

User Guide

INFORMATION MAY CHANGE WITHOUT NOTICE.

Table of Contents

Package Contents	3
Introduction.....	4
1. Product Overview.....	4
2. Front Panel.....	4
3. Rear Panel.....	5
4. IR Remote Controller	6
Installation.....	8
1. PTZ Camera connection	8
2. Alarm (External) Installation.....	9
Start up the DVR System	11
1. Pop-Up Menu	11
2. Main Menu.....	12
2.1. Camera Setup	12
2.2. Motion Setup.....	13
2.3. Record Setup.....	14
2.4. Alarm Setup	15
2.5. Hard Disk Management Setup.....	16
2.6. Network Setup	17
2.7. Backup Setup.....	19
2.8. System Setup.....	21
PTZ Menu	25
1. PTZ Preset.....	25
2. PTZ Setup.....	26
Playback.....	27
1. Playback Menu	27
2. Time Search	28
3. Event Search.....	29
4. Playback on PC	30
4.2 CD/DVD BACKUP PLAYBACK	34
4.3 USB & LOCAL BACKUP FILE PLAYBACK.....	35
4.4 BACKUP FILE TO AVI	37
APPENDIX A: RECORDING TIME LAPSE (HOURS).....	38
Half D1- 720x240	38
CIF-360x240.....	40
APPENDIX B: HDD COMPATIBLE TABLE	43
APPENDIX C: ERROR MESSAGE LIST	44
Caution	

- For your safety, unplugging the power before moving the DVR, installing, or replacing any parts or hard drive.
- Make sure all the power cable and wires are properly set up before using the DVR.
- To avoid a short circuit, don't leave any unnecessary parts inside the DVR.
- Please avoid dramatic changes of the environment, such as dust, temperature, and humidity. Keep the DVR in a temperature ranging from 5°C~40°C.
- Keep the DVR in a well-ventilated place and away from any heat-generating objects.
- Do not block the DVR's fan and vent.
- Do not expose this unit to the sun directly.
- If you are not sure of the installation and setup, please consult the technicians.
- Don't fix it yourself if there's any damage to this unit or the power supply, Consult the technician or the distributor.

Package Contents

- DVR Main unit x 1
- Power Adapter x1 + Power cord x1(4/8ch DVR)
- Power cord x1(16ch DVR)
- CD with Software / Manual x 1
- USB Mouse X1
- IR Remote Controller x 1

If there is any damage, shortage or inappropriate item in the package, please contact with your local dealer.

Introduction

1. Product Overview

- 4/8/16ch high performance digital surveillance system
- Triplex operations : Recording / Playback / Remote Backup
- H.264 Video compressive
- 240PPS (8/16ch), 120PPS(4ch).
- CMS / 3GPP support.
- Search by Time, Event.
- Ethernet remote control/ Viewer, support PPPoE, DHCP, DDNS.
- Flexible and easy backup files through USB, CDRW/DVDRW.
- Multi-Lingual OSD support
- Multiple and flexible operation control by mouse and IR remote.
- P/T/Z camera control by RS485
- Dimension(Width x Height x Depth):
340x60x270mm (4/8CH DVR), 430x80x325mm (16CH DVR)

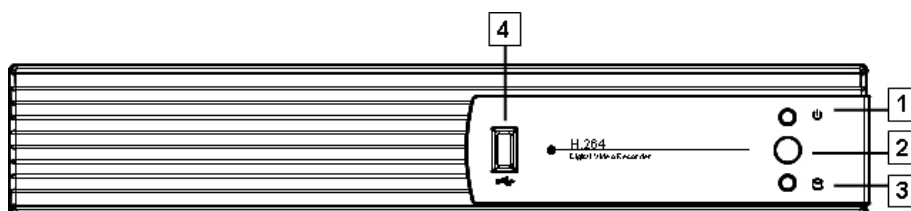
2. Front Panel

4CH DVR (Front Panel 1)

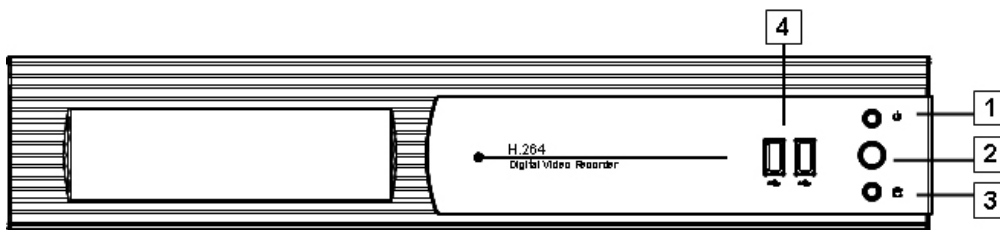


No.	Function
1	● Power
2	● HDD
3	➡ USB for backup/ firmware upgrade
4	● IR Receiver

4CH DVR (Front Panel 2)



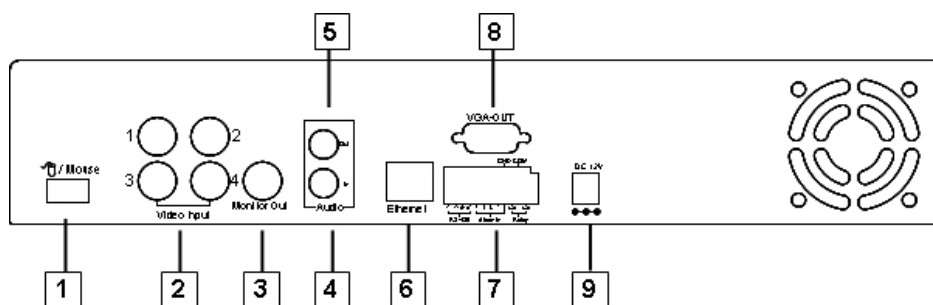
8/16CH DVR



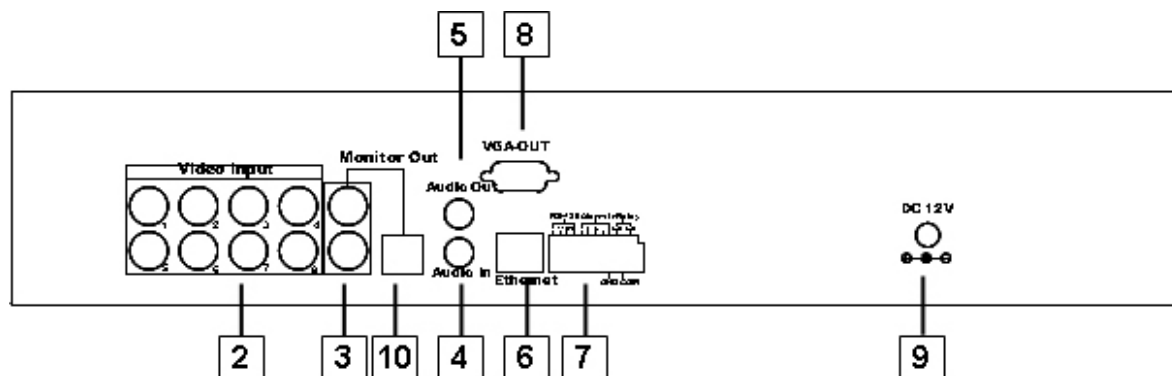
No.	Name	Function
1	Power LED	The DVR unit is powered up and running. (Green color)
2	IR Receiver	IR Control receiver (Refer to IR Remote Controller)
3	Hard disk Activated LED	LED indicator flashes at hard disk is acting (Red color)
4	USB Port	USB Port for firmware upgrade or USB backup

3. Rear Panel

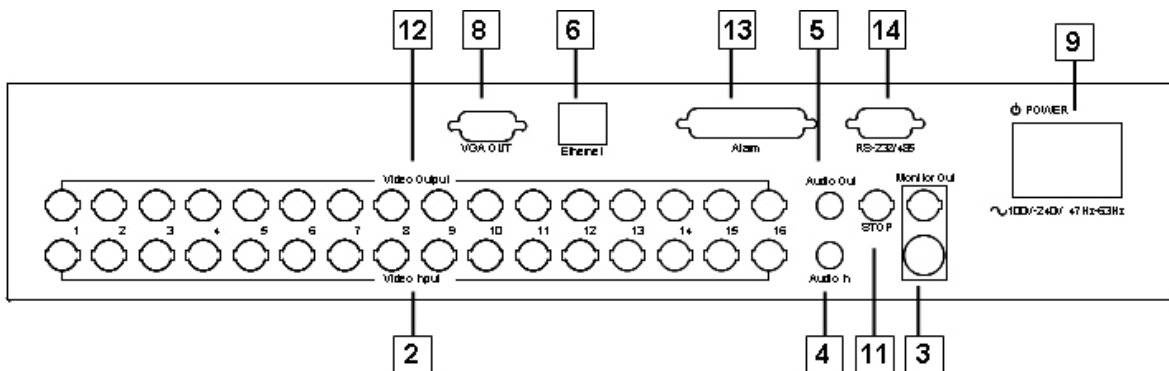
4CH DVR



8CH DVR



16CH DVR



No.	Function
1	USB PORT
2	VIDEO IN (BNC)
3	Monitor OUT
4	AUDIO-IN
5	AUDIO-OUT
6	Ethernet (RJ45)
7	RS-485/ ALARM/ RELAY, 4 pin connector for external control unit, 5 pin connector for Alarm input and 3 pin connector for relay
8	VGA Display Connector (DB-9)
9	DC-IN (12V)
10	S-VIDEO
11	SPOT MONITOR
12	Video Output
13	Alarm
14	RS232 / RS485 port

4. IR Remote Controller



ITEM	Function
AUTO	Press AUTO to switch channel by channel automatically.
SEL	Press this button to select the different assembled of camera formats or perform PTZ functions.
REC	Press REC to start recording & again to stop.
1-16	Press the button to select the channel for full screen.
⏮	Fast backward
⏪	Picture by picture backward play

⏮	Picture by picture forward play
⏭	Fast forward
▶	Play video forward
MODE	Split Screen Switch
ID	**ID setup to control DVRs
▲/▶/	Switch split screen & Move up / right or increase.
▼/◀	Switch split screen & Move down / left or decrease.
↵	To enter item or make choose.
MENU	To into or exit main menu
STOP	Stop play and playback

