H.264 Network DVR

User Manual

Please read instructions thoroughly before operation and retain it for future reference.

IMPORTANT SAFEGUARD

	CAUTION	
	RISK OF ELECTRIC SHOCK	

CAUTION:

To reduce the risk of electric shock, do not expose this apparatus to rain or moisture. Only operate this apparatus from the type of power source indicated on the label. The company shall not be liable for any damages arising out of any improper use, even if we have been advised of the possibility of such damages.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

All lead-free products offered by the company comply with the requirements of the European law on the Restriction of Hazardous Substances (RoHS) directive, which means our manufacture processes and products are strictly “lead-free” and without the hazardous substances cited in the directive.

The crossed-out wheeled bin mark symbolizes that within the European Union the product must be collected separately at the product end-of-life. This applies to your product and any peripherals marked with this symbol. Do not dispose of these products as unsorted municipal waste. Contact your local dealer for procedures for recycling this equipment.

This apparatus is manufactured to comply with the radio interference requirements.

Disclaimer

The information in this manual was current when released. We reserve the right to revise or remove any content in this manual at any time. We do not warrant or assume any legal liability or responsibility for the accuracy, completeness, or usefulness of this manual. For the actual display & operation, please refer to your DVR in hand. The content of this manual is subject to change without notice.

The product & company names mentioned herein may be the registered trademarks or tradenames of their respective owners.

Grounding

This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the instrument is likely to make the instrument dangerous. Intentional interruption is prohibited.

Water & Moisture

Do not expose this product to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the product.

MPEG4 Licensing

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The GPL Code used in this product is released without warranty and is subject to the copyright of the corresponding author.

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We are pleased to provide our modifications to the Linux Kernel, as well as a few new commands, and some tools to get you into the code. The codes are provided on the FTP site, and please download them from the following site or you can refer to your distributor:

ftp://ftp.dvrtw.com.tw/GPL/AV074/

Version
Video Viewer: 0119

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1. OVERVIEW

1.1 Product Description

This H.264 DVR series greatly maximizes the video quality and minimizes the file size (expand the storage capacity) with the feature of H.264 video compression technology. To quickly backup, the DVD writer (optional) and USB port are built in for your convenience, or the network backup is also available. It also supports the connection to the SATA HDD & keyboard controller for your easy operation.

1.2 Features

- **H.264 Video Compression Technology**
  - At the local site, the file size is minimized and the record time is lengthened
  - At the remote site, with the features of small file size and low bit rate, it will be more adaptive to different kinds of network environment compared with conventional codec designs
- **VGA Support**
  - For Model 1, 2, 3, 4, 6 & 8: VGA interface built-in with output resolution up to 1600 x 1200
  - For Model 5 & 7: Optional VGA converter needed for VGA output
- **Graphical & Multi-language OSD**
- **Remote Independent Operation**
  - Allows single-channel viewing of live displays without changing display settings on the licensed software AP provided
- **Free Upgrade to Advanced Functions**
  - Allows you to upgrade DVR functions without any charges
- **Multiplex Operation**
  - Allows live display, record, playback, backup, and network operations at the same time
- **Excellent Image Quality and Performance**
  - The CIF image quality is excellent for clear and detailed image
- **Intelligent Motion Trigger Recording**
  - Customizable security settings are achieved with the advanced motion detection, the scheduled motion detection recording, and the quick search function
  - Supports pre-alarm recording (8MB)
  - Activates event recording automatically when an alarm is triggered, and sends a http link with the event snapshot to the designated e-mails / FTP address (Selected models only)
- **Backup Devices**
  - Supports USB 2.0 flash drive, DVD writer (optional), and network
- **Remote Surveillance**
  - Supports remote surveillance up to 20 users simultaneously with the licensed software “Video Viewer”, Internet Explorer / Mozilla Firefox web browser, and QuickTime player.
- **Covert Recording**
  - Blank screen replaces live displays to achieve covert recording
- **Audio Support**
  - For Model 1, 2, 4 & 6: Supports 4 audio-in, 2 audio-out to record sounds-
    For Model 3 & 8: Supports 4 audio-in, 1 audio-out to record sounds
    For Model 5 & 7: Supports 1 audio-in, 1 audio-out to record sounds
- **General**
  - Supports SATA HDDs
  - Supports IR remote controller and keyboard controller
  - System auto recovery after power failure
  - Supports PTZ camera operations through RS-485, and PTZ Hot Point function
  - Supports daylight saving function

- Supports manual / timer / motion / network recording
- Supports TCP/IP, PPPoE, DHCP and DDNS network connection.

1.3 Specifications

1.3.1 Models with DVD Writer

MODEL	Model 1	Model 2	CPD541D
Video System	NTSC / PAL (auto detection)		
Video Compression Format	H.264		
Video Input (Composite video signal 1 Vp-p 75Ω BNC)	16 Channels	8 Channels	4 Channels
Video Loop Output (Composite video signal 1 Vp-p 75Ω BNC)	16 Channels	8 Channels	4 Channels
Video Output (BNC) – Main Monitor Output	For stable display		
Video Output (BNC) – Call Monitor Output	For sequence display		
Video Output (VGA) (up to 1600 x 1200)	Built-in VGA output for LCD monitor		
Audio Input	4 Channels (Mono)		4 Channels (Mono)
Audio Output	2 Channels (Mono)		1 Channel (Mono)
Multiplex Operating	Supports live display, record, playback, backup, and network simultaneously		
Maximum Recording Rate (Frame)	120 IPS @ 704×480 <NTSC> 100 IPS @ 704×576 <PAL>	60 IPS @ 704×480 <NTSC> 50 IPS @ 704×576 <PAL>	30 IPS @ 704×480 <NTSC> 25 IPS @ 704×576 <PAL>
Maximum Recording Rate (Field)	240 IPS @ 720×240 <NTSC> 200 IPS @ 720×288 <PAL>	120 IPS @ 704×240 <NTSC> 100 IPS @ 704×288 <PAL>	60 IPS @ 704×240 <NTSC> 50 IPS @ 704×288 <PAL>
Maximum Recording Rate (CIF)	480 IPS @ 360×240 <NTSC> 400 IPS @ 360×288 <PAL>	240 IPS @ 360×240 <NTSC> 200 IPS @ 360×288 <PAL>	120 IPS @ 352×240 <NTSC> 100 IPS @ 352×288 <PAL>
Recording Mode	Manual / Timer / Motion / Alarm / Remote		
Recording Quality Options	Super Best, Best, High & Normal		
Pre-alarm Recording	YES (8 MB)		
HDD Type	SATA		
HDD Storage * HDDs are optional ** Supports up to 1TB per HDD	Accommodates up to two SATA HDDs		Accommodates one SATA HDD
HDD Quick Cleaning	--		Delete HDD Data Efficiently (1TB within 2 seconds)
Quick Search	Time / Motion / Alarm		
USB Flash Drive Backup	YES		
DVD Writer Backup	YES		
Network Transfer Format	H.264		
Ethernet	10/100 Base-T.		
Network Protocol	TCP/IP, PPPOE, DHCP and DDNS (Dynamic IP)		
Network Surveillance Interface	Licensed Software “Video Viewer” / Internet Explorer & Firefox web browser / QuickTime (20 users on-line simultaneously)		
Remote Independent Operation	YES		
Network Alarm Notification	E-mail and FTP server		
CMS (Central Management System)	YES (Maxmium: 16 different IP addresses)		
R.E.T.R. (Remote Event Trigger Recording)	NO		YES
Operating System for Network Function	Windows Vista / XP / 2000; Apple Mac		
IR Remote Control	YES		
Multilingual OSD	YES		
Motion Detection Area	16 × 12 grids per channel		
Motion Detection Sensitivity	4 adjustable parameters for accurate detection		
PTZ Control	Pelco-D / Pelco-P / our own protocol		
External Alarm	16 inputs, 1 output	8 inputs, 1 output	4 inputs, 1 output
Picture Zoom	2X digital zoom (live & playback)		
Key Lock (Password Protection)	YES		
Video Loss Detection	YES		
Camera Title	Supports up to 6 letters		
Video Adjustable	Hue / Color / Contrast / Brightness		
Date Display Format	YY/MM/DD, DD/MM/YY, MM/DD/YY		
Daylight Saving	YES		
Power Source (±10%)	DC 19V		
Power Consumption	＜64 W		< 42 W

MODEL	CPD548D	CPD546D	CPD541D
Operating Temperature	0℃ ~ 40℃ (32℉~104℉)		10℃ ~ 40℃ (50℉~104℉)
Dimensions (mm)**	432(W) × 90(H) × 326(D)		375(W) × 61(H) × 281(D)
System Recovery	System auto recovery after power failure		
Optional Peripherals	Keyboard controller		

* The specifications are subject to change without notice.

