

security labs



SLD250 Four Channel Multiplexed DVR

Owner's Manual

OWNER'S MANUAL

To obtain the best performance and ensure that the device functions correctly, please read this manual carefully and completely.

FCC Compliance

REGULATORY INFORMATION: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- > Reorient or relocate the receiving antenna.
- > Increase the separation between the equipment and receiver.
- > Connect the equipment into an outlet on a circuit different from that to the receiver is connected.
- > Consult the dealer or an experienced electronics service technician for help.



Warnings and Cautions

WARNING:



?? TO REDUCE THE RISK OF FIRE OR ELECTRICAL SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

?? DO NOT INSERT ANY METALLIC OBJECT THROUGH VENTILATION GRILLS.

CAUTION:

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

Explanation of Graphical Symbols

	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of insinuated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electrical shock to persons.
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

USERS OF THIS DEVICE ARE RESPONSIBLE FOR CHECKING AND COMPLYING WITH ALL FEDERAL, STATE, AND LOCAL LAWS AND STATUTES CONCERNING THE MONITORING AND RECORDING OF VIDEO AND AUDIO SIGNALS. THE MANUFACTURER AND/OR RESELLER SHALL NOT BE HELD RESPONSIBLE FOR THE USE OF THIS DEVICE IN VIOLATION OF CURRENT LAWS AND STATUTES.

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Chapter 1 Features

This device includes 4 camera inputs and offers the following features:

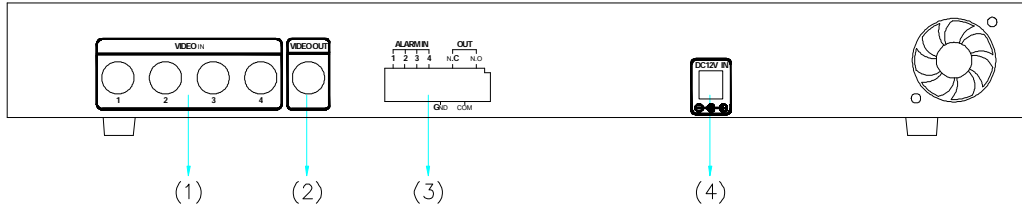
- ~~✂~~ Device can be used much like a VHS system with live display, playback and video recording.
- ~~✂~~ Supports various types of cameras with real, live-mode display.
- ~~✂~~ Multi-speed recording selection on normal recording mode or alarm recording mode; the highest speed of recording is 30/25 (NTSC/PAL) fields in both modes.
- ~~✂~~ Digitized data storage with M-JPEG compression technology will give you organized video data management without the hassles of traditional video tape.
- ~~✂~~ Non-OS (operating system) based for greater reliability and stability.
- ~~✂~~ Contrast, hue and brightness are individually adjustable for each camera.
- ~~✂~~ Supports 1 hard disk (HDD) ranging from 40GB to 120GB.
- ~~✂~~ Supports both color and monochrome cameras.
- ~~✂~~ When external alarm is triggered, corresponding camera number appears on the monitor with text.
- ~~✂~~ Motion detection: user can easily adjust sensitivity of motion detection and setup buzzer alarm when device is triggered by motion.
- ~~✂~~ Playback can be searched by time or event list.
- ~~✂~~ Selectable recording qualities (best/high/medium/low).
- ~~✂~~ Recording can operate manually or be activated automatically when alarm is triggered.
- ~~✂~~ Easy Playback options including reverse (x6) and fast forwarding (x2, x4, x6).
- ~~✂~~ Playback mode with pause (field by field).
- ~~✂~~ Easy to understand On Screen Display.
- ~~✂~~ Device will overwrite data and notify operator on monitor when the HDD is near full.
- ~~✂~~ System will restore the previous settings and continue camera activity after restart.
- ~~✂~~ Key lock function secures your DVR from accidentally pushing buttons.