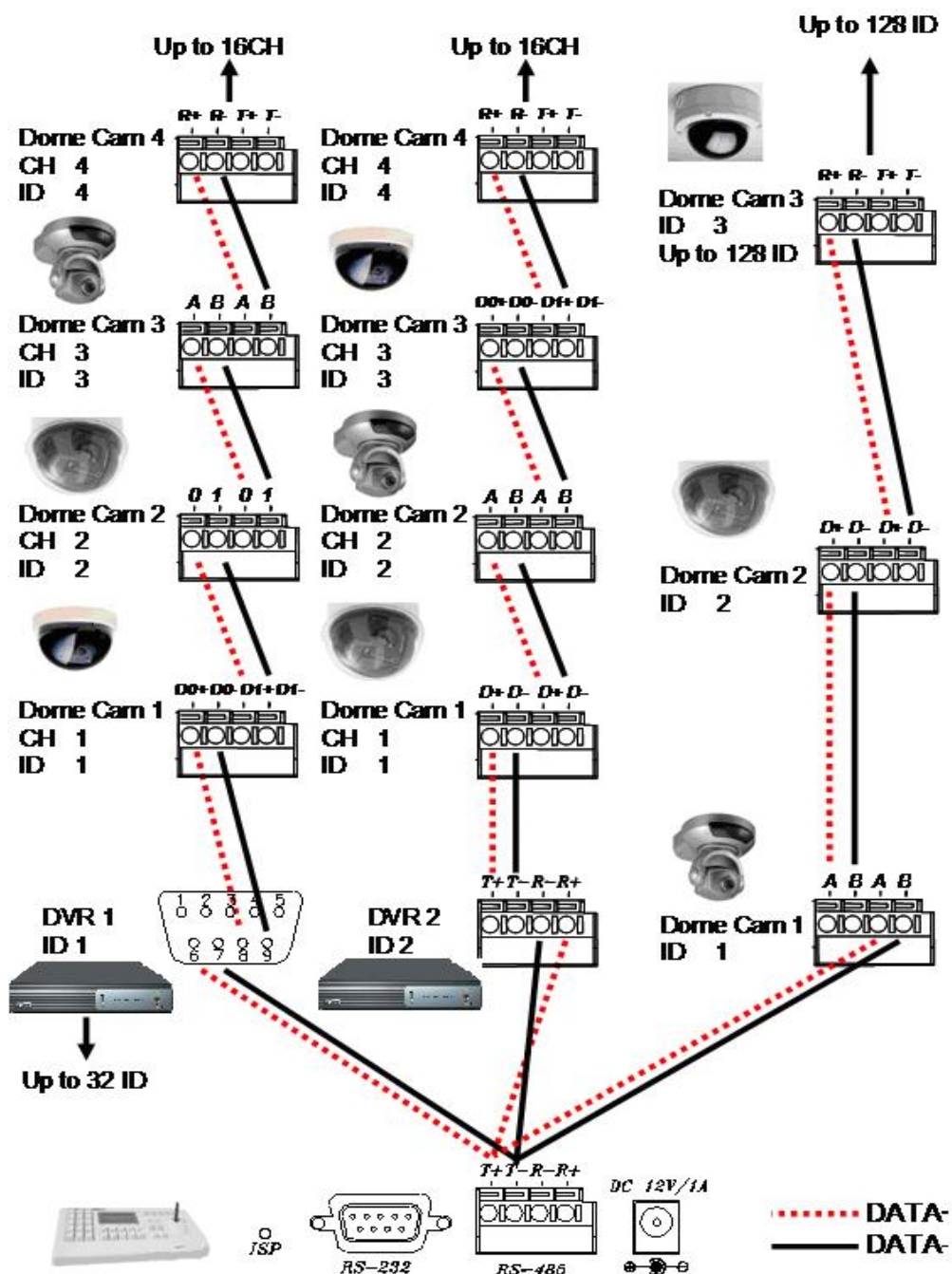
- 1) Each DVR can setup its own ID number. The user can control DVR via remote controller by pressing ID button first and then ID number of DVR and ID button again of remote controller.
- 2) For example, if DVR is set to 1, the user has to press ID button+ 1+ ID button again of remote controller to control this DVR.
- 3) Click ID button first and then number 99 and ID button again to control multi-DVR(s) on the same time.

Installation

 **Be sure there is no power connection before starting installation!**

1. PTZ Camera connection

Following diagram for DVR connect between PTZ camera & joystick controller, for DVR to control PTZ camera please make sure the CAMERA ID, BANDRATE (default at 9600 bps) and RS-485 cable.



2. Alarm (External) Installation

The DVR unit provides one alarm (speaker) signal. Please refer to following figure.

There are three types of alarms that the system can be configured to handle. They are Motion detection Alarm, External Alarm and Video Loss Alarm.

A. Motion detection Alarm and External Alarm:

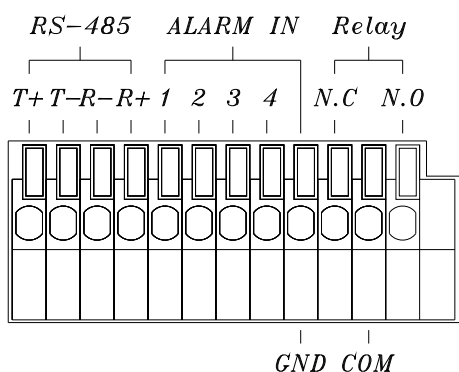
When motion detection or External Alarm was triggered, there are 5 possible actions will be taken.

1. Changes recording speed as alarm recording speed.
2. Monitor will display corresponding full screen alarm channel, it will switch automatic mode to manual mode if buttons pressing activity occurred in 5 seconds.
3. Relays can be activated by motion detection or external alarm when turning on.
4. The camera title will be transformed into color of yellow when motion is happening, "ALARM" text will show up when external alarm is triggered.

B. Video Loss Alarm:

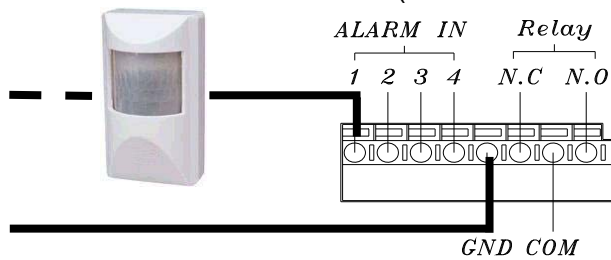
The default setting of Video Loss alarm is enabled.

Terminal Connectors:

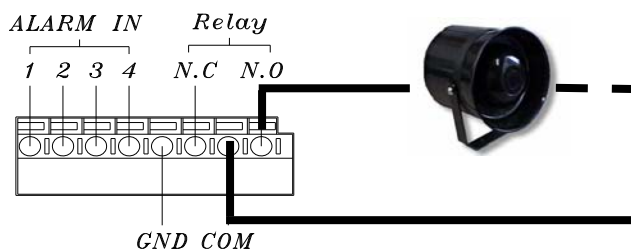


Symbol	Function
T+	RS-485 sends +
T -	RS-485 sends -
R-	RS-485 receives -
R+	RS-485 receives +
ALARM1-4	Camera alarm input.
GND	GND.
N.C	Relay N.C.
COM	Relay COM
N.O	Relay N.O.

EXAMPLE 1 : Connect Alarm In One with PIR (Passive Infrared).



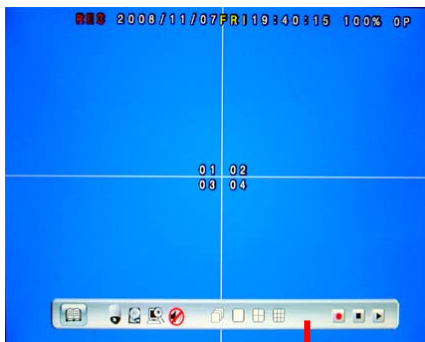
EXAMPLE 2 : Connect with Alarm Siren at Relay N.O.



Start up the DVR System

After the unit is properly installed, the DVR unit is ready to record and play. Please plug the power to turn on the DVR.

1. Pop-Up Menu



There is a Pop-Up Menu on the bottom of the screen to control DVR.



: Main Menu. Press this button to get into main menu.



: PTZ Control. Press this button to get into PTZ setup menu.



: Disk Drive Information. Press this button to display disk information.



: Digital Zoom. : Under full-screen mode, click mouse left button and to pull a range to zoom in or zoom out the image (up to 16X). Right-click the mouse button can disable this function.



: Audio Control. Press this button to turn the audio on / off.



: Screen Display Mode Selection



: Full screen



: 4 Split View



: 9 Split View



: 16 Split View



: Auto channel rotation



: Record/Playback Control



: Start Recording



: Stop Recording



: Play / Playback

2. Main Menu

Press  to enter the "main menu".



 : Camera Setup	 : Motion Setup	 : Record Setup
 : Alarm Setup	 : Hard Disk Setup	 : Network Setup
 : Backup Setup	 : System Setup	 : Exit

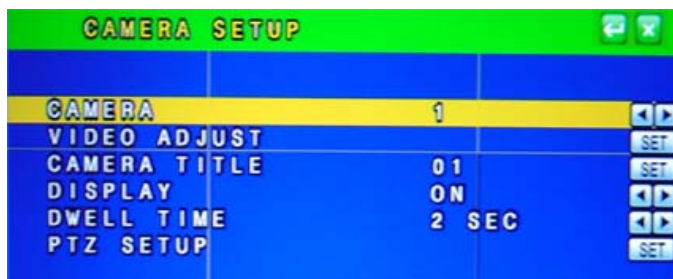
Press ▲ or ▼ to select items

Press ◀ or ▶ to change values

Press SET to see more options

 **ESC/Discard:** To escape this menu

2.1. Camera Setup



- ◆ **CAMERA:** To select or specify the camera for display/record.
- ◆ **VIDEO ADJUST:** To adjust video display contrast, brightness, hue, color and sharpness

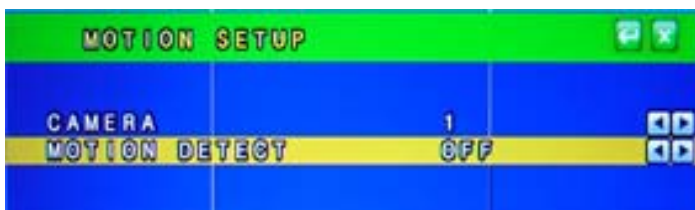


- ◆ **CAMERA TITLE:** To specify each camera name by entering characters.



- ◆ **DISPLAY:** Set the selected camera at “CAMERA” to display on screen or not.
 “OFF” – Hidden the channel on screen you choose, “ON”- Not hidden
- ◆ **DWELL TIME:** To setup the time period of camera auto rotate.
- ◆ **PTZ SETUP:** PTZ setup menu. (Please refer to **“PTZ Menu”**)

2.2. Motion Setup



- ◆ **CAMERA:** To select or specify the camera for motion setting.
- ◆ **MOTION DETECT:** “ON” / “OFF” – Enable/Disable motion detection.
- ◆ **BUZZER:** Press ◀ or ▶ / mouse wheel to change value for buzzer while motion detected.
- ◆ **SENSITIVITY:** Press ◀ or ▶ / mouse wheel to change sensitivity value from 001 (minimum) to 100 (maximum).
- ◆ **AREA SETUP:** Press **SET** to enter Motion Area Setting. (**Note: The default setting of all area is “MOTION ON”.**)

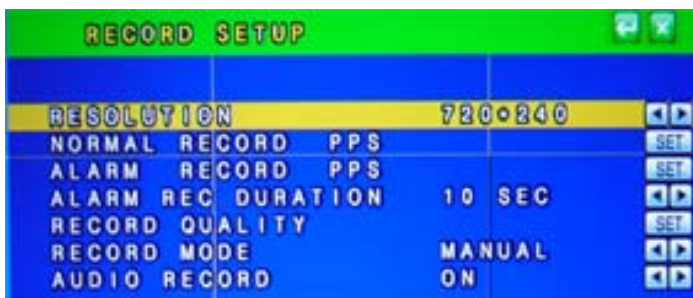


SELECT: Cancel the selected area.