1.3.2 Models without DVD Writer

MODEL		CPD548	Model 5	CPD546	Model 7	Model 8
Video System		NTSC / PAL (auto detection)				
Video Compression Format		H.264				
Video Input (Composite video signal 1 Vp-p 75Ω BNC)		16 Channels		8 Channels		4 Channels
Video Loop Output (Composite video signal 1 Vp-p 75Ω BNC)		16 Channels	--	8 Channels	--	4 Channels
Video Output (BNC)	Main Monitor Output	For stable display				
	Call Monitor Output	For sequence display	--	For sequence display	--	For sequence display
Video Output (VGA) (up to 1600 x 1200)		Built-in VGA output for LCD monitor	--	Built-in VGA output for LCD monitor	--	Built-in VGA output for LCD monitor
Audio Input		4 Channels (Mono)	1 Channel (Mono)	4 Channels (Mono)	1 Channel (Mono)	4 Channels (Mono)
Audio Output		2 Channels (Mono)	1 Channel (Mono)	2 Channels (Mono)	1 Channel (Mono)	1 Channel (Mono)
Multiplex Operating		Supports live display, record, playback, backup, and network simultaneously				
Maximum Recording Rate (Frame)		120 IPS @ 704×480 <NTSC> 100 IPS @ 704×576 <PAL>		60 IPS @ 704×480 <NTSC> 50 IPS @ 704×576 <PAL>		30 IPS @ 704×480 <NTSC> 25 IPS @ 704×576 <PAL>
Maximum Recording Rate (Field)		240 IPS @ 720×240 <NTSC> 200 IPS @ 720×288 <PAL>	-- --	120 IPS @ 704×240 <NTSC> 100 IPS @ 704×288 <PAL>	-- --	60 IPS @ 704×240 <NTSC> 50 IPS @ 704×288 <PAL>
Maximum Recording Rate (CIF)		480 IPS @ 360×240 <NTSC> 400 IPS @ 360×288 <PAL>		240 IPS @ 360×240 <NTSC> 200 IPS @ 360×288 <PAL>		120 IPS @ 352×240 <NTSC> 100 IPS @ 352×288 <PAL>
Recording Mode		Manual / Timer / Motion / Alarm / Remote	Manual / Timer / Motion / Remote	Manual / Timer / Motion / Alarm / Remote	Manual / Timer / Motion / Remote	Manual / Timer / Motion / Alarm / Remote
Recording Quality Options		Super Best, Best, High & Normal				
Pre-alarm Recording		YES (8 MB)				
HDD Type		SATA				
HDD Storage * HDDs are optional ** Supports up to 1TB per HDD		Accommodates up to two SATA HDDs				
HDD Quick Cleaning		--				Delete HDD Data Efficiently (1TB within 2 seconds)
Quick Search		Time / Motion / Alarm	Time / Motion	Time / Motion / Alarm	Time / Motion	Time / Motion / Alarm
USB Flash Drive Backup		YES				
DVD Writer Backup		Available for self installation	--	Available for self installation	--	
Network Transfer Format		H.264				
Ethernet		10/100 Base-T.				
Network Protocol		TCP/IP, PPPOE, DHCP and DDNS (Dynamic IP)				
Network Surveillance Interface		Licensed Software “Video Viewer” / Internet Explorer & Firefox web browser / QuickTime (20 users on-line simultaneously)				
Remote Independent Operation		YES				
Network Alarm Notification		E-mail and FTP server	--	E-mail and FTP server	--	E-mail and FTP server
CMS (Central Management System)		YES (Maxmium: 16 different IP addresses)				
R.E.T.R. (Remote Event Trigger Recording)		NO				YES
Operating System for Network Function		Windows Vista / XP / 2000; Apple Mac				
IR Remote Control		YES				
Multilingual OSD		YES				
Motion Detection Area		16 x 12 grids per channel	3 pre-defined detection areas selectable	16 x 12 grids per channel	3 pre-defined detection areas selectable	16 x 12 grids per channel

MODEL	**CPD548**	Model 5	**CPD546**	Model 7	Model 8
Motion Detection Sensitivity	4 adjustable parameters for accurate detection	One parameter with three sensitivity levels (High / Normal / Low)	4 adjustable parameters for accurate detection	One parameter with three sensitivity levels (High / Normal / Low)	4 adjustable parameters for accurate detection
PTZ Control	Pelco-D / Pelco-P / our own protocol				
External Alarm	16 inputs, 1 outpu	--	8 inputs, 1 output	--	4 inputs, 1 output
Picture Zoom	2X digital zoom (live & playback)				
Key Lock (Password Protection)	YES				
Video Loss Detection	YES				
Camera Title	Supports up to 6 letters				
Video Adjustable	Hue / Color / Contrast / Brightness				
Date Display Format	YY/MM/DD, DD/MM/YY, MM/DD/YY				
Daylight Saving	YES				
Power Source (±10%)	DC 19V				
Power Consumption	＜64 W				< 42 W
Operating Temperature	0℃ ~ 40℃ (32℉~104℉)				10℃ ~ 40℃ (50℉~104℉)
Dimensions (mm)**	432(W) × 90(H) × 326(D)				375(W) × 61(H) × 281(D)
System Recovery	System auto recovery after power failure				
Optional Peripherals	Keyboard controller	Keyboard controller / VGA Converter	Keyboard controller	Keyboard controller / VGA Converter	Keyboard controller

* The specifications are subject to change without notice.

1.4 Package Contents

- ☐ Digital video recorder (DVR)
- ☐ Adapter and power cord
- ☐ quick start & IR remote control manual
- ☐ CD-ROM (including manual & licensed software “Video Viewer”)
- ☐ IR receiver (optional)
- ☐ HDD bracket screws (spare parts)
- ☐ DSUB PIN connector
- ☐ IR remote controller
- ☐ AAA size battery * 2

Note: Before using the IR remote control, please install the batteries first.

2. FRONT AND REAR PANELS

2.1 Front Panel

1) LED Indicators

HDD HDD is reading or recording.
DVR is powered on.
An alarm is triggered.
Timer recording is on.
Under playback status (For 4CH model only).
HDD FULL HDD is full (For 16CH / 8CH models only).

2) MENU

Press “MENU” to enter the main menu.

3) ENTER

Press “ENTER” to confirm the setting.

4) SLOW

Under the playback mode, press “SLOW“ to show slow playback.

5) ZOOM

Press “ZOOM” to enlarge the picture of selected channel in the FRAME or FIELD recording mode.

6)

Press “ “ to show the 4 channel display mode.

7) SEQ

Press “SEQ” to activate the call monitor function and press “SEQ” again to escape the call monitor mode.

8) POWER

Press to turn on / off the DVR.
(Under the recording mode, please stop recording before turning off the DVR).

9) CH1 ~ 16 / CH1 ~ 8 / CH1 ~ 4

Press the channel number buttons to select the channel to display.

10) PLAY

Press to playback the recorded data.

11) ▲ (PAUSE/+) / ▼ (STOP/-) / ◄ (REW) / ► (FF)

Press ▲ / ▼ / ◄ / ► to move the cursor up / down / left / right.
Under the playback mode, press “ PAUSE” to pause playback.
Under the playback mode, press “ STOP” to stop playback.
Under the playback mode, press “FF“ to fast forward.
Under the playback mode, press “REW“ to fast rewind.

12) AUDIO (SLOW + ZOOM)

Press “SLOW” + “ZOOM” to select live or playback sounds of the audio channels.

- Live audio of the 1st audio channel
- Live audio of the 2nd audio channel
- Live audio of the 3rd audio channel
- Live audio of the 4th audio channel
- The audio channel is not selected.
- Playback audio of the 1st audio channel
- Playback audio of the 2nd audio channel
- Playback audio of the 3rd audio channel
- Playback audio of the 4th audio channel

13) P.T.Z. (⊞ + SEQ)

Press “⊞” + “SEQ” at the same time to enter / exit the PTZ control mode.

In the PTZ control mode,

* Zoom in: Press "SEQ"
* Zoom out: Press "⊞"
* Adjust PTZ angle: Press ▲ / ▼ / ◄ / ►

14) LIST (Event List Search)

To quick search the recorded files by event, press to show all types of the event lists.

15) SNAP

Press “SNAP” to take a snapshot.

Note: Before taking a snapshot, insert a compatible USB flash drive into the DVR USB port for snapshot saving. For the compatible USB flash drive list, please refer to “APPENDIX 2 COMPATIBLE USB FLASH DRIVE BRAND” at page 54.

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16) REC *(For 16CH & 8CH Models Only)*

Press “REC” to start manual recording function immediately when this function is disabled.

17) EJECT *(For Selected Models Only)*

Press “EJECT” to open / close the DVD Writer.

18) USB

Supports firmware / OSD upgrade and file backup.

2.2 Rear Panel

1) 75Ω / HI-IMPEDANCE

When using Loop function, please switch to HI-IMPEDANCE. When you don’t use Loop function, please switch to 75Ω.

2) INPUT (1 ~ 16 / 1 ~ 8 / 1 ~ 4): Connect to video sources, such as cameras.

LOOP (1 ~ 16 / 1 ~ 8 / 1 ~ 4): Video output connector. *(For Selected Models Only)*

Note: The DVR will automatically detect the video system of the camera, please make sure that the cameras are properly connected to the DVR and power-supplied before the DVR is turned on.

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3) MONITOR

Connect to a CRT monitor for video output.

4) CALL *(For Selected Models Only)*

Connect to a call monitor.

5) Audio IN

Connect to audio sources, such as cameras equipped with the audio function.

When users start recording, the audio input will also be recorded with corresponding video channel.

