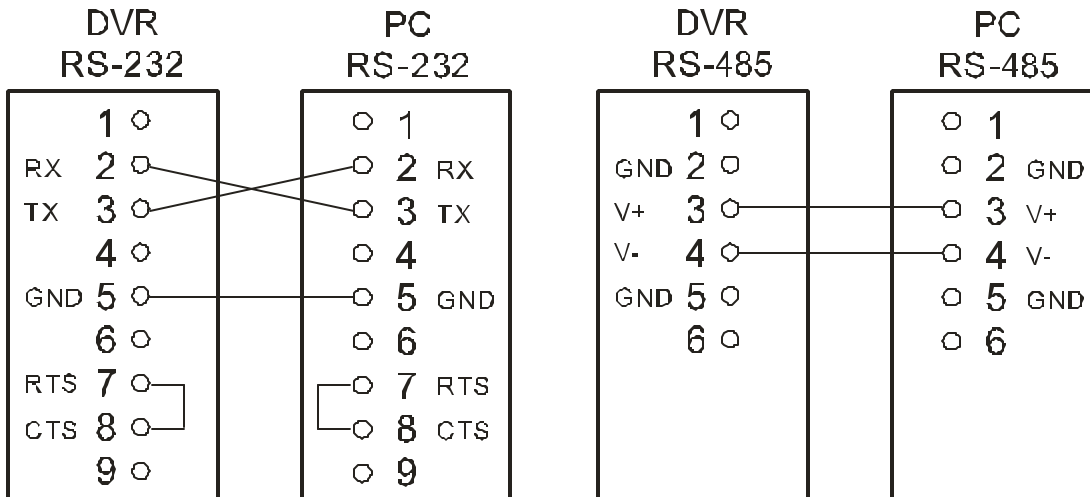
**NOTE: The remote viewer will function best when only one computer is directly linked to the DVR, as in Section 9.1.1.**

## 12. RS-232 & RS-485 Protocol

**IMPORTANT:** This section is designed to allow users to control the DVR via the RS-232 and RS-485 ports. The following information is intended to be used by qualified professionals. Do not make any changes to your system's settings unless instructed by a qualified technician.

### 12.1 Setup

**12.1.1** Use a Null Modem cable (the standard RS-232 9 Pin Cable with Pin 2 and Pin 3 exchanged, see pin configuration chart below for details) to connect the COM 1 on the rear panel of the DVR to a PC.



**12.1.2** Set the **RS-232** option to **ON** in the **COMMUNICATION** page of the setup menu.

**12.1.3** Set the PC communication parameters: 9600 bps, No Parity, 8 Data Bits, 1 Stop Bit.



## 12.2 Communication Protocol

**IMPORTANT:** This section is designed to allow users to control the DVR via the RS-232 and RS-485 ports. The following information is intended to be used by qualified professionals. Do not make any changes to your system's settings unless instructed by a qualified technician.

### 12.2.0 General Command Format

<Lead Code = 0x41>, < Dest ID >, < Src ID >, <Main category>, <Second category >, {<N umber of parameters>, <Parameter 1>, <Parameter 2> ...} <End Code= 0x4f>

Lead Code = 0x41  
Dest ID = 0x01  
Src ID = 0x20  
Main Category = 0x01 Keys and Signals  
= 0x02 Command  
Second Category = 0x01 Handshake  
= 0x02 Request Time/Set Time  
= 0x06 Request System State  
End Code= 0x4f

The different command types and their corresponding parameters are as follows:

### 12.2.1 Keys and signals

PC Send: <0x41>, <0x01>, <0x20>, <0x01>, <Key Value>, <0x4f>

#### < The value of a specific front panel key >

KEY_PLAY	1
KEY_STOP	3
KEY_PAUSE	4
KEY_POWER	5
KEY_REC	6
KEY_SETUP	7
KEY_ENTER	8
KEY_SEARCH	10
KEY_DISPLAY	11
KEY_UP	13
KEY_DOWN	14
KEY_LEFT	15
KEY_RIGHT	16
KEY_MONITOR	36

JOG_L	128
JOG_R	129
KEY_SHUT_L8	130
KEY_SHUT_L7	131
KEY_SHUT_L6	132
KEY_SHUT_L5	133
KEY_SHUT_L4	134
KEY_SHUT_L3	135
KEY_SHUT_L2	136
KEY_SHUT_L1	137
KEY_SHUT_CT	138
KEY_SHUT_R1	139
KEY_SHUT_R2	140
KEY_SHUT_R3	141
KEY_SHUT_R4	142
KEY_SHUT_R5	143
KEY_SHUT_R6	144
KEY_SHUT_R7	145
SIGNAL_REC_IN	163
SIGNAL_ALARM_RESET	165
SIGNAL_REC_OUT	169
SIGNAL_ALARM_IN	189

## 12.2.2 COMMAND Types

### 12.2.2.0 Command (Main Category=0x02)

#### 12.2.2.1 Handshake (Second Category=0x01)

PC Request: <0x41>, <0x01>, <0x20>, <0x02>, <0x01>, <0x00>, <0x4f>

DVR Response: <0x41>, <0x20>, <0x01>, <0x02>, <0x08>, <0x00>, <0x4f>

#### 12.2.2.2 Request Time (Second Category=0x02)

PC Request: <0x41>, <0x01>, <0x20>, <0x02>, <0x02>, <0x00>, <0x4f>

DVR Response: <0x41>, <0x20>, <0x01>, <0x02>, <0x02>, <0x07>, <7 Time Value >, <0x4f>

The following case is an illustration of < 7 Time Value>

2001/06/20 17:05:00 = <0xD1>, <0x07>, <0x06>, <0x14>, <0x11>, <0x05>, <0x00>

#### 12.2.2.3 Set Time (Second Category=0x02)

PC Request: <0x41>, <0x01>, <0x20>, <0x02>, <0x02>, <0x07>, < 7 Time Value >, <0x4f>

The following case is an illustration of < 7 Time Value>

2001/06/20 17:05:00 = <0xD1>, <0x07>, <0x06>, <0x14>, <0x11>, <0x05>, <0x00>

DVR Act: Changing the time and date.