CLEAR: Select the area without motion detection.

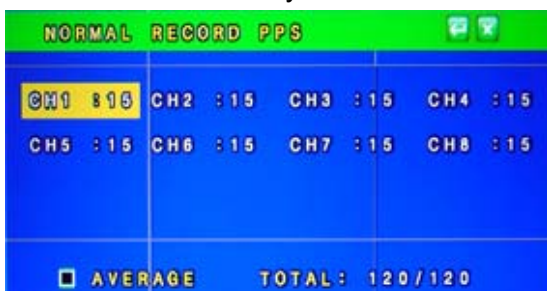
EXIT: Exit the motion detection setup.

2.3. Record Setup

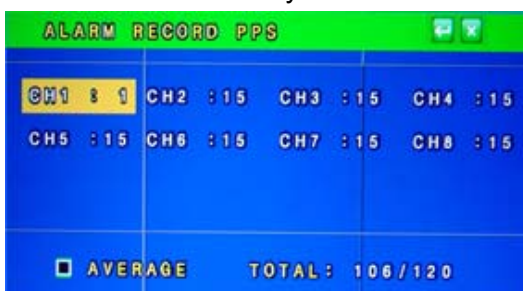


◆ **RESOLUTION:** To setup recording resolution as 720 x 240 (NTSC)/ 720 x 288 (PAL) or 360 x 240 (NTSC)/ 360 x 288 (PAL)

◆ **NORMAL RECORD PPS:** Press **SET** to change the PPS in normal recording. Choose “AVERAGE” to set PPS automatically by system or change the PPS for each channel manually




◆ **ALARM RECORD PPS:** Press **SET** to change the PPS in alarm recording. Choose “AVERAGE” to set PPS automatically by system or change the PPS for each channel manually.



◆ **ALARM REC DURATION:** To set the time period of alarm recording.

◆ **RECORD QUALITY:** Press **SET** to switch image quality of each channel (720 × 240 (NTSC) / 720 × 288 (PAL)) or each two channels (360 × 240 (NTSC) / 360 × 288 (PAL)). The image quality of each single channel can be setup as LOW/ MEDIUM/ HIGH/ BEST, or use “AVERAGE” to switch the image quality of all channels at once.

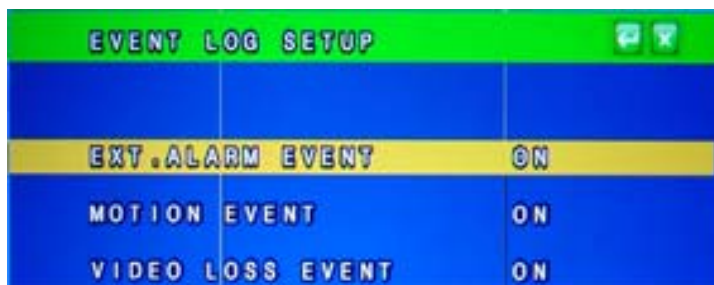


- ◆ **RECORD MODE:** Set record mode as ALWAYS/ MOTION/ SCHEDULE / OFF
- ◆ **AUDIO RECORD:** Enable/Disable the audio recording as ON/OFF
- ◆ **SCHEDULE SETUP:** Press **SET** to get into schedule setup menu.
 1. Use mouse to select schedule day/ time/ mode.
 2. Click  to save change and exit.

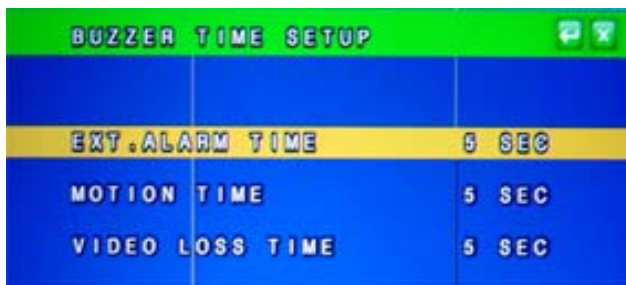
2.4. Alarm Setup



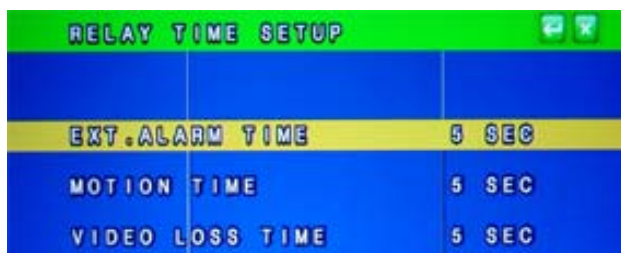
- ◆ **EXT. ALARM MODE:** Select N.C for “normal close” alarm input, or select N.O for “normal open” alarm input.
- ◆ **ALARM DISPLAY MODE:** Set display mode when alarm occurs.
- ◆ **VIDEO LOSS DETECT:** Enable/Disable video loss diction.
- ◆ **EVENT LOG SETUP:** Press **SET** to change value for MOTION EVENT / VIDEO LOSS EVENT to ON / OFF



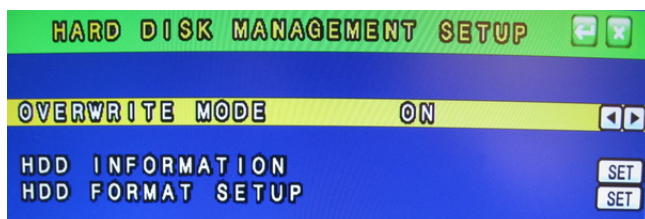
- ◆ **BUZZER TIME SETUP:** Press **SET** to set dwell time of BUZZER/ ALARM.



◆ **RELAY TIME SETUP:** Press **SET** to set dwell time of RELAY



2.5. Hard Disk Management Setup



2.5.1. OVERWRITE MODE

“ON” / “OFF” : Enable or Disable hard disk overwriting function.

2.5.2. CAPACITY WARNING

Set the hard disk capacity left (by %) that will start overwriting function to enable “Alarm” as warning.

Remark: When Overwrite Mode is OFF, Capacity Warning will enable automatically.

2.5.3. HDD INFORMATION

HDD INFORMATION		
DISK	CAPACITY	LEFT RATIO
HDD1	245 GB	100 %
HDD2	160 GB	98 %

Display existed hard disk information.

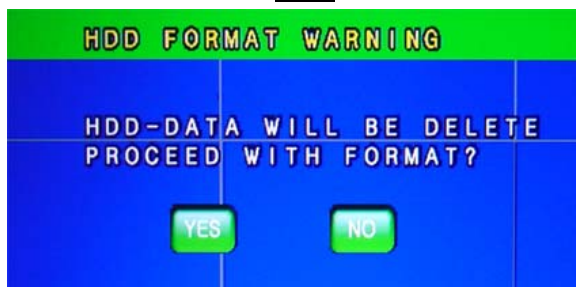
2.5.4. HDD FORMAT SETUP



- ◆ **HDD Password Protect** : “Enable” or “Disable” HDD Password protection.
- ◆ **HDD Password Setup**: Specify the limits of authority of user and set its own password. Default is “1111” .

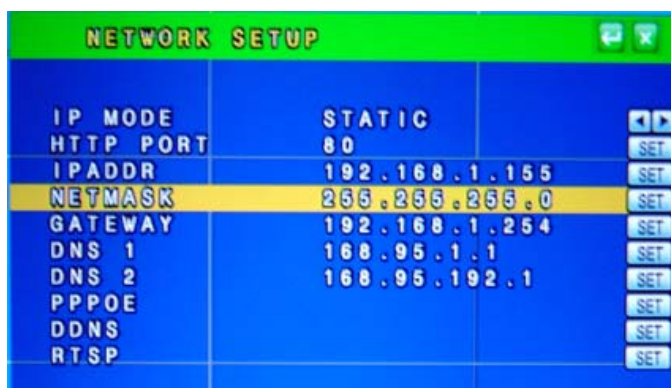


- ◆ **HDD Format**: Press **SET** to start FORMAT Hard disk.



2.6. Network Setup

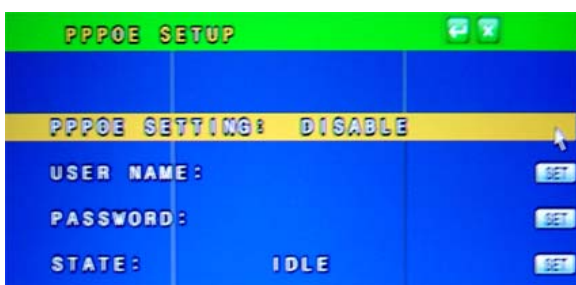
To set up Network configurations



- ◆ **IP MODE** : Set IP mode as Static or DHCP.
- ◆ **HTTP PORT**: Assign a communication port.

- ◆ **IPADDR:** The IP address acts as a locator for one IP device to find another and interact with it.
- ◆ **NETMASK:** Subnet mask is a range of logical addresses that is assigned to an organization. Please check with your M.I.S staff or administrator to enter the setting
- ◆ **GATEWAY:** Gateway IP address, please check with your M.I.S staff or administrator to enter the setting.
- ◆ **DNS 1 / DNS 2:** Domain Name System(DNS) translate hostnames to IP addresses (default setting).
- ◆ **PPPOE:** Point-to-Point Protocol over Ethernet.

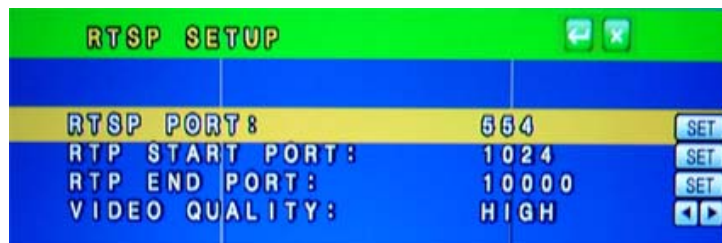
Enter "USER NAME" / "PASSWORD" as ADSL account / Password.



- ◆ **DDNS:** Dynamic DNS is a system which allows the domain name data held in a name server to be updated in real time



- ◆ **RTSP:**



“RTSP PORT”: Press **SET** to setup RTSP port. The default value is 554.

“RTP START PORT”: Press **SET** to setup RTP start port.

“RTP END PORT”: Press **SET** to setup RTP end port.

“VIDEO QUALITY”: Press ◀ or ▶ / mouse wheel to select video quality.

There are BEST, HIGH, STANDARD, MEDIUM & LOW five options.