Chapter 2 Specifications

Operation System	Embedded RTOS	
Video Input	NTSC/PAL	
Video Input Channel	4ch Composite	
Video Output Channel	1ch Composite	
Display Frame	NTSC	120 fps (4 x 30 fps)
	PAL	100 fps (4 x 25 fps)
Recording Frame Rate	NTSC	30 fps / 4ch
	PAL	25 fps / 4ch
Recording Mode	Manual / Alarm / Schedule	
Resolution	Display	NTSC: 720 x 480 / PAL: 720 x 576
	Recording	NTSC: 640 x 224 / PAL: 640 x 272
Compression Format	Advanced MJPEG	Low: 8K Bytes / Frame
		Medium: 10K Bytes / Frame
		High: 15K Bytes / Frame
		Best: 20K Bytes / Frame
HDD	80GB removable HDD (installed)	
Backup Device	VCR	
Alarm Control Type	Sensor	4 Input , 1 Output
	Motion Detection	YES
	Video Loss	YES
Power Supply	DC 12V / 4A	
Dimension	17"W x 12.5"D x 2.25"H	
Weight	3.5 KG	

Chapter 3 Hardware Overview

Back panel layout overview

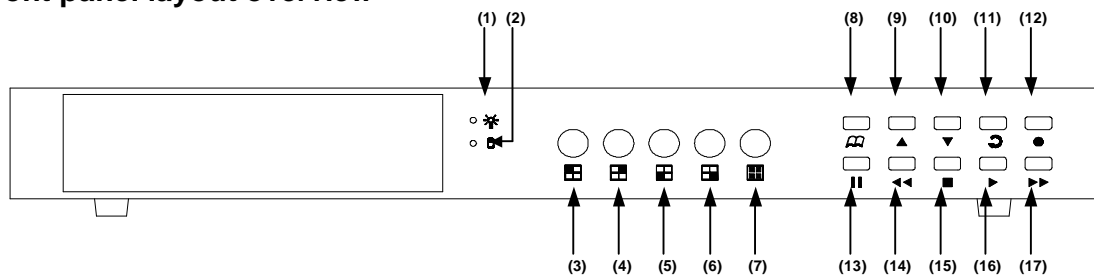


- (1) Video input : Camera 1-4 video input with BNC connector
- (2) Video output : Corresponding to monitor
- (3) Sensor I/O

Pin Number	Introduction
1	Sensor Input of Camera #1
2	Sensor Input of Camera #2
3	Sensor Input of Camera #3
4	Sensor Input of Camera #4
5	Sensor GND of Camera (#1- #4)
6	Relay N.C Output
7	Relay COM Output
8	Relay N.O Output














- (4) Power Input: Please use the power supply included with unit.
DC-12V / 4A adapter required