#### 12.2.2.4 Request State (Second Category=0x06)

PC Request: <0x41>, <0x01>, <0x20>, <0x02>, <0x06>, <0x00>, <0x4f>

DVR Response: <0x41>, <0x20>, <0x01>, <0x02>, <0x06>, <0x01>,

<System State = 0..>, <0x4f>

#### Description of <System State>:

STATE_STOP	0
STATE_REC	1
STATE_PREREC	2
STATE_PLAY	3
STATE_MENU	4
STATE_PLAYIDLE	5
STATE_SETUP	6
STATE_SEARCH	7
STATE_BACKUP	13
STATE_NET_PLAY	23

#### 12.2.2.5 Time Search (Second Category=0x0b)

PC send: <0x41>, <0x01>, <0x20>, <0x02>, <0x0b>, <0x06>, <6 Bytes Date/Time>,

<0x4f> where < 6 bytes Date/Time >, = year (2 bytes, =LowByte + HighByte\*256), month ( 1 byte), day (1 byte), hour(1 byte),min(1 byte)

Example: to search 06/12/2002 17:00 the Date/Time =

<0xd2>, <0x07><0x06>, <0x0b>, <0x11>, <0x00> where 2003= 210(=0xd3) + 7(=0x07) \*256

**NOTE: The DVR accepts RS-232 time search commands only under the live or playback Mode.**

### **13. Compatible Multiplexer Drives**

<b>Manufacturer</b>	<b>Model</b>	<b>Channels</b>	<b>Colors</b>
APPRO	MPX-9016	16CH	COLOR
APPRO	MPX-9004	4CH	COLOR
APPRO	MPX-9104E	4CH	B/W
Sensormatic	RV2216	16CH	COLOR
GYR	DSP9C	9CH	COLOR
ATV	DPX16	16CH	COLOR
PELCO	MX4016CD	16CH	COLOR
DM	DM/SPC2/D/N/04M	4CH	COLOR
DM	SLDX16C	16CH	COLOR
ROBOT	MV16	16CH	B/W
IMPAC	CBR-16CDT	16CH	COLOR
TOSHIBA	JK-MX16A	16CH	COLOR
JPI	MP1600	16CH	COLOR
PANASONIC	WJ-FS616	16CH	COLOR
SECURITY LABS	SLX950	16CH	COLOR

## 14. SPECIFICATIONS

Model Number	SLD240	
Image System	NTSC	PAL
Resolution	720 x 240 pixels 352 x 240 pixels	720 x 288 pixels 352 x 288 pixels
Video In	Composite Video In (BNC) x 1, Multiplexer Monitor In (BNC) x 1	
Video Out	Composite Video Out (BNC) x 1, Multiplexer Monitor Out (BNC) x 1	
Audio In/Out	Line In / Out (RCAx2), 16 bits, 8 kHz	
Storage Media	80GB Fixed HDD, 1 Removable HDD	
Compression	MJPEG	
Memory Card	SD Card	
Archive	Hot Swappable Removable HD	
Watermark	Digital Signature	
Recording Rate	30 fps (720x240) 60 fps (352x240)	25 fps (720x288) 50 fps (352x288)
Image Size	Best(48KB) / High(32KB) / Standard(21KB) / Basic(16KB)	
Recording Mode	Schedule / Manual / Alarm / Circular	
Alarm Recording	Event / Pre-Alarm / Post Alarm	
Pre-Alarm Recording	100 Images	
Playback Speeds	Frame Stepping, 1/16x, 1/8x, 1/4x, 1/2x, 1x, 2x, 4x, 8x, 16x, 30x, 100x	
Record Search	Alarm / Time / Event list / Filter(thumbnail) / SD card	
Set-up Menu	Multi-layer / Network setting	
Log list	3,000 records	
Alarm In/Out	1 Alarm Input / Output	
Built-in Buzzer	Yes	
<b>Motion Detection</b>	<b>Yes</b>	
Communication Port	RS-232, RS-485, and Ethernet Port	
Network Interface	Ethernet (RJ-45 10/100 base-Tx) x 1	
Network Protocol	TCP/IP, DHCP, HTTP, UDP, FTP, PPP	
Software Upgrade	Upgrade via Memory Card(SD Card)	
Password Protection	Operation / Menu Setup / Remote Access	
Network Capabilities	Archive image as JPEG formats, Multi-brand multiplexer decoding, Remote live or recorded images	
Power Supply	Input: 100V-230V, 50 Hz/60 Hz; Output: DC12V max 5A: (AC adapter)	
Dimensions	220 mm x 94 mm x 340 mm EIA 19" 2U Half Size Mountable	
Operation Temperature	5° C ~ 40° C (41° F ~ 104° F)	
Regulation	FCC, CE	
Provided Accessories	AC Adapter	
	Instruction manual	
	Power cord	
	CD	
	Screw ( #6-32UNC ) x 4, Screw ( M3 ) x 8	
	Key x 2	

\*Design and specifications subject to change without notice.

SLD240 v1.0