2.7. Backup Setup



- NOTE 1:** Ethernet remote control will be stopped when backup processing
- NOTE 2:** If there is compatible issue, please refer to APPENDIX B.
- NOTE 3:** Please format USB flash memory with FAT32.

2.7.1. USB BACKUP

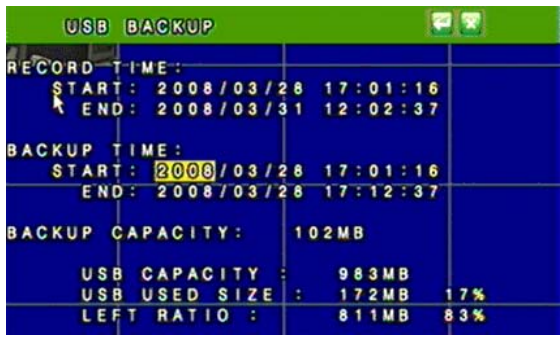
Plug the USB disk into USB port on DVR front panel




If there is no USB detected, it will display "USB DEVICE NOT FOUND":



You can choose the time period of recorded data for backup by setting the "START"-Start Time and "END"- End Time and plug in the USB disk. It will count the backup capacity automatically.



Click  to start backup, the total process will be shown on screen.



BACKUP FILE NAME: Each backup file will be named as START TIME.
EXAMPLE: 174624.264 is 17:46:24

AFTER BACKUP: After backup, the system will copy "R6VIEWER.EXE" automatically on USB device for the user to play back backup file.

2.7.2. CD/DVD RW BACKUP

Insert a new CD/DVD disk into CD/DVDRW Device on DVR front panel.



You can choose the time period of recorded data for backup by setting the "START"-Start Time and "END"- End Time and plug in the USB disk. It will count the backup capacity automatically.

Click  to start backup, the total process will be shown on screen



BACKUP FILE NAME: Each backup file will be named as START TIME.

EXAMPLE: 03311041.264 is March 31st 10:41

AFTER BACKUP: After backup, the system will copy "R6VIEWER.EXE" Automatically on disk for the user to play back backup file.

2.8. System Setup



Firmware Version

2.8.1. DATE/TIME SETUP



- ◆ **TIME:** Setup the Date and Time
- ◆ **DATE FORMAT:** Select the Date format as YYYY/MM/DD, DD/MM/YYYY or MM/DD/YYYY. YYYY-Year, MM-Month, DD-Date.
- ◆ **NTP MODE:** Enable / Disable NTP (Network Time Service).
- ◆ **SERVER IP:** Setup NTP IP address



- ◆ **GMT:** Set the Time zone
- ◆ **UPDATE TIME:** Set the time period to synchronize NTP

2.8.2. SYSTEM TYPE

To select the video format as NTSC or PAL

2.8.3. KEYBOARD LOCK

There are three modes for keyboard operating:

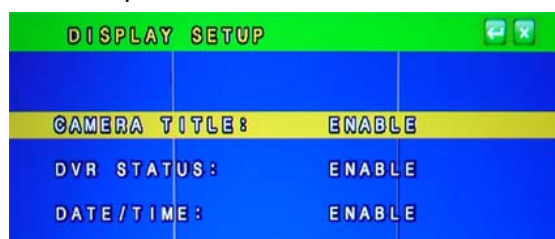
- ◆ **OFF** : Keyboard unlock.
- ◆ **TYPE 1** : It can switch split screen and full screen. The user can operate AUTO and MENU functions as well. However, the password has to be filled in to implement playback mode.
- ◆ **TYPE 2** : Keyboard lock (Except MENU button). The password (same as system password) has to be filled in to implement playback mode.

2.8.4. DVR ID NUMBER

Set a unique ID for each DVR for identification.

2.8.5. DISPLAY SETUP

Enable / Disable the display of CAMERA TITLE / DVR STATUS / DATE / TIME on the top of screen.



2.8.6. LANGUAGE

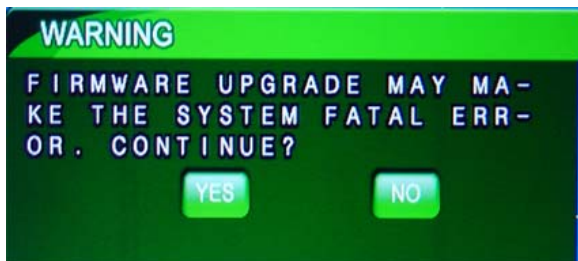
Multi-Lingual OSD support for English, Traditional Chinese ...

2.8.7. SYSTEM PASSWORD

Set a password for DVR operating. Default password: 1111

2.8.8. FIRMWARE UPGRADE

Plug the USB device into USB port on the front panel of DVR.



Press **YES** to start firmware update.

After completed the updated, DVR will reboot automatically.

NOTE 1: Please format USB flash memory with FAT32.

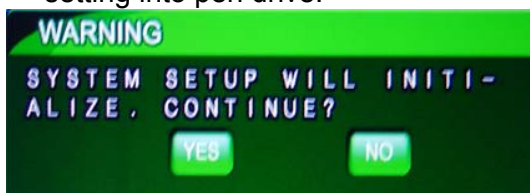
NOTE 2: Please STOP recording when firmware upgrade is processing.

2.8.9. LOAD DEFAULT

Press **SET** button to entry CONFIGURE SET screen..



- ◆ **LOAD SETUP FROM DEFAULT:** Press **SET** button to load the setting back to factory default.
- ◆ **LOAD SETUP FROM USB:** Press **SET** button to load the pen drive setting to the current DVR.
- ◆ **BACKUP SETUP TO USB:** Press **SET** button to backup the current DVR setting into pen drive.

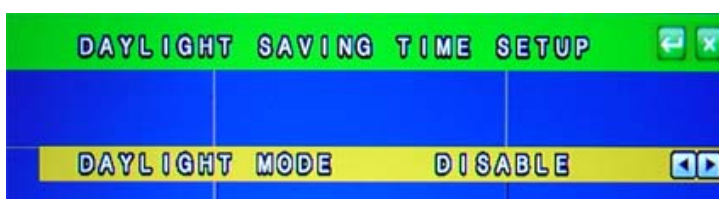


Make sure to load default and press 『YES』.

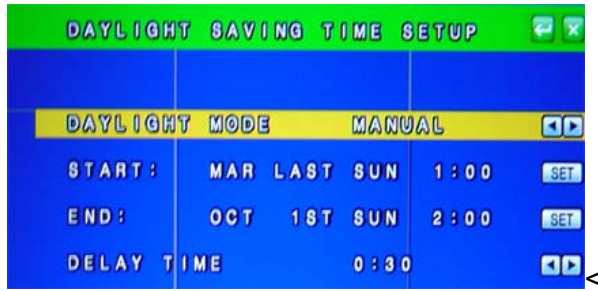
2.8.10. DAYLIGHT SAVING TIME SETUP

Set the Daylight saving mode as Disable, Manual or Auto.

Disable Daylight saving mode:



Daylight saving mode: Manual (to set the time period of daylight saving)



Daylight saving mode: Auto

PTZ Menu



: PTZ Control. Press this button to get into PTZ setup menu.



: Direction key (Up, Down, Left, Right)



: Zoom In (“▶▶” Key)



: Zoom Out (“◀◀” Key)



: PTZ Setup Menu



: Preset



: Auto-Pan

1. PTZ Preset



Setup the PTZ preset number.

2. PTZ Setup

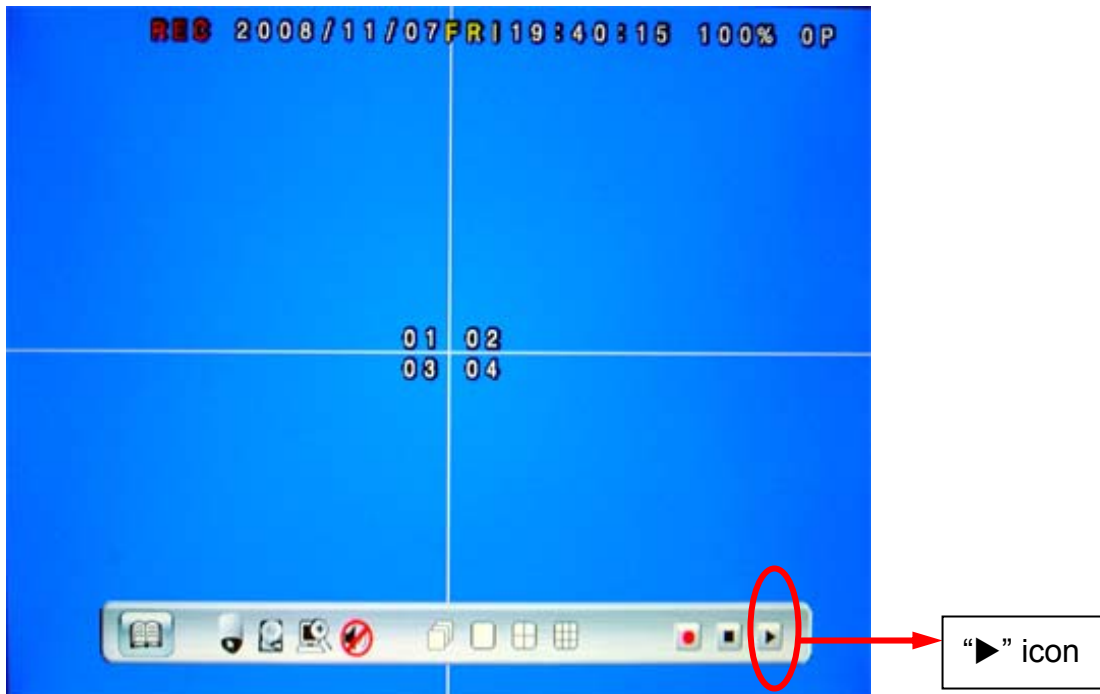


- ◆ **LEFT-RIGHT SPEED:** Use the mouse wheel to change the left-right speed.
- ◆ **UP-DOWN SPEED:** Use the mouse wheel to change the up-down speed.
- ◆ **AUTO SPEED:** Use the mouse wheel to change the auto patrol speed.
- ◆ **BAUD RATE:** Use the mouse wheel to change the BAUD rate.
- ◆ **PROTOCOL:** Use the mouse wheel to change the connection protocol.

Playback

Click “▶” icon on screen to enter Play menu.

Just click the viewing screen to back to pop-up menu.




1. Playback Menu



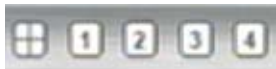
DISK INFORMATION: With playback mode, press this button to display disk and pen drive information.



RECORD BACKUP: With playback mode, press this button to backup record (.264 video backup) and press this button again to finish backup. For performing the single image backup (.Y42 single image backup), press  first and then click this button to backup the necessary image.



AUDIO CONTROL: Press this button to turn the audio on or off



DISPLAY CONTROL: Within playback mode, use display control to switch the camera channel.