Note: To make a video backup with audio, make sure the camera which supports the audio function is connected to the correct video channel (INPUT) which supports audio recording. Depending on the model you have, up to four channels for audio recording are supported.
Take Model 1 as an example,
Audio IN 1 audio data will be recorded with CH1 video.
Audio IN 2 audio data will be recorded with CH2 video.
Audio IN 3 audio data will be recorded with CH3 video.
Audio IN 4 audio data will be recorded with CH4 video.

---

6) Audio OUT

Connect to a monitor or speaker with 1 mono audio output.

7) VGA *(For Selected Models Only)*

Connect to a LCD monitor directly.

8) IR

Connect the IR receiver extension line (optional) for remote control.

9) RS485 *(For 16CH & 8CH Models Only)*

Connect to external devices (such as speed dome cameras) with RS485-A and RS485-B wires.

10) EXTERNAL I/O *(For Selected Models Only)*

Insert the supplied 15 / 25 PIN DSUB to this port for connecting external devices (external alarm, etc).
For detailed I/O port PIN configuration, please refer to “APPENDIX 1 PIN CONFIGURATION” at page 51.

11) LAN

Connect to Internet by LAN cable.

12) LINK / ACT LED light:

When the Internet is activated, the LED light will be on.

13) DC 19V

Connect to the supplied adapter.

3. CONNECTIONS AND SETUP

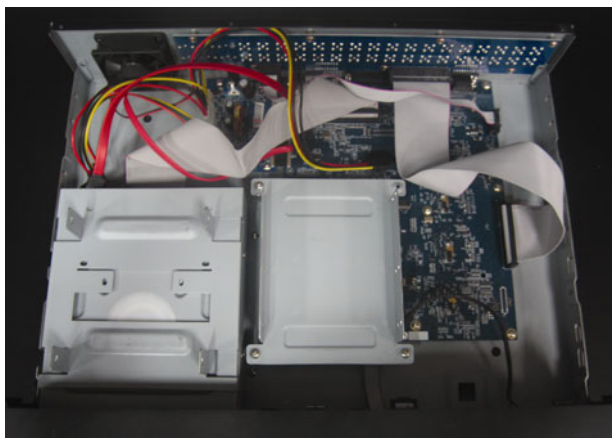
Note: The DVR is designed to automatically detect the video system of the connected cameras (NTSC or PAL). To make sure the system detection is correct, please check if the cameras are connected to the DVR and power-supplied before the DVR is powered on.

3.1 SATA HDD Installation

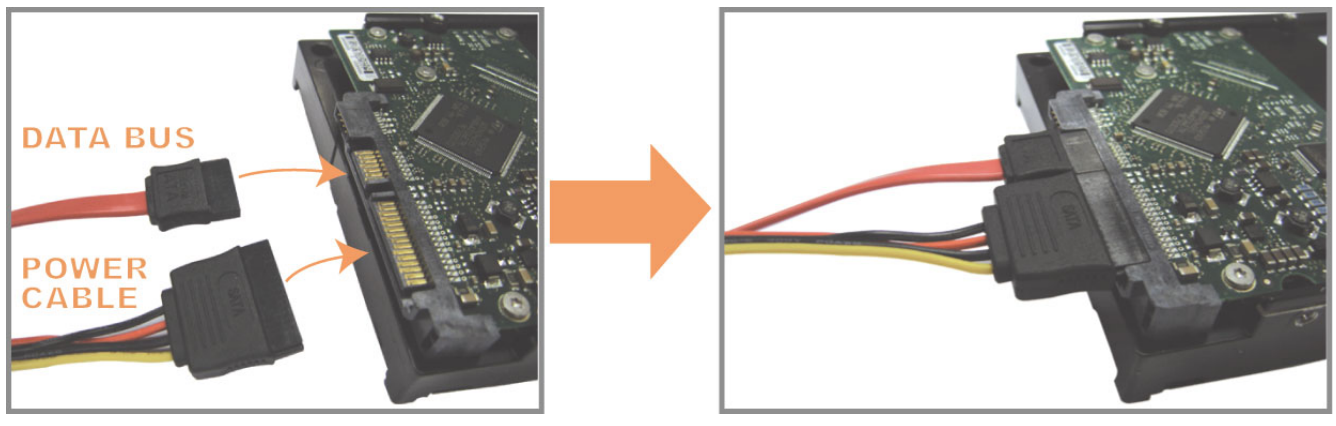
The SATA HDDs must be installed before the DVR is powered on.

3.1.1 For 16CH& 8CH Models

STEP1: Remove the screws on the top cover of DVR, and remove the top cover.
With the front panel facing you, there are two HDD brackets: one is on the left, and the other one is at the middle.



STEP2: Install the compatible HDD to the bracket.
2.1. To install the HDD on the left:
a) With the PCB side facing up, connect the compatible HDD to the power connector and data bus connector.



b) Put the compatible HDD in the left bracket, and fasten it with the supplied screws, two for each side.

2.2. To install the HDD at the middle:
a) Remove the bracket.
b) With the PCB side facing up, slide the HDD into the HDD bracket.

c) Fix the HDD with the supplied screws to the bracket, two for each side.

STEP3: Connect the compatible HDD to the power connector and data bus connector.
STEP4: Replace the bracket back to the DVR.
STEP5: Replace the top cover and fasten the screws you loosened in STEP1.

3.1.2 For 4CH Models

Note: The following description takes a 4CH DVR model ***WITHOUT*** a DVD writer built-in as an example. For the 4CH DVR model with a DVD writer built-in, please ignore STEP2.1.

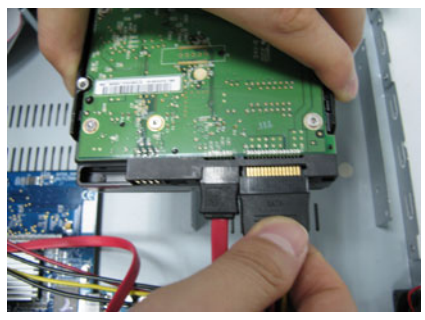
STEP1: Remove the screws on the top cover of DVR, and remove the top cover.
There are two places to install HDDs for this DVR: one is on the right, and the other one is on the left.

STEP2: Turn the DVR real panel facing you.

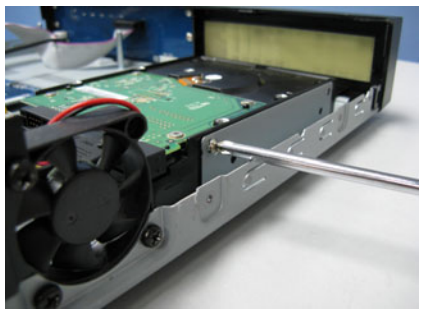
2.1. To install the HDD on the right (For the DVR model without a DVD writer built-in only):

a) Find the two HDD brackets in the accessory pack, and fix them onto the DVR base.

b) Get a compatible SATA HDD, and connect it to the power connector and data bus connector.

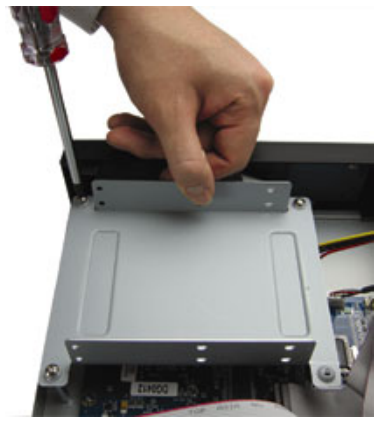


c) Put the HDD to the DVR, and have the SATA HDD fixed in the DVR.



2.2. To install the HDD on the left side:

a) Remove the HDD bracket as indicated below.



b) Get a compatible SATA HDD. Slide the HDD to the bracket, and fix it with two screws for each side. There are three screw holes per side on the bracket, and you can choose two of them to secure the HDD.


c) Connect the HDD to the power connector and data bus connector.


d) Screw the HDD bracket back to the DVR base.

STEP3: Replace the top cover and fasten the screws you loosened in STEP1.


3.2 Camera Connection

The cameras must be connected and power-supplied before the DVR is turned on. Connect the camera with the indicated power supply. And then connect the camera video output to the DVR video input port with a coaxial cable or RCA lines with BNC connectors (**The DVR will automatically detect the video system of the camera**).

Note: For detailed DVR video input / output ports, please refer to “2.2 Rear Panel” at page 6.
For detailed camera operation, please refer to its own manual.

3.2.1 Regular Camera Connection

1) Video cable connection

Connect the camera video output to the DVR video input port with a coaxial cable or RCA line with BNC connector.

2) Audio cable connection (Optional)

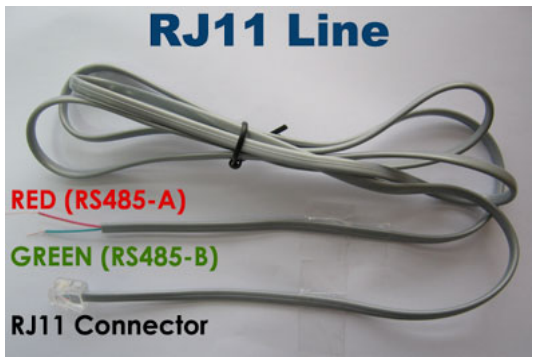
Connect the camera audio output to the DVR audio input port with a coaxial cable or RCA line with BNC connector.