Front panel layout overview



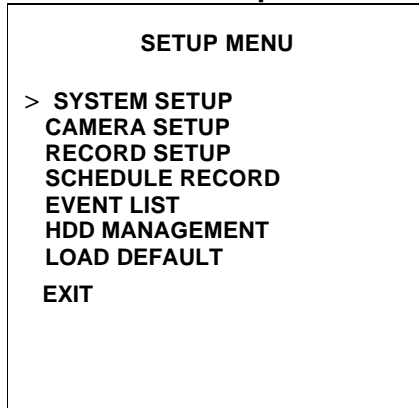
Led and buttons function list

Part	Label	Function
1	REC	Recording status LED
2	HDD	Hard disk status LED

3	1 	1. This view button controls FULL SCREEN display from camera 1. 2. When entering/changing a password, corresponds to number "1".
4	2 	1. This view button controls FULL SCREEN display from camera 2. 2. When entering/changing a password, corresponds to number "2".
5	3 	1. This view button controls FULL SCREEN display from camera 3. 2. When entering/changing a password, corresponds to number "3".
6	4 	1. This view button controls FULL SCREEN display from camera 4. 2. When entering/changing a password, corresponds to number "4".
7	QUAD 	Quad screen: All cameras are displayed.
8	MENU	Press MENU to go into or exit menu
9	.	1. Move the cursor upward or leftward 2. When not under the recording mode, you can use the button to adjust position of date & time display which appears on OSD
10	.	1. Move the cursor downward or rightward 2. When it's not under recording mode, you can use the button to adjust position of date & time display which appears on OSD
11		1. Press  key to select choices in the MENU system 2. Make any changes in the selected option or increase the number. 3. You can use  key to indicate HDD status when system is not in Menu mode.
12	REC	Press REC to start recording.
13		Press Pause to pause forward motion (field by field) in Playback mode. You can easily lock the DVR buttons by pressing the Pause button 5 times under recording or monitoring mode. When key lock is activated, you can see an "L" show up on the upper right corner of screen. Press 5 times again to release the buttons from key lock mode.
14		6x fast rewind mode
15		Press Stop to stop playback or recording
16		Press the Play button to enter time search and event list search modes.
17		Press Fast Forward to play video forward at high speed. Press the button again and the speed will be change circulative from x2,x4, to the highest x6.

Chapter 4 Setup Procedures

1. Main Menu setup



Press the **MENU** button to enter the main menu.

Use the **←** and **→** button to select items.

Press the **↵** button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.

Contents:

(1) **SYSTEM SETUP**

Includes buzzer duration time (1-30 seconds), Alarm video interruption on/off, Motion buzzer on/off, HDD password selection, System time/date.

(2) **CAMERA SETUP**

Ch1-Ch4 camera, Camera on/off recording, Motion detection on/off, Sensitivity of motion detection, Brightness, contrast, and hue selections for each camera.

(3) **RECORD SETUP**

Record mode (MUX/QUAD), Normal record frame selection (FPS), Alarm record selection (FPS), Alarm record dwell time, Record quality (Low/Medium/High/Best).

(4) **SCHEDULE RECORD**

Scheduled Recording (Fully /No /Alarm record)

(5) **EVENT LIST**

Event indexing (REC/PWR/MOT/ALM)

(6) **HDD MANAGEMENT**

HDD full overwriting (YES/NO), Hard Drive Capacity, Amount of HDD free (%), Format HDD (requires key-in password).

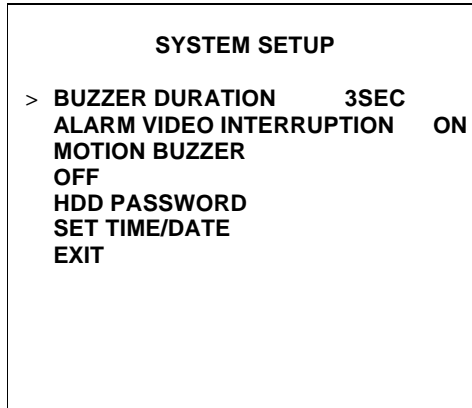
(7) **LOAD DEFAULT**

Returns to factory settings upon entering selection.

(8) **EXIT**

Escape from the setup menu.

2. System setup



Press the **MENU** button to enter the main menu.

Use the **←** and **→** button to select items.

Press the **↵** button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.

Contents:

(1) **BUZZER DURATION 3 SEC (Default) Available (1-30 seconds)**

Use **↵** button to adjust the duration time of the buzzer action.

(2) **ALARM VIDEO INTERRUPTION**

On for default

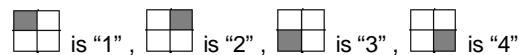
(3) **MOTION BUZZER**

Off for default

(4) **HDD PASSWORD**

A password can be setup to protect the hard disk content. It needs to be entered in order to perform a hard disk format. Default password is set to: **1111**

Use the view control button on the front panel to input the numbers.