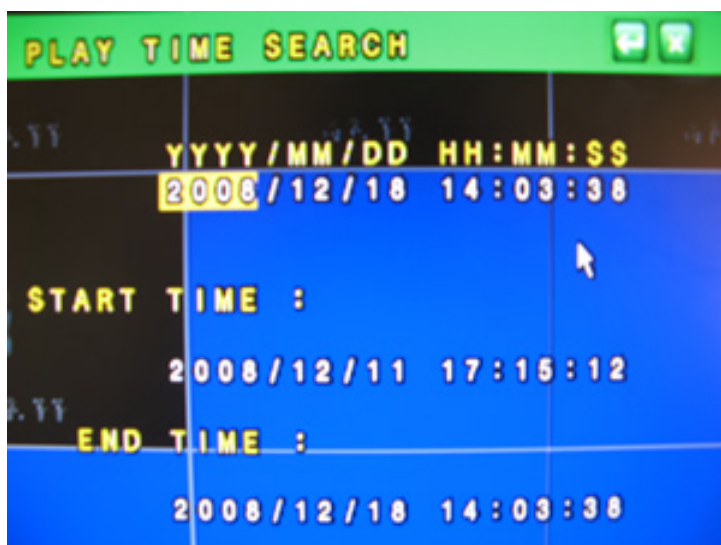
RECORD AND PLAYBACK CONTROL : Same as front panel controller and remote controller.

2. Time Search

Click the right button on the menu to enter “Play Search” menu



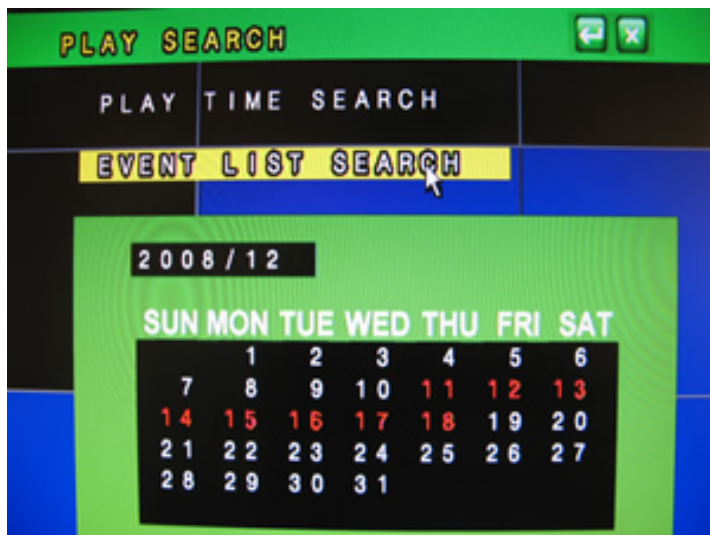
Select “PLAY TIME SEARCH”, then click “Enter” button.



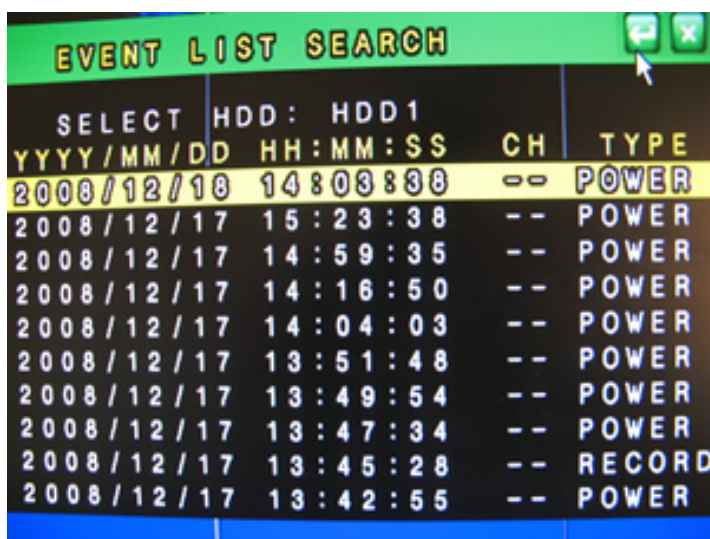
Please set up “START TIME” & “END TIME” to search the video.

3. Event Search

Click the right button on the menu to enter "Play Search" menu



Select "EVENT LIST SEARCH", then click "Enter" button



Please select event to playback

4. Playback on PC

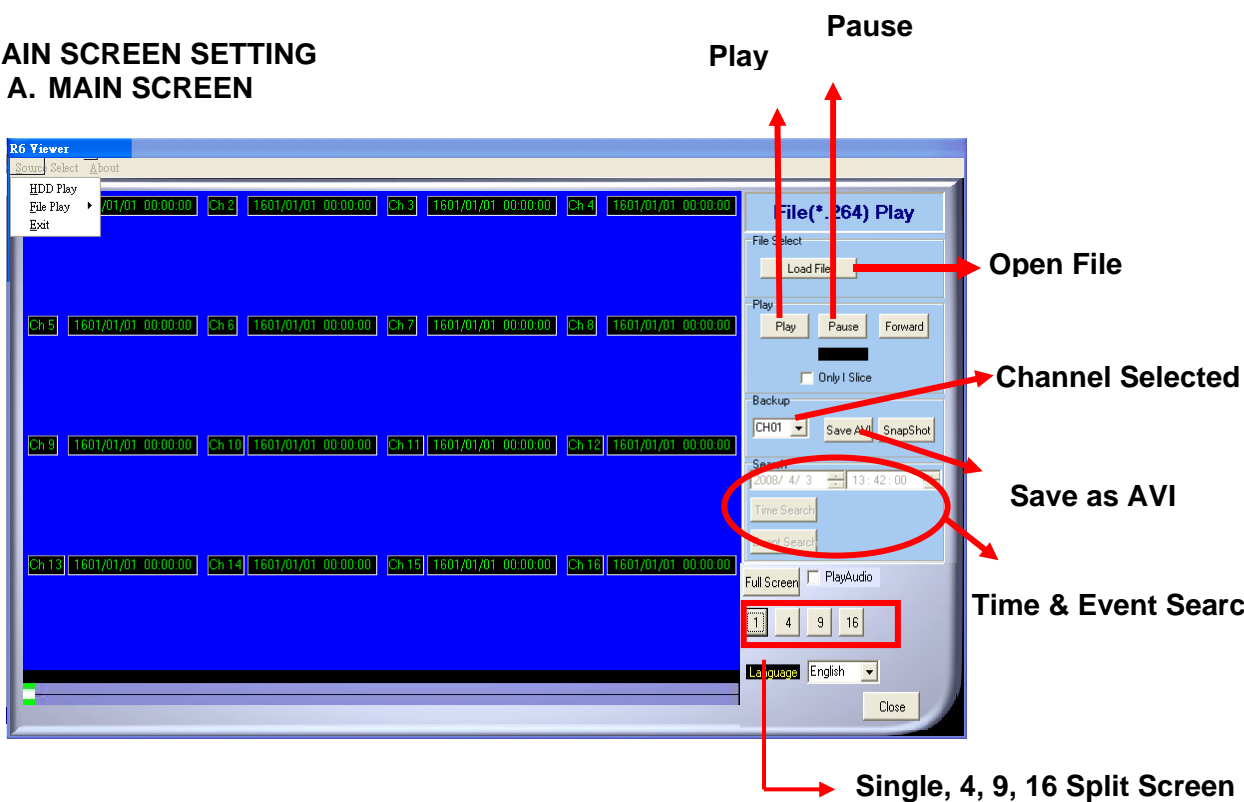
SYSTEM REQUIREMENT

CPU: Intel Celeron 1.6G
 MEMORY: 256MB.
 VGA: 32MB
 VGA RESOLUTION: 1024 x 768.
 OS: Windows XP / 2000

SUGGESTED REQUIREMENT

CPU: Intel P4 2.8G
 MEMORY: 512MB or above
 VGA: 64MB or above
 VGA RESOLUTION: 1024 x 768
 OS: Windows XP / 2000


**4.1 MAIN SCREEN SETTING
 A. MAIN SCREEN**

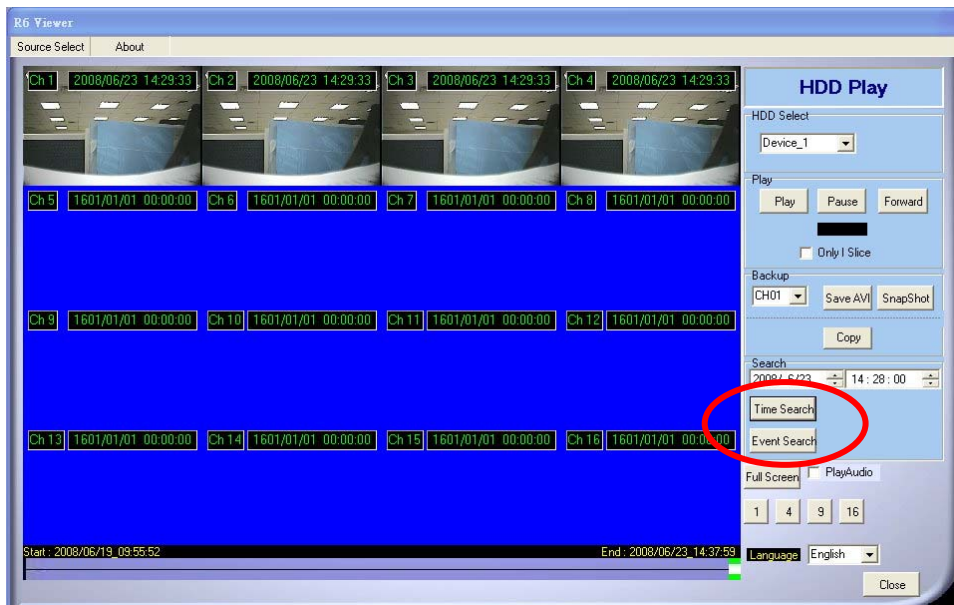


B. HDD PLAY

Play about all the data from the Hard disk of DVR or perform the specific Time and Event Search to play.