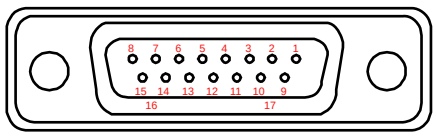
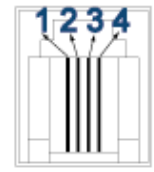
3) Power connection

Connect the camera with indicated power supply and make sure it's power-supplied.

3.2.2 Speed Dome Camera Connection

The following description is taking our brand's speed dome camera as an example. For detailed PIN / port connection, please refer to "APPENDIX 1 PIN CONFIGURATION" at page 51; for DVR setting to control the speed dome camera, please refer to "7.1.8 Remote" at page 30.

RJ11 cable
RS485-A: **Red wire**
RS485-B: **Green wire**

The RJ11 cable is not supplied in the sales package.

15 PIN D-Sub Connector	**RS-485 Port**
RS485-A: **PIN 11** RS485-B: **PIN 10**	RS485-A: **PIN 2** RS485-B: **PIN 3**
Solder Side of 15-pin D-Sub connector RS485 -A: PIN11 / RS485-B: PIN1 0 	 2: RS485-A 3: RS485-B
D-Sub connector is supplied with the DVR package.	*Example of RS485 port on the DVR rear panel.*

STEP 1: Get a RJ11 cable with the proper length to your connection.

Different RJ11 connector may have different wire layout, so the connection might be different. If you cannot control the DVR after connection, please reverse the RJ11 cable connection with the DVR.

STEP 2: Remove one end of the insulating coating of the RJ11 cable.

Remove one end of the insulating coating of the RJ11 cable to find the RS485-A and the RS485-B wires, and remove the insulating coating to reveal the naked wires for further connection.

STEP 3: Twist the RS485-A and RS485-B wires of the RJ11 cable and the speed dome camera together.

Twist the RS485-A (red) and RS485-B (green) wires of the RJ11 cable to the RS485-A (brown) and RS485-B (orange) wires of the speed dome camera. To protect the naked wires, use the insulation tape to cover on the twisted wires.

STEP 4: Connect the other end of the RJ11 cable to DVR.

When there's an RS485 port on the DVR real panel

Connect the other end of the RJ11 cable without removing the insulating coating directly to the RS485 port on the DVR real panel.

When there's an external I/O port on the DVR real panel

Solder the RS485-A (red) and RS485-B (green) wires of the RJ11 cable to the corresponding pins on the solder side of the 15 PIN D-Sub connector (as shown in the picture above).

STEP 5: Set the speed dome camera at the DVR side.

Go to “ADVANCE” → “REMOTE” to set the speed dome camera.

a) Select the device to “PTZ”.

b) Set the ID to the value the same as the one set in the speed dome camera. The default ID of the camera is 000.

c) Select the protocol to “NORMAL”.

d) Set the baud rate to the value the same as the one set in the speed dome camera. The default baud rate of the camera is 2400.

REMOTE				
TITLE	DEVICE	ID	PROTOCOL	RATE
CH1	PTZ	000	NORMAL	2400
CH2	CAMERA	000	NORMAL	2400
CH3	CAMERA	000	NORMAL	2400
CH4	CAMERA	000	NORMAL	2400
CH5	CAMERA	000	NORMAL	2400
CH6	CAMERA	000	NORMAL	2400
CH7	CAMERA	000	NORMAL	2400
CH8	CAMERA	000	NORMAL	2400
CH9	CAMERA	000	NORMAL	2400
CH10	CAMERA	000	NORMAL	2400
NEXT				
PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING				
↑↓ SELECT ← BACK → NEXT ↵ ENTER				

3.3 Power Setup

This device should be operated only with the type of power source indicated on the manufacturer’s label. Connect the indicated AC power cord to the power adapter, and plug into an electrical outlet. The power LED will be on.

Note: Before the DVR is powered on, make sure the cameras are connected and power-supplied for the detection of the camera video system to be correct.

Note: To ensure that your DVR works constantly and properly, it's recommended to use an UPS, Uninterruptible Power Supply (Optional), for continuously operation.

3.4 Date and Time Setting

Before operating your DVR, please set the date and time on your DVR **FIRST**.

Note: Please DO NOT change the date or time of your DVR after the recording function is activated. Otherwise, the recorded data will be disordered and you will not be able to find the recorded file to backup by time search. If users change the date or time accidentally when the recording function is activated, it’s recommended to clear all HDD data, and start recording again.

Note: For the first time to use the DVR, please power it on for at least 48 hours continuously after the date & time is set correctly. It helps to prevent DVR time from resetting after the disconnecting of DVR power. If the DVR time resets after the disconnecting of DVR power, for example, caused by a power outage, the battery might run out and please replace the battery as described in “APPENDIX 6 DVR BATTERY REPLACEMENT” at page 58.

Press “MENU” and enter the password to go to the quick-start menu list. The default admin password is 0000.

Move to the icon  and you can set the date / time / daylight saving in this menu list.

QUICK START		
	CHANNEL TITLE	ON
	EVENT STATUS	ON
	DATE DISPLAY	ON
	IMAGE SIZE	CIF
	QUALITY	BEST
	IMAGE PER SECOND	120
	RECORD TIMER	OFF
	DETECTION TIMER	OFF
	DATE	2008 / APR / 23 11 : 20 : 45
	FORMAT	Y / M / D
	DAYLIGHT SAVING	OFF

▼ ADVANCE ↑↓ SELECT ← BACK → NEXT ↵ ENTER

3.5 Password Setting

Press “MENU” and enter the password to go to the quick-start menu list. Then, move to “ADVANCE” to enter the advanced setting menu.

In the “ADVANCE” menu, move to “  ” (SYSTEM INFO). Select “PASSWORD” and press “ENTER” to enter the submenu to set the password (four digits).

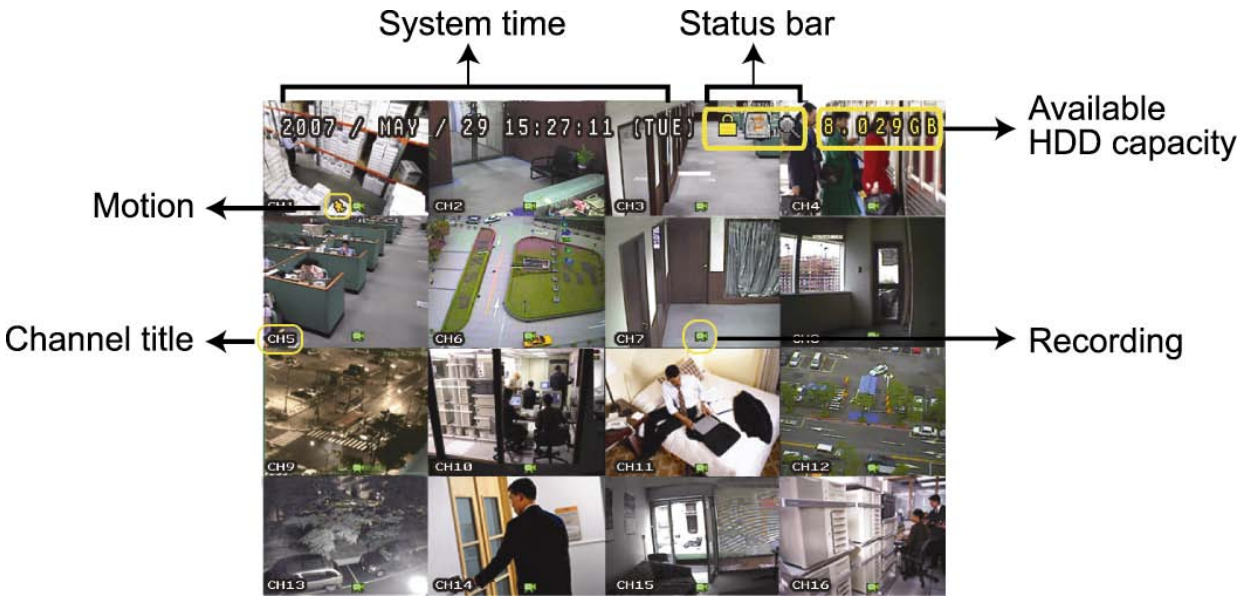
SYSTEM INFO		
	SERIAL TYPE	RS485
	BAUD RATE	2400
	HOST ID	0
	PASSWORD	XXXX
	RESET DEFAULT	RESET
	CLEAR HDD	HDD-MASTER-1
	UPGRADE	START
	R.E.T.R. (MIN) *(Selected models only)*	05
	AUTO KEYLOCK (SEC)	NEVER
	LANGUAGE	ENGLISH
	VIDEO FORMAT	PAL
	VERSION	1083-1028-1009-1013-02-0000

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

4. BASIC OPERATION

4.1 Live Page

In this live page of the DVR, you can see the live viewing of 1- / 4- / 9- / 16-cut screen.