(5) **SET TIME/DATE**

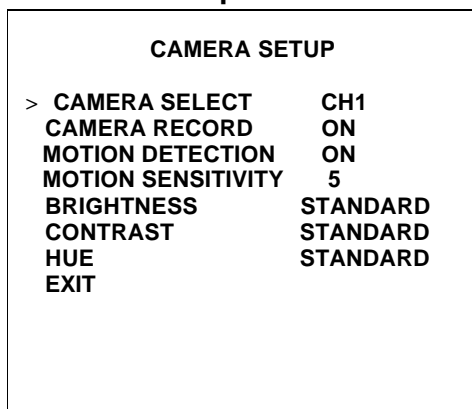
Use the **←** and **→** button to select items.

Press the **↵** button to increase the number.

(6) **EXIT**

Exit from the **SYSTEM SETUP** menu.

3. Camera setup










Press the **MENU** button to enter the main menu.

Use the **←** and **→** button to select items.

Press the **↵** button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.



Contents:


- (1) **CAMERA SELECT CH1(CH1~CH4)**
Use  button to select the camera from CAM 1 – CAM 4 to be adjusted.
- (2) **CAMERA RECORD ON(ON/OFF)**
Use  button to select ON/OFF recording.
- (3) **MOTION DETECTION ON(ON/OFF)**
Use  button to select ON/OFF motion detection.
- (4) **MOTION SENSITIVITY(1~10)**
Use  button to adjust sensitivity of motion detection for selected camera.
Sensitivity ranges from 1 to 10, default value is 5(STANDARD). Selection “10” is the most sensitive to motion and “1” is least sensitive.
- (5) **BRIGHTNESS STANDARD(1~10)**
Use  button to adjust the brightness of the selected camera. Initial number is 5 (STANDARD).
- (6) **CONTRAST STANDARD(1~10)**
Use  button to adjust the contrast of the selected camera. Initial number is 5 (STANDARD).
- (7) **HUE STANDARD(1~10)**
Use  button to adjust the hue of the selected camera. Initial number is 5 (STANDARD).
- (8) **EXIT**
Exit from the **CAMERA SETUP** menu.

4. Record setup

RECORD SETUP	
> RECORD MODE	MUX
NORMAL RECORD FPS	15P
ALARM RECORD FPS	15P
ALARM RECORD DWELL	5SEC
RECORD QUALITY	HIGH
EXIT	



Press the **MENU** button to enter the main menu.

Use the  and  button to select items.

Press the  button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.


Contents:

- (1) **RECORD MODE MUX(MUX/QUAD)**
Use  button to select MUX or QUAD recording
- (2) **NORMAL RECORD FPS 15P (1~5P/7P/10P/15P/30P)**
Use  button to select recording speed.
15P means 15 fields per second, 30P is the highest speed, and 1P is the

lowest. There are a total of nine speeds you can choose from. (FPS: Fields per second)


Note: PAL: (1~4P/6P/8P/12P/25P) NTSC=15P, PAL=12P on default

(3) ALARM RECORD FPS 15P (1~5P/7P/10P/15P/30P)

Use  button to select alarm recording speed when external alarm or motion detection is triggered.

Note: PAL: (1~4P/6P/8P/12P/25P) NTSC=15P, PAL=12P on default


(4) ALARM RECORD DWELL 5SEC (1-30)

Use  button to set the dwell time for alarm recording with an external trigger or motion alarm.

When triggered by an external alarm or motion and within the dwell period:

- the screen will be switched into quad format
- the corresponding camera will be marked ID "ALM" or "MOT"

(5) RECORD QUALITY HIGH(BEST/HIGH/MEDIUM/LOW)

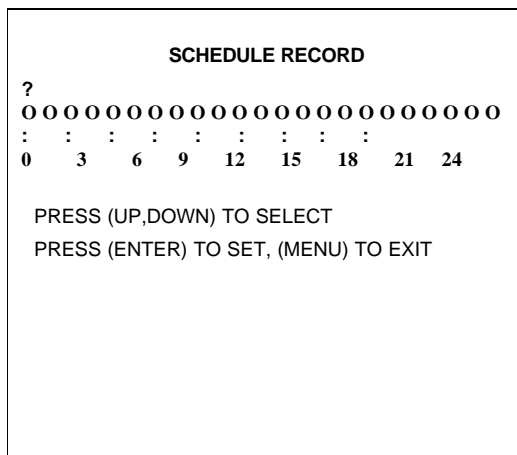
Use  button to select the BEST, HIGH, MEDIUM or LOW setting. The higher the quality, the higher the amount of storage will be consumed. Thus, this setting should be carefully chosen as it will affect the usage of hard disk storage.