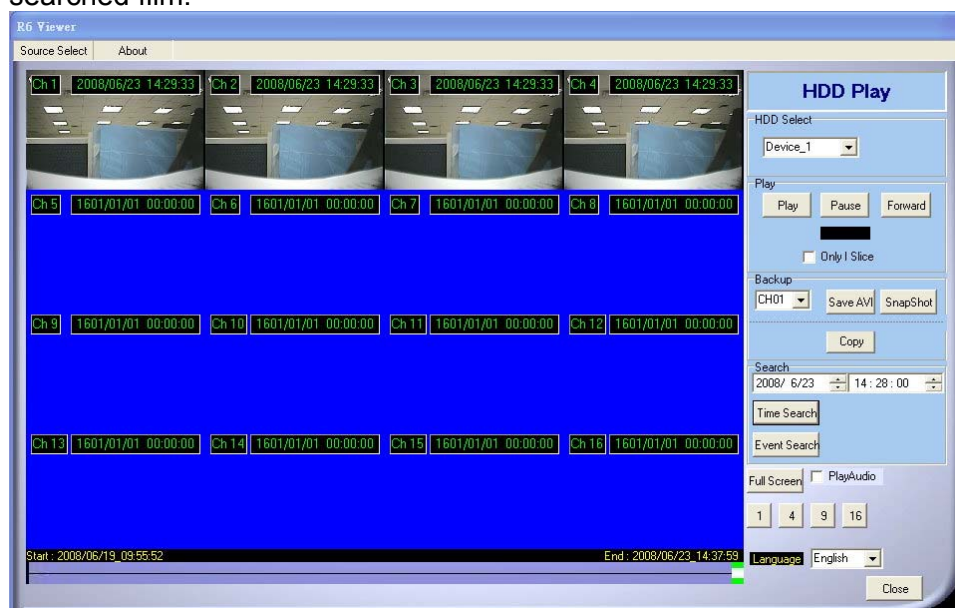
Note: Unload the DVR HDD first and connect to the PC to play the HDD.

DVR software  (R6Viewer.exe) can get from USB Playback, DVD-RW Playback and "Player" within "Others" blank of Network viewing.



B-1. TIME SEARCH

Insert search Date and Time and then click **Time Search** to play all the searched film.



B-2. EVENT SEARCH

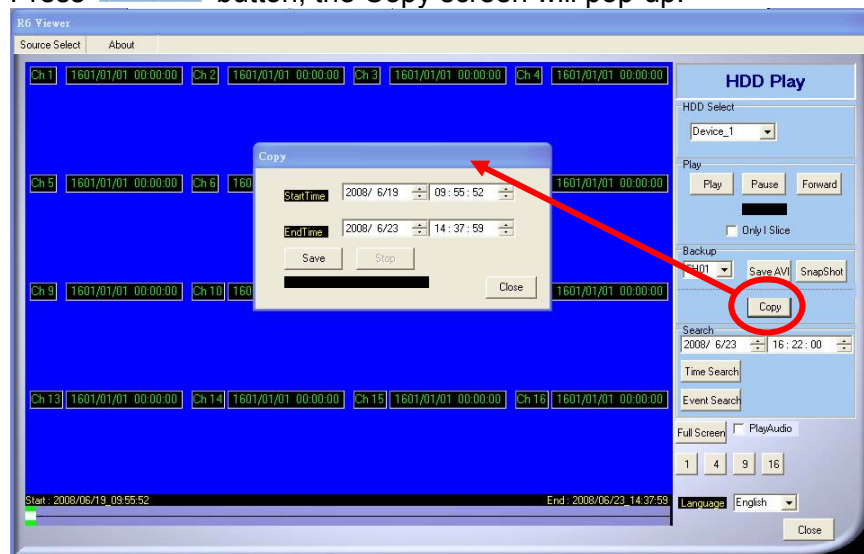
It will display all the events which are reserved within the DVR HDD after press **Event Search** (Shown in the following) and double click left button of mouse to trigger event.

No.	Channel	Time	Type
1	255	2008/02/25_09:53:29	POWER ON
2	255	2008/02/25_09:53:38	POWER ON
3	255	2008/02/25_09:54:56	POWER ON
4	255	2008/02/25_09:56:09	POWER ON
5	255	2008/02/25_09:58:05	POWER ON
6	255	2008/02/25_10:02:45	POWER ON
7	255	2008/02/25_10:13:05	POWER ON
8	255	2008/02/25_10:15:33	POWER ON
9	255	2008/02/25_10:25:06	POWER ON
10	255	2008/02/25_10:37:42	POWER ON
11	255	2008/02/25_10:47:21	POWER ON
12	255	2008/02/25_10:49:25	POWER ON
13	255	2008/02/25_10:51:11	POWER ON
14	255	2008/02/25_10:54:16	POWER ON
15	255	2008/02/25_10:58:08	POWER ON
16	255	2008/02/25_11:00:02	POWER ON
17	255	2008/02/25_11:04:15	POWER ON
18	255	2008/02/25_11:05:35	POWER ON
19	255	2008/02/25_10:28:44	POWER ON

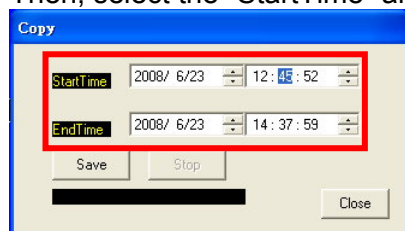
B-3. HDD COPY

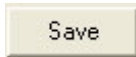
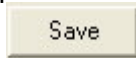
Copied and reserved the DVR HDD data to other data storage device.

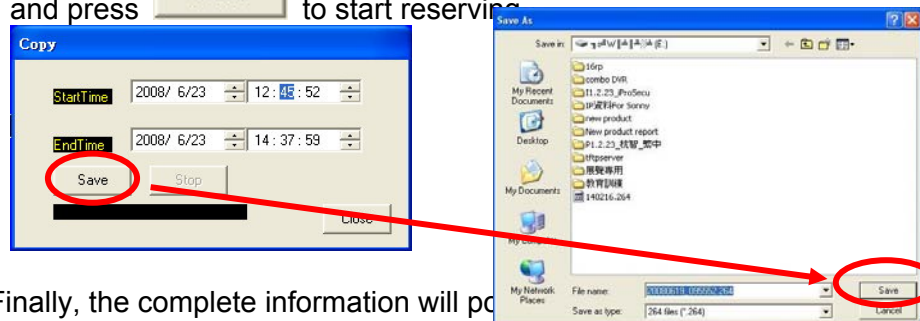
Press  button, the Copy screen will pop-up.



Then, select the "StartTime" and "EndTime".



After that, press  button to choose the storage destination and press  to start reserving.

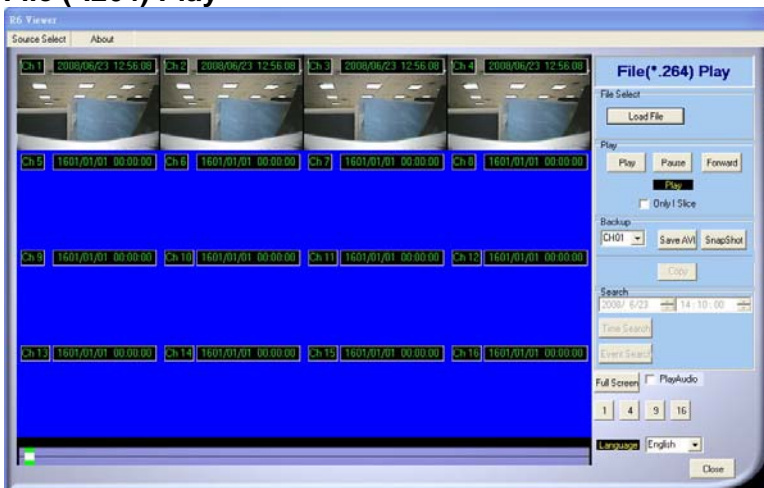


Finally, the complete information will po

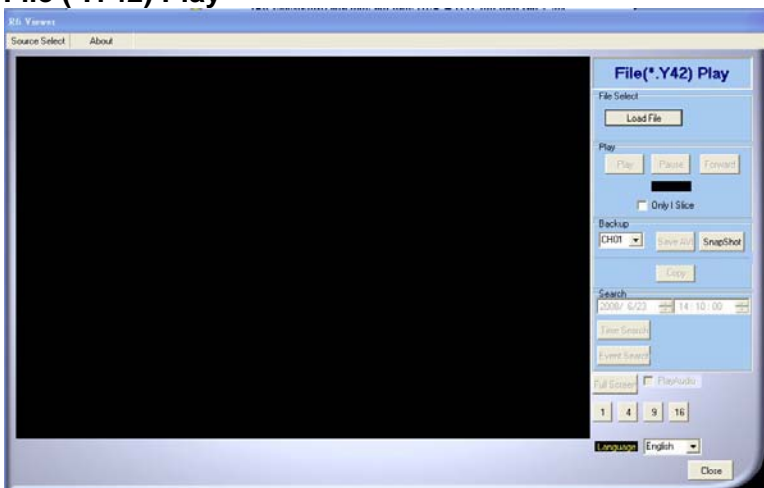


(R6 Viewer.exe) can play not only DVR H.D.D. but also the *.264 and *.Y42 files which are reserved within the data storage devices. (i.e. CD/DVD disc, pen drive and the PC H.D.D which the data backup from DVR H.D.D)