Icon	Function	Icon	Function	Icon	Function	Icon	Function
	Key lock		Key unlock		The 1st live audio channel		The 2nd live audio channel
	The 3rd live audio channel		The 4th live audio channel		The 1st playback audio channel		The 2nd playback audio channel
	The 3rd playback audio channel		The 4th playback audio channel		Audio channel unselected		Digital zoom mode
	Digital zoom unselected		Timer recording		Motion		Recording
	Alarm *(Selected models only)*		HDD overwrite	R.E.T.R.	R.E.T.R. ON *(Selected models only)*	R.E.T.R.	R.E.T.R. Delay *(Selected models only)*

4.2 Recording

When the HDD overwrite function is activated, this device will overwrite 8GB data from the oldest for continuous recording without notice.

1) Continuous Recording Icon

By defaults, the record icon ( ) shows on the screen when the DVR is powered on and a HDD is installed.

2) Event Recording Icon

When the motion detection or alarm is activated, the motion icon ( ) or alarm icon ( ) shows on the screen for any motion or alarm event.

3) Timer Recording Icon

When the timer record is activated, you will see the icon " " (timer) on the screen.

Note: A new log will be added in the system log when the HDD data is overwritten or the recording starts after DVR reboots.

4) HDD Overwritten Icon

The HDD overwritten function can be set to ON / OFF. When this function is enabled (ON), the icon will display on the screen.

4.3 Playback

Press “**PLAY**” on the DVR control panel, and the device will playback the latest recorded video.

Note: There must be at least 8192 images of recorded data for playback to work properly. If not, the device will stop playback. For example, if the IPS is set to 30, the recording time should be at least 273 seconds (8192 images / 30 IPS) for the playback to work properly.

Note: The playback at the local site might not be so smooth if there’s any remote surveillance simultaneously going on.

1) Fast Forward / Fast Rewind

You can increase the speed for fast forward and rewind on this device. In the playback mode:
Press “FF” once to get 4X speed forward and press twice to get 8X speed, etc. And the maximum speed is 32X.
Press “REW” once to get 4X speed rewind and press twice to get 8X speed, etc. And the maximum speed is 32X.

Note: During playback, the image size of the recording (FRAME, FIELD or CIF) will be shown on the screen.

2) Pause / Image Jog

Press “PAUSE” to pause the playback.
In the Pause mode:
Press “FF” once to get one frame forward.
Press “REW” once to get one frame rewind.

3) Stop

Press “STOP” under playback mode, and the screen will return to live monitoring mode.

4) Slow Playback

Press “SLOW” to get 1/4X speed playback and press twice to get 1/8X speed playback.

5) Audio Playback (SLOW + ZOOM)

Press “SLOW” + “ZOOM” to select the live or playback sound of the audio channels.

Live audio of the 1st audio channel	Playback audio of the 1st audio channel
Live audio of the 2nd audio channel	Playback audio of the 2nd audio channel
Live audio of the 3rd audio channel	Playback audio of the 3rd audio channel
Live audio of the 4th audio channel	Playback audio of the 4th audio channel
The audio channel is not selected.	

Note: To make a video backup with audio, make sure the camera which supports the audio function is connected to the correct video channel (INPUT) which supports audio recording. Depending on the model you have, up to four channels for audio recording are supported.
Take Model 1 as an example,
Audio IN 1 audio data will be recorded with CH1 video.
Audio IN 2 audio data will be recorded with CH2 video.
Audio IN 3 audio data will be recorded with CH3 video.
Audio IN 4 audio data will be recorded with CH4 video.

4.4 Key Lock and Unlock

1) Key Lock On

Set the time-out after which the key lock function is activated (NEVER / 10 SEC / 30 SEC / 60 SEC). Please refer to “7.2 System Info” at page 31.

OR

Press “F2” on the IR remote controller to immediately lock the keys.

2) Key Lock Off

Enter the DVR password to exit “Key Lock” mode.

Note: For the password setting, please refer to “3.5 Password Setting” at page 13.

4.5 Upgrade

- **Firmware / Multilanguage OSD Upgrade**

1) By using USB flash drive

Step 1. Format the USB memory device as FAT 32 format first.

Step 2. Get the upgrade files from your distributor, and save the upgrade files in your USB flash device (do not change the file name).

Step 3. Insert your USB flash drive into the USB port. Wait till the DVR detects your USB flash drive.

Step 4. Press “MENU”, and move to “ADVANCE” → “  ” (SYSTEM INFO). Select “UPGRADE” → “START”, and press “ENTER”.

Step 5. Select “YES”, and press “ENTER” to confirm the upgrade.

2) By using the supplied software “Video Viewer”

Step 1. Save the upgrade files at your PC (do not change the file name), and execute Video Viewer.

Step 2. In the “Address Book” panel, select the IP address of your DVR (or add the IP address of your DVR to the address book if it’s not yet in the address book), and click “  ” to show the “Update Server” panel.

Step 3. In “Update Server”, click “Firmware” or “Language” tab as needed, and click “Add” to select the firmware or OSD files to upgrade.

Step 4. Click “Update Firmware” or “Update Language” to start the upgrade.

4.6 Search

1) Search by List

Press “LIST” on the DVR control panel to show the list for all types of the recorded files. Choose the item you want to view, and press “ENTER” to start playback.

2) Search by Time

In the “  ” (EVENT INFO) menu list, move to “QUICK SEARCH”, and press “ENTER” to enter the quick search menu. You can search any specific events by time (Year / Month / Day / Hour / Min) and directly play the file you find.

5. MAIN MENU

5.1 Menu Configuration

QUICK START MENU		STATUS	CHANNEL TITLE
			EVENT STATUS
			DATE DISPLAY
		RECORD	IMAGE SIZE
			QUALITY
			IMAGE PER SECOND
		TIMER	RECORD TIMER
			DETECTION TIMER
		DATE	DATE
			FORMAT
			DAYLIGHT SAVING
ADVANCED MENU		ADVANCE CONFIG	CAMERA
			DETECTION
			ALERT
			NETWORK
			SNTP
			DISPLAY
			RECORD
			REMOTE
		SYSTEM CONFIG	SERIAL TYPE
			BAUD RATE
			HOST ID
			PASSWORD
			RESET DEFAULT
			CLEAR HDD
			UPGRADE
			R.E.T.R. (MIN) *(Selected Models Only)*
			AUTO KEYLOCK (SEC)
			LANGUAGE
			VIDEO FORMAT
			VERSION
		EVENT LOG	QUICK SEARCH
			EVENT SEARCH
			HDD INFO
			EVENT LOG
		BACKUP	USB BACKUP
			DISK BACKUP *(Selected Models Only)*

5.2 Menu Operation Instruction

ITEM	FUNCTION
QUICK START MENU:	**View & change the settings of the quick start menu items.**
MENU	Enter / exit the quick start menu
▲ ▼	Make the selection / Change the setting
◄ ►	Go to the upper layer or sub-layer / Make the selection
ENTER	Confirm the password entering
▼ ADVANCED MENU:	**In the quick start menu, move to "▼", and press "▼" to enter the advanced setting menu.**
ENTER	Go to the sub-layer of the advanced menu
MENU	Under the sub-layer of the advanced setting menu, use this button to confirm the settings and go back to the upper layer.
→ NEXT	Move to this item and press ENTER to go the next page.
← BACK	Move to this item and press ENTER to go the previous page.
	Other operations in the advanced menu are the same as in the quick start menu.

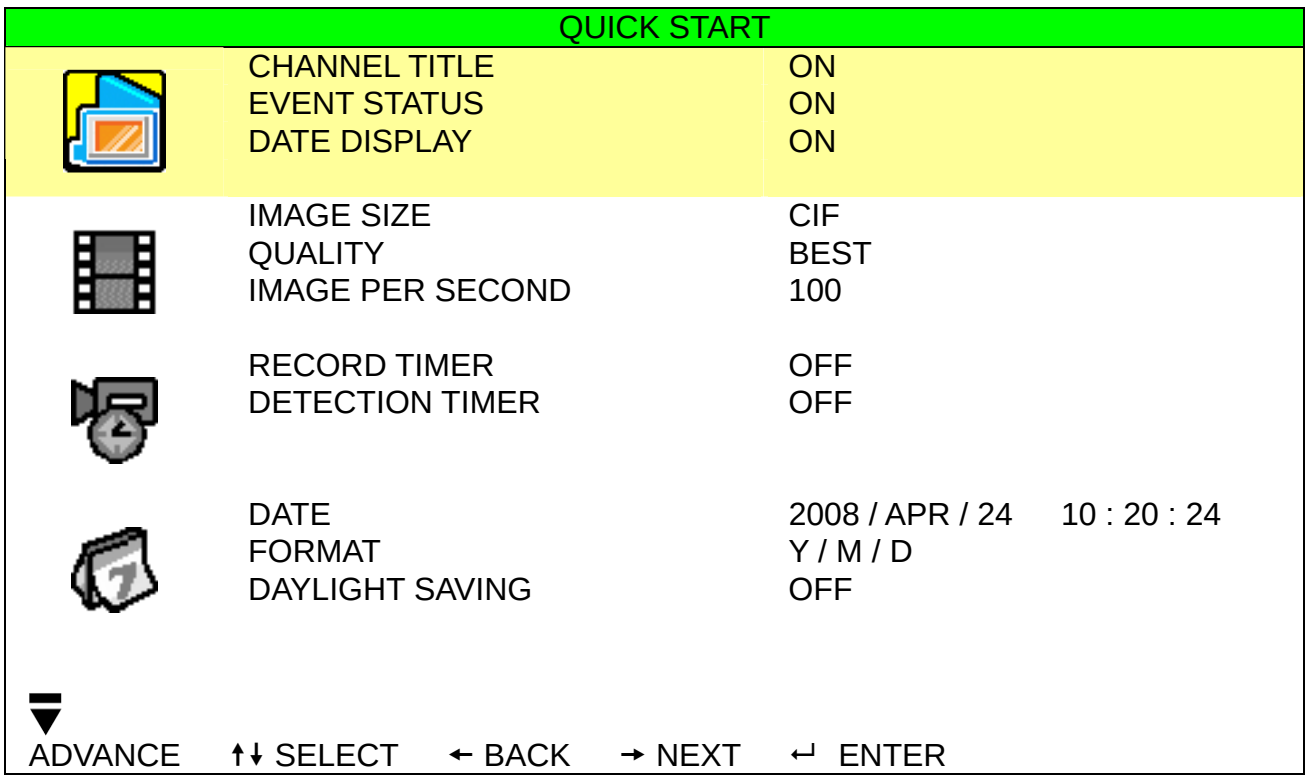
6. QUICK START MENU

Press MENU" and enter the password to go to the quick-start menu list. The default admin password is 0000. Users can change the password later. Please refer to "7.2 System Info" at page 31.