A table of relationships between quality, record speed and hard disks is included at the end of this manual for reference.



(6) EXIT


Exit from the **RECORD SETUP** menu

5. Scheduled record



Press the **MENU** button to enter the main menu.

Use the  and  button to select items.

Press the  button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.

Contents:

(1) SCHEDULE RECORD

There are 24 circles in the schedule table, which represent 24 hours

Every circles has 3 options to select:

O : represents "fully record"

X : represents "no record"

A : represents “alarm record”

Use the **?** and **?** button to select items

Press **?** button to select the **O / X / A** (Fully / No / Alarm Record)

6. Event List

Press **?** key on “EVENT LIST” than windows will appear as below:

EVENT LIST				
MASTER HARD DRIVE				
>	01	2003/AUG/25	12:13:16	REC
	02	2003/AUG/25	11:14:21	PWR
	03	2003/AUG/25	10:03:04	MOT CH2
	04	2003/AUG/25	09:35:24	ALM CH1

Use “**?**” key or “**?**” key to select event which needs to be played. The location of “>” symbol will move up and down for indicating current event which is selected. Once the correct event is indicated, press **?** **PLAY** key to start playing the video in normal speed.

There are 4 different types of events that will be recorded:

1. REC: Event starts when “REC” key is pressed or a timed recording.
2. PWR: System begins recording event after a power interruption and restart of the unit.
3. ALM: Event starts with an external trigger and displays the channel that was triggered.
4. MOT: Event starts recording with motion in the selected camera channels.

7. HDD management

HDD MANAGEMENT	
> OVERWRITE MODE	NO
MASTER HDD CAPACITY	
76GB	
MASTER HDD LEFT RATIO	
73GB 97%	
MASTER HDD FORMAT	
EXIT	

Press the **MENU** button to enter the main menu.

Use the **?** and **?** button to select items.

Press the **?** button to confirm the selection or increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.

Contents:

(1) OVERWRITE MODE YES (NO)

Use **?** button to enable or disable overwriting when HDD is full.

When HDD overwrite is enabled, the oldest partition on the HDD will automatically be reused, this means the oldest images will be overwritten by the current images.

When overwrite mode is disabled, the HDD Full Warning will appear and will need to

be configured.

(2) **MASTER HDD CAPACITY 76GB**

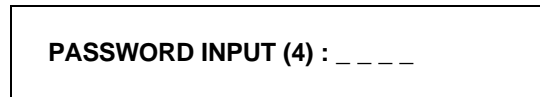
The HDD capacity will be indicated on the screen. This option can not be changed.

(3) **MASTER HDD LEFT RATIO 73GB 97%**





The amount of unused space remaining on the HDD.

(4) **MASTER HDD FORMAT**

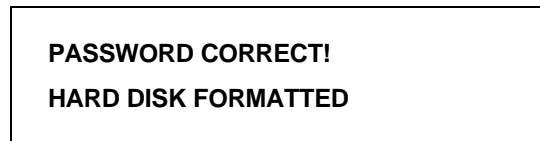
Use  button to enter the **MASTER HDD FORMAT** menu



Use the view control button on the front panel to input the number

 is "1",  is "2",  is "3",  is "4"

When you key in the correct password, the screen will be displayed the following message:




Otherwise, the following error message will be displayed on the screen:



(5) **EXIT**

Escape from the **HDD MANAGEMENT** menu

8. Load default

Use the  button to return to the factory default settings. This will clear all the user settings and replace it with the original default parameters (The HDD Password and Schedule Record can't be defaulted here). There is no confirmation screen. By selecting "Load default", the factory settings will be automatically applied.