C. File (*.264) Play

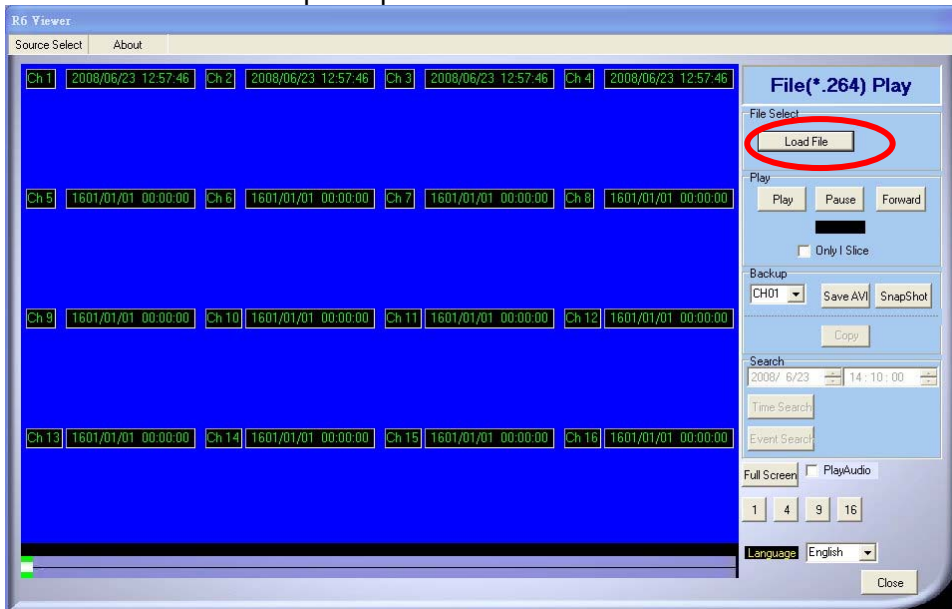


D. File (*.Y42) Play

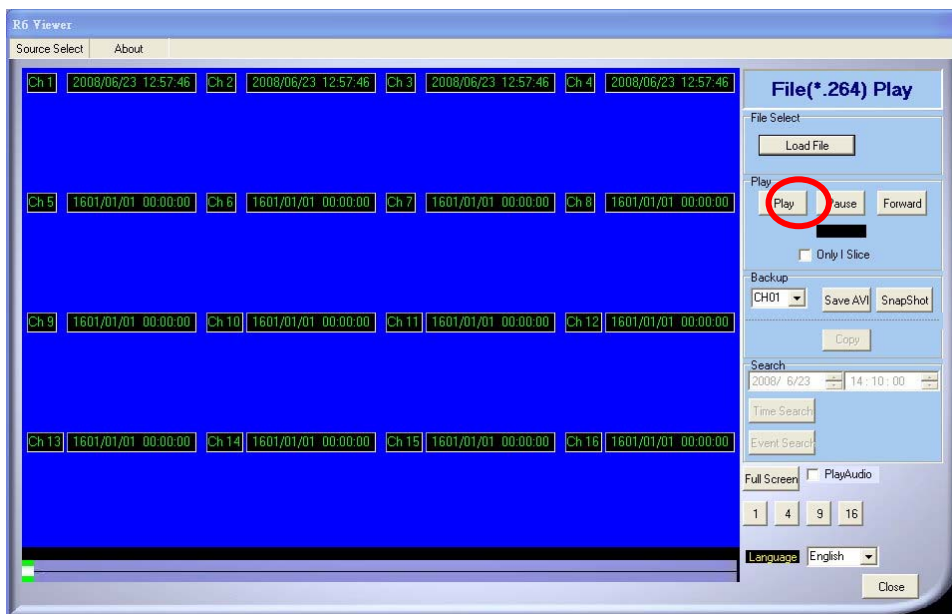


4.2 CD/DVD BACKUP PLAYBACK

A. Insert the CD/DVD disk into CD/DVD ROM, the software will auto pop out, and select "Load File" and pick up the file.

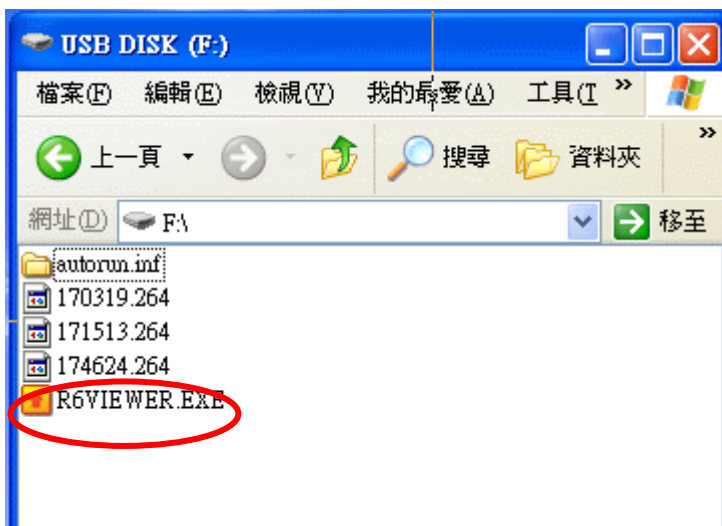


B. Press the play icon to play the video.

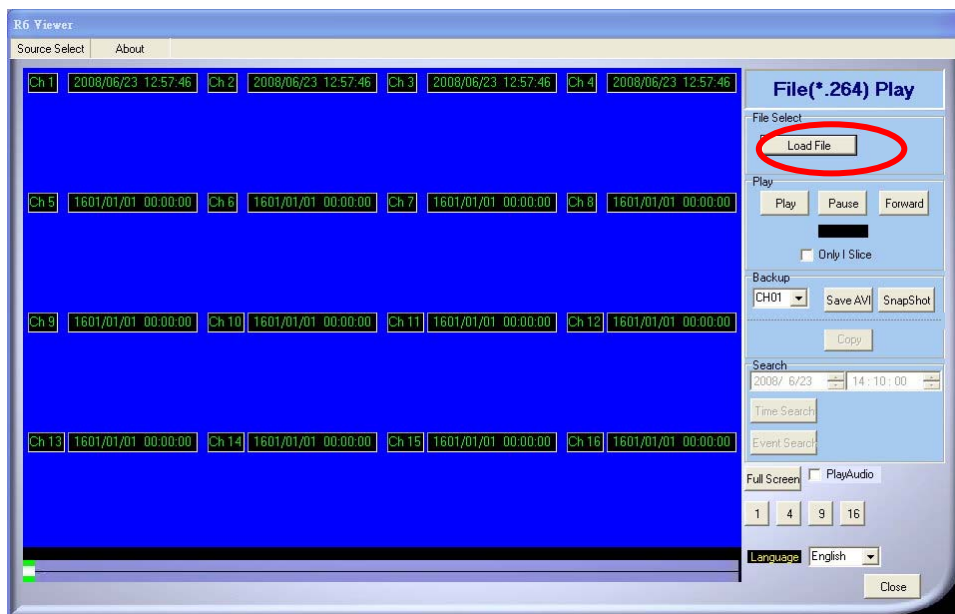


4.3 USB & LOCAL BACKUP FILE PLAYBACK

- A. Plug the USB disk into PC or check the local backup folder.
 If using USB mode, please double click the player.exe from the pop-up diagram. (As below)

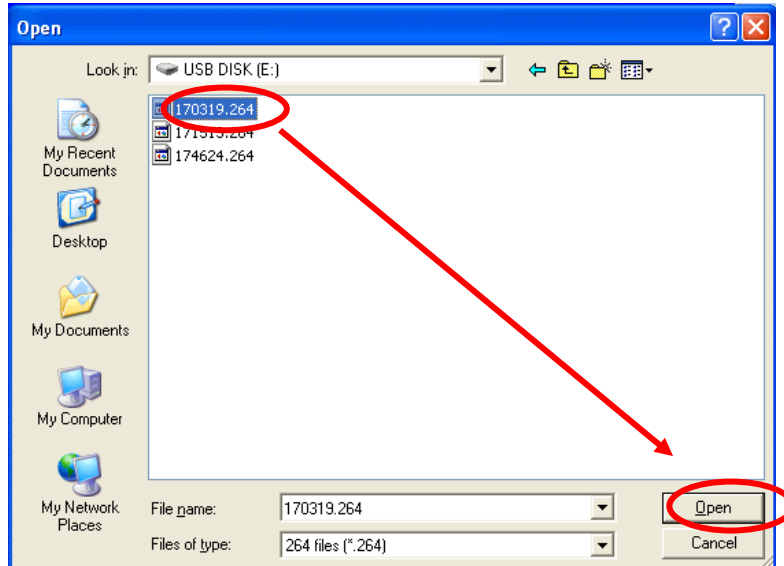


- B. The play backup program would appear on the screen, select "Load File".

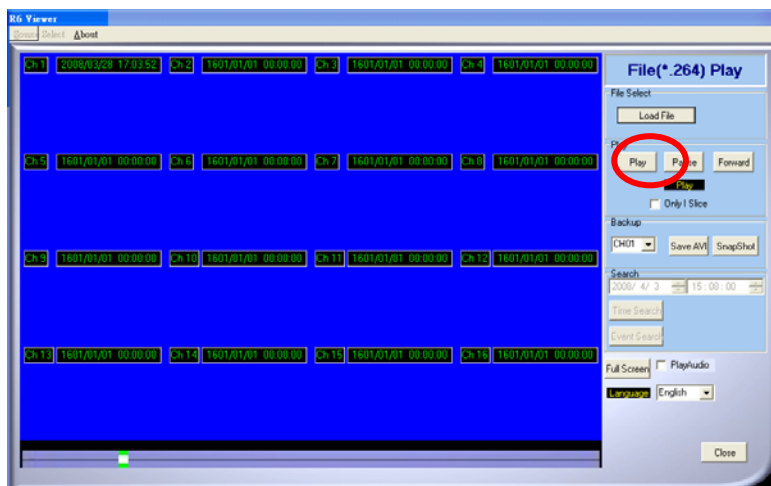


- C. Open the USB disk located driver letter. (Example E:) or the local backup folder, and pick the file to playback.

The backup file will named as the time when backup, as like:
170319.264 will be 17:03:19

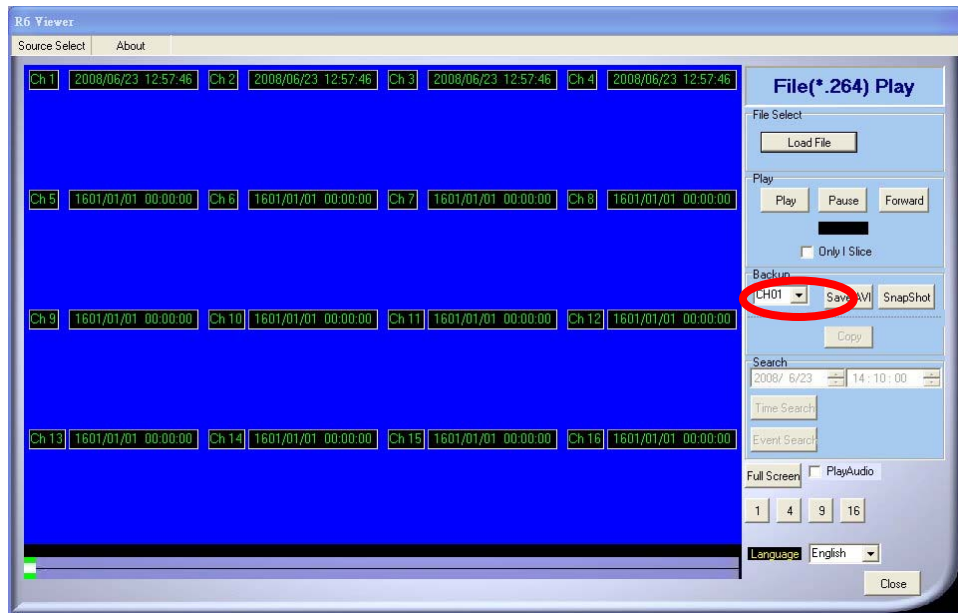



- D. Press the play icon to play the video or still picture.