6.1 Status

In this menu list, you can check and change some display settings.

Move to  , and you will see the following screen:



The submenu items are described below:

1) CHANNEL TITLE

Select to display the channel title or not (ON / OFF).

2) EVENT STATUS

Select to display the symbols of the event or not (ON / OFF).

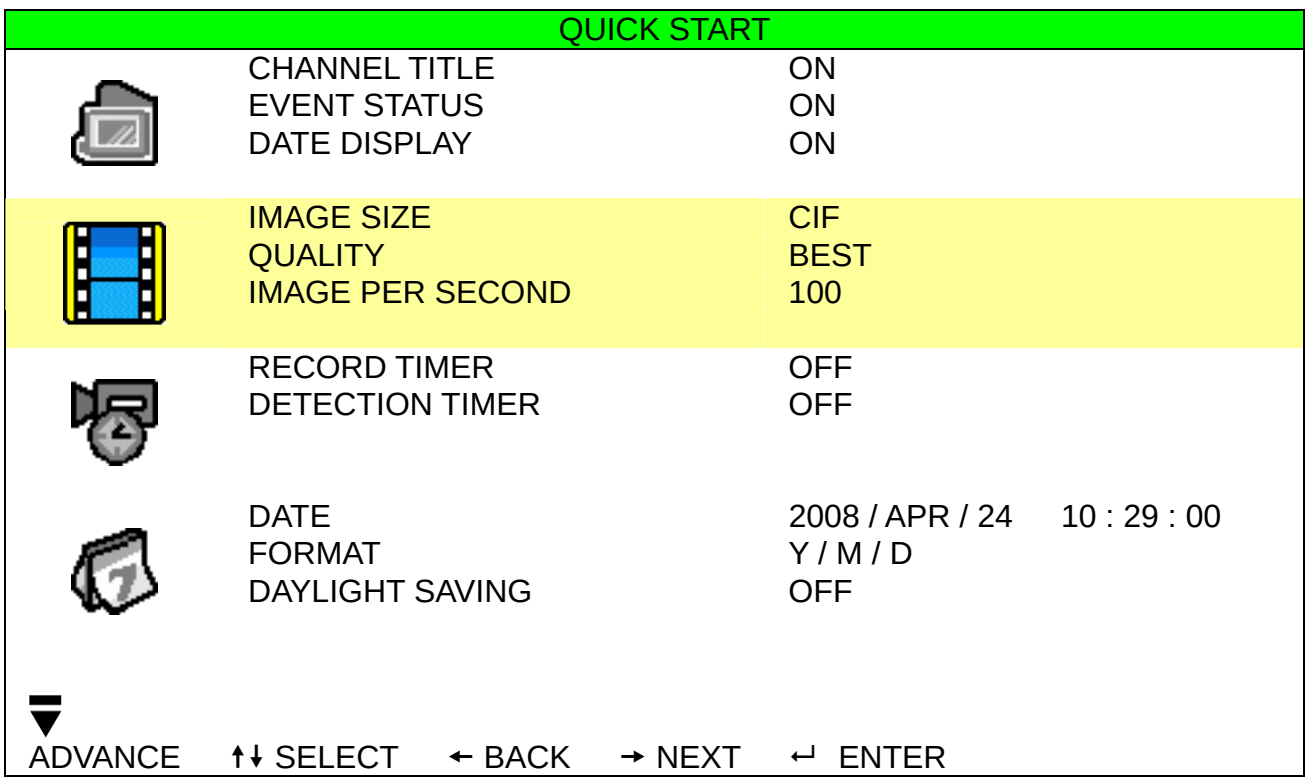
3) DATE DISPLAY

Select to display the date, status icons & remaining HDD capacity or not (ON / OFF).

6.2 Manual Record

In this menu list, you can set record settings.

Move to , and you will see the following screen:



The submenu items are described below:

1) IMAGE SIZE

Select one of the image sizes: FRAME, FIELD or CIF.

2) QUALITY

Select one of the 4 quality options: SUPER BEST, BEST, HIGH and NORMAL.

3) IMAGE PER SECOND

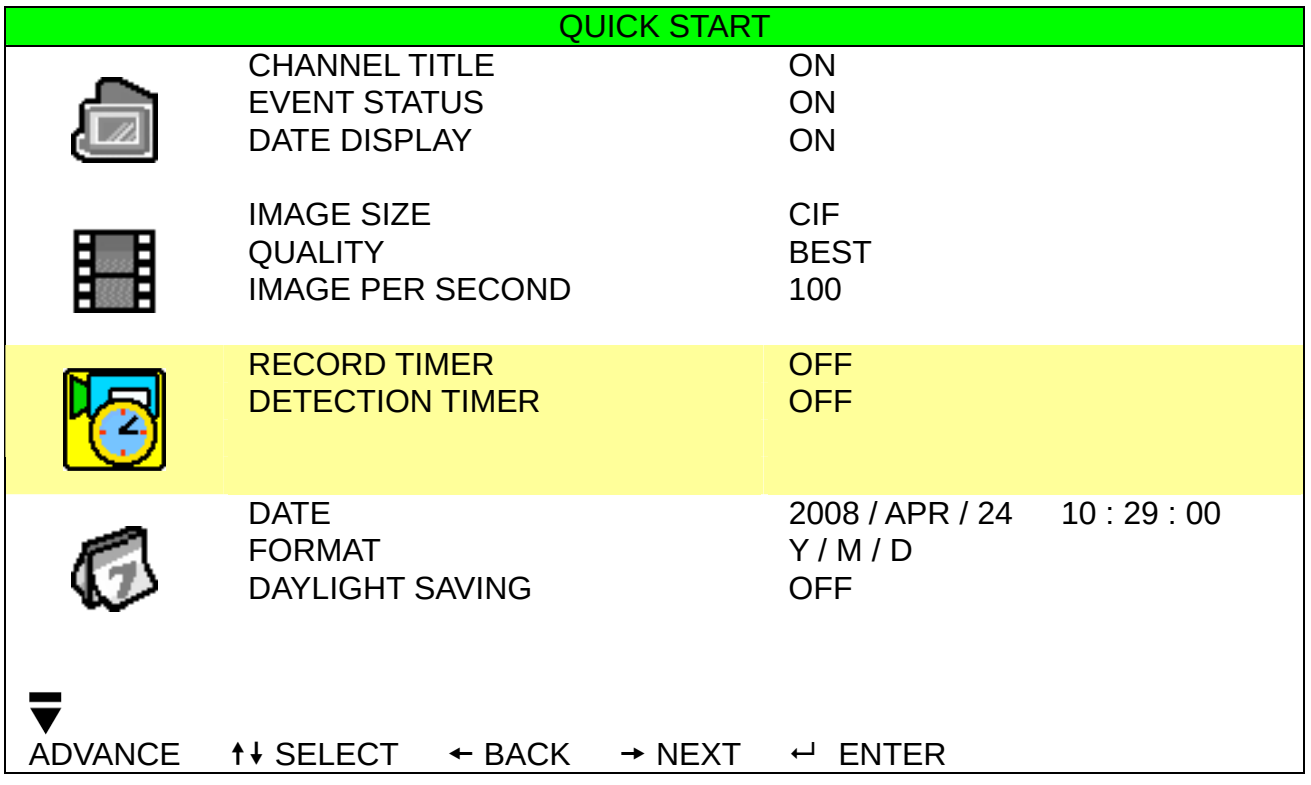
Select the images per second for MANUAL RECORD.

Note: For different model's actual recording IPS, please see "1.3 Specifications" at page 2.

6.3 Timer

In this menu list, you can schedule different sets of time for recording and detection function.