9. Exit

Exit from the **SETUP MENU**

Chapter 5 Operation

1. Getting started with your machine

Understand the following instructions before you switch on the machine:

- 1.1 Voltage check: Before power cable is connected, please check the voltage of this appliance against the supply.

CAUTION – An incorrect power supply can damage this unit.

- 1.2 Hard Disk connection: Make sure the hard drive is securely fastened in the drive bay and the bay is in the locked position.

2. Recording

Press the **REC** key to enter the Recording Mode. And press the **STOP** key to stop recording.

✍ “REC[M]” or “REC[Q]” sign will be indicated in top left corner of the screen. This indicates whether the unit is in MUX or QUAD recording mode.

✍ “15P” sign will be indicated in top right corner of the screen. This is the current recording speed selected. 15P means 15 fields per second.

✍ “O” sign will be indicated in the center corner of the screen. This verifies that the channel is being recorded.


✍ “X” sign will be indicated in the center corner of the channels if the channel is not being recorded.

✍ **Notice:** “REC []” in the top left corner of the screen does not indicate that the unit is recording, but is simply in standby mode, ready to record. The unit will only begin recording when displaying the “O” status in the center of the screen next to the channel numbers. An “X” indicates the channel is not recording. You can verify that the video is being saved to the drive by noting that the red light next to “REC” on the front panel of the unit is lit AND the green light is blinking next to “HDD”.

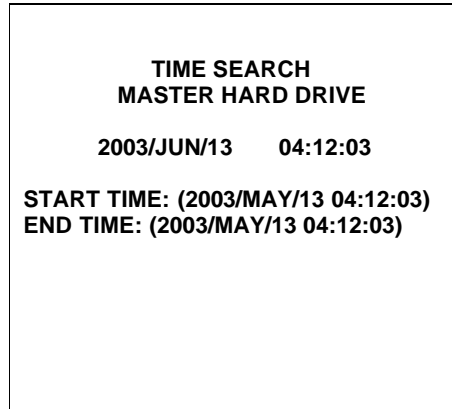
✍ For more information on setting up Recording Mode, refer to Section 3.4 Recording Setup.

✍ In Recording Mode, if there is a power failure or power lost for any reason that causes the machine to shut down, it will return to the Recording Mode automatically when power is restored.



3. Playback


Press the  **PLAY** button and select Time Search or Event List.

The following message will be displayed on the screen:





Press the **MENU** button to enter the main menu.

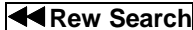
Use the  and  button to select items.

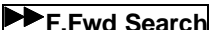
Press the  button to increase highlighted selection number.

Press **MENU** or Select **EXIT** to escape the setup mode.

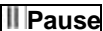
Press  **PLAY** button to play video forward.


 "MUX or QUAD" sign will be indicated in top right corner of the screen. This indicates the recording mode selected.

Press  **Rew Search** button to play video reverse at 6x speed.

Press  **F.Fwd Search** button to play video forward at high speeds. Press the button again, and the speed will be changed circulative from x2, x4, and x6.

 "REW" or "FF *2/4/6" sign will be indicated in top left corner of the screen.

Press  **Pause** button to pause (field by field) in forward motion. This function can be used in full screen and quad mode (If you chose QUAD in recording mode then it can't playback in full screen).

Press the  **STOP** button to leave playback mode and resume the Live Mode.

4. Hard Disk

Should you wish to install a new hard drive in this unit, a list of tested hard drives shown to be compatible can be found below. If you have further questions about hard drive compatibility, consult the manufacturer.

Brand	Model	Capacity	Speed (rpm)
Seagate	ST3120023A	120GB	7200 rpm
Seagate	ST380020A	80GB	7200 rpm
Maxtor	6Y120L0	120GB	7200 rpm
Maxtor	6Y080L0	80GB	7200 rpm

Notice: Samsung Hard Drives are not recommended for this unit.