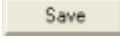


4.4 BACKUP FILE TO AVI

A. Please select specific channel to backup.



B. During video playback mode please press AVI bottom  to start.

C. Make up a filename and path than press  bottom to start AVI backup.

D. Press AVI bottom  to finish backup.

**APPENDIX A: RECORDING TIME LAPSE (HOURS)
Half D1- 720x240**

80 GB Hard Disk													Unit: Hour
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	194	51	122	97	32	64	38	19	28	32	11	21	
60	388	102	245	194	64	129	77	38	57	64	22	43	
30	776	204	490	388	129	258	155	77	116	129	45	87	
15	1553	408	980	776	258	517	310	155	232	258	91	174	
8	2912	766	1839	1456	485	970	582	291	436	485	171	328	
4	5825	1533	3679	2912	970	1941	1165	582	873	970	342	656	

160 GB Hard Disk													Unit: Hour
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	388	102	245	194	64	129	77	38	57	64	22	43	
60	776	204	490	388	129	258	155	77	116	129	45	87	
30	1553	408	980	776	258	517	310	155	232	258	91	174	
15	3106	817	1961	1553	517	1035	621	310	465	517	182	349	
8	5825	1533	3679	2912	970	1941	1165	582	873	970	342	656	
4	11650	3066	7358	5825	1941	3883	2330	1165	1747	1941	685	1313	

250 GB Hard Disk													Unit: Hour
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	606	159	382	303	101	202	121	60	90	101	35	68	
60	1213	319	766	606	202	404	242	121	181	202	71	136	
30	2427	638	1532	1213	404	808	485	242	363	404	142	273	
15	4854	1277	3065	2427	809	1618	970	485	727	809	285	547	
8	9102	2395	5748	4551	1517	3034	1820	910	1365	1517	535	1026	
4	18204	4790	11497	9102	3034	6068	3640	1820	2730	3034	1070	2052	

400 GB Hard Disk											Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	970	255	612	485	161	323	194	97	145	161	57	109	
60	1941	511	1226	970	323	646	388	194	291	323	114	218	
30	3883	1022	2452	1941	647	1294	776	388	582	647	228	437	
15	7767	2044	4905	3883	1294	2588	1553	776	1164	1294	456	875	
8	14563	3832	9197	7281	2427	4854	2912	1456	2184	2427	856	1641	
4	29127	7665	18396	14563	4854	9708	5825	2912	4368	4854	1713	3283	

500 GB Hard Disk											Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	1213	319	766	606	202	404	242	121	181	202	71	136	
60	2427	638	1532	1213	404	808	485	242	363	404	142	273	
30	4854	1277	3065	2427	809	1618	970	485	727	809	285	547	
15	9709	2555	6132	4854	1618	3236	1941	970	1455	1618	571	1094	
8	18204	4790	11497	9102	3034	6068	3640	1820	2730	3034	1070	2052	
4	36408	9581	22994	18204	6068	12136	7281	3640	5460	6068	2141	4104	

750 GB Hard Disk											Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)												
	LOW			MEDIUM			HIGH			BEST			
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average	
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50	
120	1820	479	1149	910	303	606	364	182	273	303	107	205	
60	3640	958	2299	1820	606	1213	728	364	546	606	214	410	
30	7281	1916	4598	3640	1213	2426	1456	728	1092	1213	428	820	
15	14563	3832	9197	7281	2427	4854	2912	1456	2184	2427	856	1641	
8	27306	7185	17245	13653	4551	9102	5461	2730	4095	4551	1606	3078	
4	54613	14371	34492	27306	9102	18204	10922	5461	8191	9102	3212	6157	

1T Hard Disk										Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	1.00	3.80	2.40	2.00	6.00	4.00	5.00	10.00	7.50	6.00	17.00	11.50
120	2427	638	1532	1213	404	808	485	242	363	404	142	273
60	4854	1277	3065	2427	809	1618	970	485	727	809	285	547
30	9709	2555	6132	4854	1618	3236	1941	970	1455	1618	571	1094
15	19418	5110	12264	9709	3236	6472	3883	1941	2912	3236	1142	2189
8	36408	9581	22994	18204	6068	12136	7281	3640	5460	6068	2141	4104
4	72817	19162	45989	36408	12136	24272	14563	7281	10922	12136	4283	8209

CIF-360x240

80 GB Hard Disk										Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	194	51	122	97	32	64	38	19	28	32	11	21
120	388	102	245	194	64	129	77	38	57	64	22	43
60	776	204	490	388	129	258	155	77	116	129	44	86
30	1553	408	980	776	258	517	310	155	232	258	88	173
15	3106	817	1961	1553	517	1035	621	310	465	517	177	347
8	5825	1533	3679	2912	970	1941	1165	582	873	970	332	651
4	11650	3066	7358	5825	1941	3883	2330	1165	1747	1941	665	1303

160 GB Hard Disk										Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	388	102	245	194	64	129	77	38	57	64	22	43
120	776	204	490	388	129	258	155	77	116	129	44	86
60	1553	408	980	776	258	517	310	155	232	258	88	173
30	3106	817	1961	1553	517	1035	621	310	465	517	177	347
15	6213	1635	3924	3106	1035	2070	1242	621	931	1035	355	695

Triplex H.264 4/8/16CH DVR

8	11650	3066	7358	5825	1941	3883	2330	1165	1747	1941	665	1303
4	23301	6132	14716	11650	3883	7766	4660	2330	3495	3883	1331	2607

250 GB Hard Disk

Unit: Hour

Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	606	159	382	303	101	202	121	60	90	101	34	67
120	1213	319	766	606	202	404	242	121	181	202	69	135
60	2427	638	1532	1213	404	808	485	242	363	404	138	271
30	4854	1277	3065	2427	809	1618	970	485	727	809	277	543
15	9709	2555	6132	4854	1618	3236	1941	970	1455	1618	554	1086
8	18204	4790	11497	9102	3034	6068	3640	1820	2730	3034	1040	2037
4	36408	9581	22994	18204	6068	12136	7281	3640	5460	6068	2080	4074

400 GB Hard Disk

Unit: Hour

Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	970	255	612	485	161	323	194	97	145	161	55	108
120	1941	511	1226	970	323	646	388	194	291	323	110	216
60	3883	1022	2452	1941	647	1294	776	388	582	647	221	434
30	7767	2044	4905	3883	1294	2588	1553	776	1164	1294	443	868
15	15534	4088	9811	7767	2589	5178	3106	1553	2329	2589	887	1738
8	29127	7665	18396	14563	4854	9708	5825	2912	4368	4854	1664	3259
4	58254	15330	36792	29127	9709	19418	11650	5825	8737	9709	3328	6518

500 GB Hard Disk

Unit: Hour

Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	1213	319	766	606	202	404	242	121	181	202	69	135
120	2427	638	1532	1213	404	808	485	242	363	404	138	271
60	4854	1277	3065	2427	809	1618	970	485	727	809	277	543
30	9709	2555	6132	4854	1618	3236	1941	970	1455	1618	554	1086

Triplex H.264 4/8/16CH DVR

15	19418	5110	12264	9709	3236	6472	3883	1941	2912	3236	1109	2172
8	36408	9581	22994	18204	6068	12136	7281	3640	5460	6068	2080	4074
4	72817	19162	45989	36408	12136	24272	14563	7281	10922	12136	4161	8148

750 GB Hard Disk										Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	1820	479	1149	910	303	606	364	182	273	303	104	203
120	3640	958	2299	1820	606	1213	728	364	546	606	208	407
60	7281	1916	4598	3640	1213	2426	1456	728	1092	1213	416	814
30	14563	3832	9197	7281	2427	4854	2912	1456	2184	2427	832	1629
15	29127	7665	18396	14563	4854	9708	5825	2912	4368	4854	1664	3259
8	54613	14371	34492	27306	9102	18204	10922	5461	8191	9102	3120	6111
4	109226	28743	68984	54613	18204	36408	21845	10922	16383	18204	6241	12222

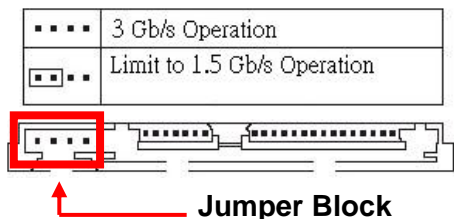
1T Hard Disk										Unit: Hour		
Recording Speed (PPS)	PICTURE QUALITY (KB)											
	LOW			MEDIUM			HIGH			BEST		
	simple	complex	average	simple	complex	average	simple	complex	average	simple	complex	average
	0.50	1.90	1.20	1.00	3.00	2.00	2.50	5.00	3.75	3.00	8.75	5.88
240	2427	638	1532	1213	404	808	485	242	363	404	138	271
120	4854	1277	3065	2427	809	1618	970	485	727	809	277	543
60	9709	2555	6132	4854	1618	3236	1941	970	1455	1618	554	1086
30	19418	5110	12264	9709	3236	6472	3883	1941	2912	3236	1109	2172
15	38836	10220	24528	19418	6472	12945	7767	3883	5825	6472	2219	4345
8	72817	19162	45989	36408	12136	24272	14563	7281	10922	12136	4161	8148
4	145635	38325	91980	72817	24272	48544	29127	14563	21845	24272	8322	16297

* The value is for reference only

APPENDIX B: HDD COMPATIBLE TABLE

Brand	Model	Capacity	Speed (RPM)
SEAGATE	ST380815AS	80G	7200 10
	ST3160815AS	160G	7200 10
	STM3250820AS	250G	7200 10
	ST3400620AS	400G	7200 10
	ST3750640AS	750G	7200 10
	ST310005N1D1AS-RK	1000G	7200
WD	WD2500AAKS	250G	7200
HITACHI	HDS721616PLA380	160G	7200
	HDT725025VLA380	250G	7200
	HDT725032VLA360	320G	7200
	HDP725050GLA360	500G	7200
Last Update Date	2008/3/24		

* Please use **SATA I** Hard Disk and setup the **Jumper Block** to 1.5 Gb/s Operation. As the following image,



* According to the machine test result, SEAGATE Hard Disk **ST3500320AC 500G** is incompatible for this DVR. Therefore, SEAGATE ST3500320AC 500G is not suggested to use.

* This H.D.D. compatible table is for your reference.

APPENDIX C: ERROR MESSAGE LIST

ERROR MESSAGE	ERROR STATUS & REASON	NOTE
DISK ACCESS ERROR!	H.D.D. Data structure Un-normal. Data does not record into DVR or bad sector on DVR H.D.D. Please install another H.D.D. and perform the record again.	
UPDATE FILE ERROR!	Please re-download the update file and update again.	
FIRMWARE UPGRADE FAILED	Please reboot the DVR and upgrade the firmware. Please send the DVR back to repair when DVR is disability.	
MEDIA ACCESS FAIL!	The USB file format is incorrect (Please format the pen drive to FAT32) or Pen Drive is setup to ONLY READ mode (Please annul ONLY READ mode) when reserve the data by using Pen Drive. The data cannot be burn into CD/DVD disc. Please change another CD/DVD disc and backup the file in CD/DVD disc storage.	
NO FILE!	There is no upgrade file within Pen Drive or the name of upgrade file does not correspond with DVR format. Please adjust the upgrade file name based on the following information. 16CH -> UpdateR.bin 08CH -> Update8.bin 04CH -> Update4.bin	
USB DEVICE NOT FOUND NO USB	Pen Drive undetected. Please Unplug the Pen Drive and plug it again.	
BACKUP START TIME ERROR	Backup start time error.	
BACKUPEND TIME ERROR	Backup end time error.	
DISK ERROR	The data cannot be burn into CD/DVD disc. Please change another CD/DVD disc and backup the file.	

FAN FAILED	Fan Error Warning.	
NO LOG DATA	No Events Record.	
SCHEDULE RECORD	The condition is caused by trying to stop recording when perform the schedule record. Please setup the record to manual mode and then stop the record.	
PLEASE SELECT ONE CAMERA	The message will be shown while using the ZOOM function under split screen condition. Please switch the screen into full screen mode and then operate the ZOOM function.	