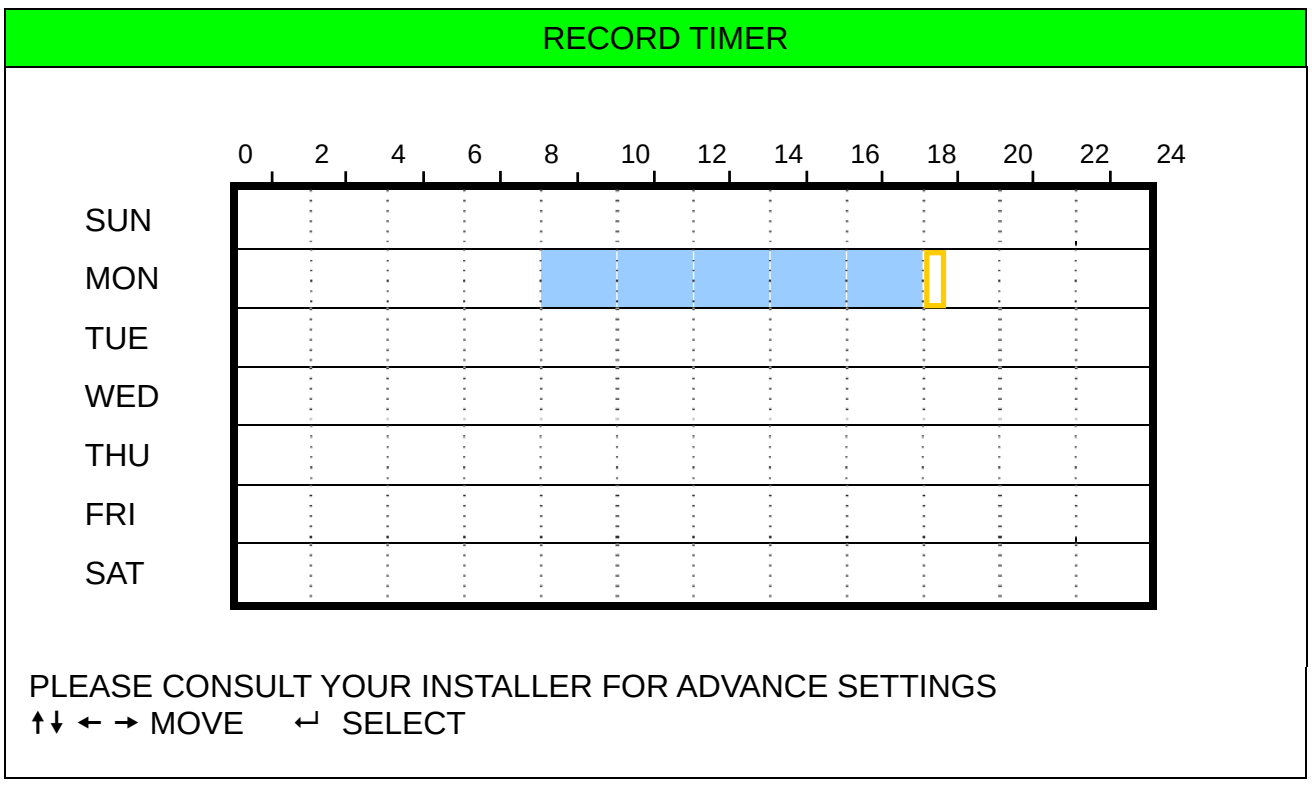
Move to , and you will see the following screen:



The submenu items are described below:

1) RECORD TIMER

Use ▲ / ▼ to change the setting (ON / OFF). When it's set to "ON", press "ENTER" to go to its submenu for further settings.



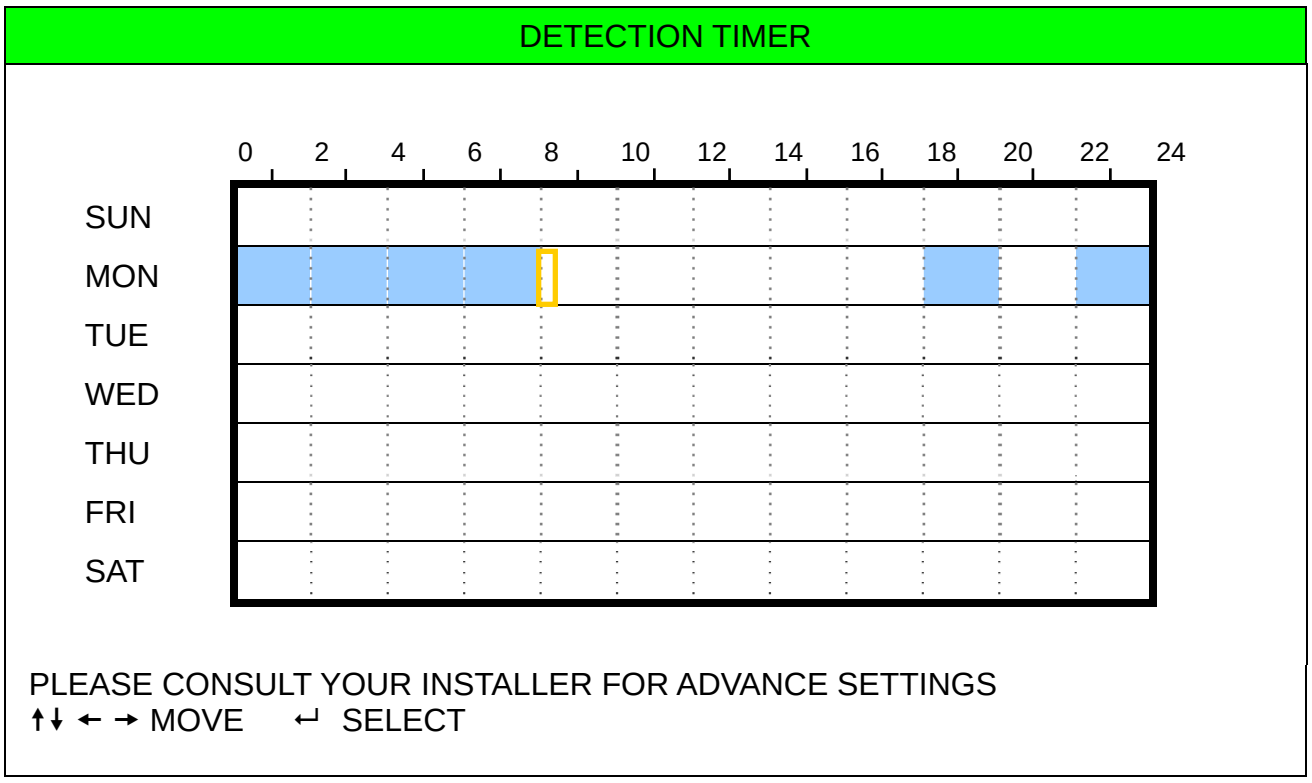
X axis 0 ~ 24 hours. Each time interval within a square is two hours (divided into four 30-minutes).

Y axis Monday ~ Sunday.

Operation Move to the start time point, and press "ENTER" to set the start time point (marked in red color). Then, press ▲ / ▼ / ◄ / ► to set the timer-recording schedule. After setup, press "ENTER" again to create an ending time point (marked in yellow color) and press "MENU" to exit.

2) DETECTION TIMER

Use ▲ / ▼ to change the setting (ON / OFF). When it's set to "ON", press "ENTER" to go to its submenu for further settings.



X axis 0 ~ 24 hours. Each time interval within a square is two hours (divided into four 30-minutes).

Y axis Monday ~ Sunday.

Operation Move to the start time point, and press "ENTER" to set the start time point (marked in red color). Then, press ▲ / ▼ / ◄ / ► to set the timer-recording schedule. After setup, press "ENTER" again to create an ending time point (marked in yellow color) and press "MENU" to exit.

Note: This function here is only for event record timer setup and activation. For motion detection function setup and activation, please refer to section "7.1.2 Detection" at page 24.