5. Backup

This unit provides composite signal output for back-up use. You can keep the image data by attaching a VCR to the **VIDEO OUT** connection on the rear of the unit. Set the unit to playback mode. Set the VCR to the proper input selection and press record on the VCR.

6. Alarm control

There are three types of alarms that the system can be configured to handle. They are external alarm, video loss alarm, and an alarm for motion detection.

When the above types of alarms are triggered, it changes recording speed to alarm recording speed.

Video Loss alarm is enabled as a default and cannot be changed. The buzzer will sound and a "V.LOSS" sign will be indicated on the screen.

7. External alarm connector









The external alarm functions only when the DVR has been set under recording mode. The unit has 4 input ports to receive signals from external alarms and 4 GND port for termination. When the external alarm is triggered, currents will be grounded through the GND port to activate the external alarm.

- A** The text "ALM" will be displayed on the corresponding channel.
- B** A relay of the signal will occur.
- C** Recording speed will be switched from normal mode to alarm mode (refer to chapter 4 for recording settings)
- D** The unit will only record from the external trigger when "A" has been selected during the specific time frame in the scheduled recordings menu. This is also true for motion-detected recordings.

Chapter 6 Recording time length

Recording Results in NTSC Format			30fps	15fps	10fps	7fps	5fps	4fps	3fps	2fps	1fps
Video Signal	Display Format	Video Quality									
NTSC	QUAD MODE	Best	19hr	38hr	57hr	80hr	114hr	142hr	190hr	285hr	570hr
		High	29hr	57hr	87hr	120hr	171hr	214hr	285hr	426hr	870hr
		Medium	35hr	70hr	105hr	148hr	213hr	266hr	350hr	532hr	1050hr
		Low	50hr	100hr	150hr	208hr	300hr	375hr	500hr	750hr	1500hr
	MUX MODE (Full Screen)	Best	38hr	76hr	114hr	160hr	228hr	285hr	380hr	570hr	1140hr
		High	57hr	114hr	171hr	240hr	342hr	428hr	570hr	855hr	1710hr
		Medium	71hr	142hr	213hr	298hr	426hr	532hr	710hr	1065hr	2130hr
		Low	100hr	200hr	300hr	420hr	600hr	750hr	1000hr	1500hr	3000hr
Recording Results in PAL Format			25fps	12fps	8fps	6fps	4fps	3fps	2fps	1fps	
Video Signal	Display Format	Video Quality									
PAL	QUAD MODE	Best	12hr	25hr	37hr	50hr	75hr	100hr	150hr	300hr	
		High	16hr	33hr	50hr	66hr	100hr	133hr	200hr	400hr	
		Medium	23hr	48hr	72hr	95hr	143hr	191hr	287hr	575hr	
		Low	34hr	70hr	106hr	141hr	212hr	283hr	425hr	850hr	
	MUX MODE (Full Screen)	Best	35hr	72hr	110hr	145hr	218hr	291hr	437hr	875hr	
		High	46hr	95hr	144hr	190hr	287hr	383hr	575hr	1150hr	
		Medium	67hr	139hr	209hr	278hr	418hr	558hr	837hr	1675hr	
		Low	98hr	204hr	306hr	408hr	612hr	816hr	1225hr	2450hr	

Chapter 7 HDD Drive installation procedures

		
1.Open HDD rack	2.Pull out the HDD rack	3.Adjust the lock of HDD rack
		
4.Connect HDD(Power & IDE) to HDD rack	5.Cover up the HDD rack	6.Push HDD rack back to DVR slot
		
7.Lock the HDD rack	8.Power up DVR system	

Attention:

1. Hard drive master mode must be set correctly.
2. Primary hard drive must be set as master.
3. Make sure power cable is unplugged before hard drive installation starts.
4. IDE cable and power cable must be hooked up correctly.