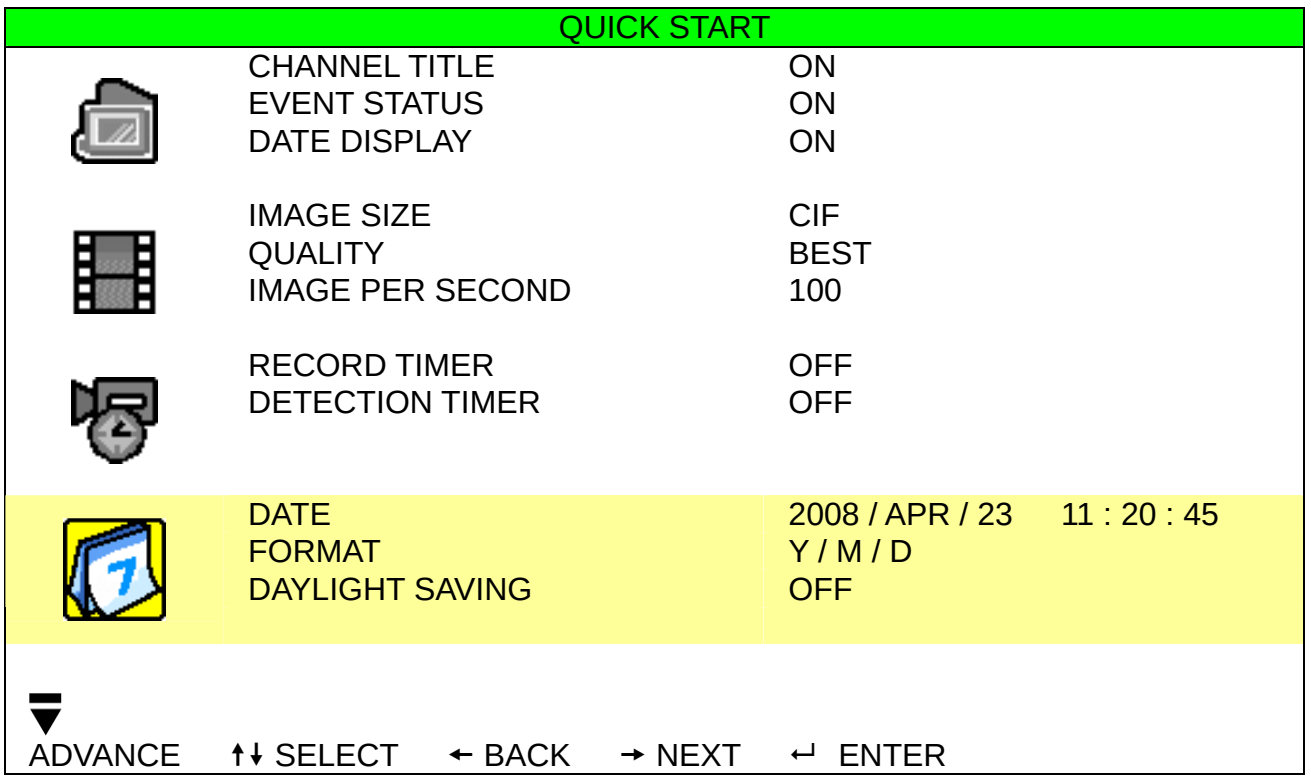
6.4 Date

In this menu list, you can set up the system date and time for this device.

Note: Please DO NOT change the date or time of your DVR after the recording function is activated. Otherwise, the recorded data will be disordered and you will not be able to find the recorded file to backup by time search. If users change the date or time accidentally when the recording function is activated, it's recommended to clear all HDD data, and start recording again.

Note: The DVR time might get reset when the DVR battery is low or even running out of power. If so, please replace the DVR battery, CR2032, right away as instructed in "APPENDIX 6 DVR BATTERY REPLACEMENT" at page 58.

Press “MENU” to enter the main menu list. Move to  , and you will see the following screen:



The submenu items are described below:

1) <u>DATE</u>

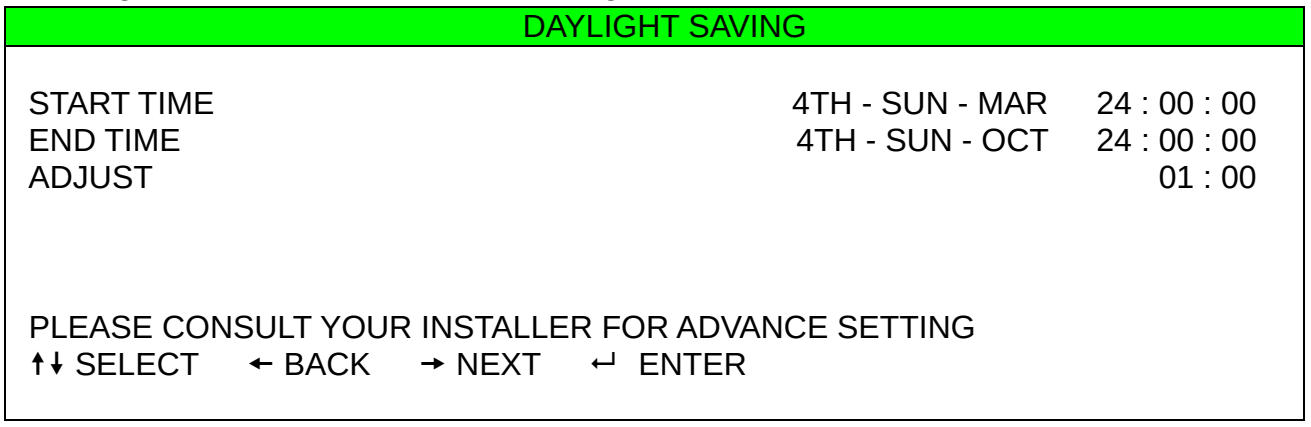
Set the current date and time. The default order is “YEAR – MONTH – DATE HOUR : MIN : SEC”.

2) <u>FORMAT</u>

Select one date format from the following 3 options: Y-M-D, M-D-Y, D-M-Y.

3) <u>DAYLIGHT SAVING</u>

Use the ▲ / ▼ to specify whether to use daylight-saving time (ON / OFF). When it’s set to “ON”, press “ENTER” to go to its submenu for further settings.



Set the start time and end time, and adjust the daylight saving time in hour. The above example means during the daylight-saving time period (starting from the 4th Sunday of March and ending on the 4th Sunday of October), the system time will plus one hour. After setup, press “ENTER” again to create an ending time point and press “MENU” to exit.

7. ADVANCED MENU

Note: The following menu display takes 16CH DVR as an example, and some display may differ from the actual display when users are using a 8CH or 4CH DVR.

Press “MENU” and enter the password to go to the quick-start menu list. Then, move to “ADVANCE” to enter the advanced setting menu. The default admin password is 0000. Users can change the password later. Please refer to “7.2 System Info” at page 31.

It is recommended that consult your installer to setup this advanced menu.

7.1 Advanced Configuration

In this menu list, you can check or change CAMERA / DETECTION / ALERT / NETWORK / SNTP / DISPLAY / RECORD / REMOTE settings.

Move to “  ”, and you will see the following screen:

ADVANCE CONFIG

CAMERA
DETECTION
ALERT
NETWORK
SNTP
DISPLAY
RECORD
REMOTE

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

7.1.1 Camera

In this submenu, you can make advanced camera settings, such as changing the camera title, or adjust the brightness. Move to “CAMERA”, and press “ENTER”. You will see the following screen:

CAMERA

TITLE	BRIG	CONT	SATU	HUE	COV.	REC
CH1	128	098	128	128	OFF	ON
CH2	128	098	128	128	OFF	ON
CH3	128	098	128	128	OFF	ON
CH4	128	098	128	128	OFF	ON
CH5	128	098	128	128	OFF	ON
CH6	128	098	128	128	OFF	ON
CH7	128	098	128	128	OFF	ON
CH8	128	098	128	128	OFF	ON
CH9	128	098	128	128	OFF	ON
CH10	128	098	128	128	OFF	ON

NEXT

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below. While you changing the camera setting, you can ***preview*** the changing on the screen.

1) TITLE

You can change the default camera naming here. The default title is the channel number.
Move to the camera title you want to change, and press “ENTER” on the control panel of the DVR to access the character selection screen. Assign a new name to the camera up to six characters (letters or symbols or numbers).

2) BRIG / CONT / SATU / HUE

You can adjust the brightness/contrast/saturation/hue of each channel here. The default value of CONT is 098, and others are 128. The value is adjustable from 0 to 255.

3) COV

Select if you want to mask the selected channel under recording (ON / OFF). When this function is activated, the wording “COV.” will be shown on the channel screen.

4) REC

Select if you want to enable recording for the selected channel (ON / OFF). When this function is activated, the symbol “ ” will be shown on the channel screen.

7.1.2 Detection

In this submenu, you can set up detection-related functions.
Move to “DETECTION”, and press “ENTER”. The submenu items are described below:

1) TITLE

Show the camera title of each channel set in “CAMERA”.

2) DET

The available options vary depending on the model you have.
For Model 5 & 7: Select if you want to activate the motion detection function for the selected channel (ON/OFF).
For Model 1, 2, 3, 4, 6 & 8: Select HIGH / NORMAL / LOW to activate the motion detection function with different sensitivity for the selected channel, or select OFF to disable this function.

3) AREA

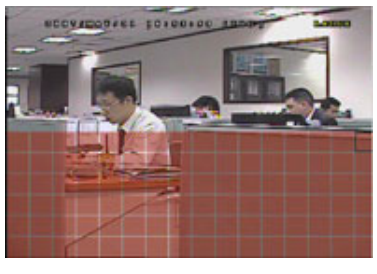
Press “ENTER” to set the detection area. You will see similar screens as the following:
Pink blocks represent the area that is not being detected while the transparent blocks are the area under detection.
There are two different methods to set the detection area depending on the model you have.

Model 1, 2, 3, 4, 6 & 8

Transparent blocks are the area under detection.

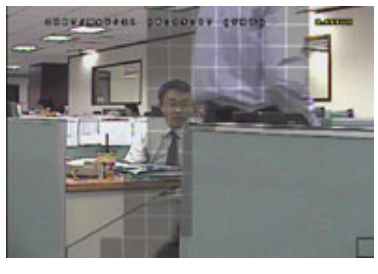
Press “ENTER” to confirm the start area.

Press ◂ / ▸ to choose the width of the detection area.



Press ▲ / ▼ to choose the height of the area.

You can also set up multi-detection area.



When any movement is detected, you will see the grids are flashing.

*Pink blocks represent the area that is not being detected while the transparent blocks are the area under detection.

Model 5 & 7

*Pink blocks represent the area that is not being detected while the transparent blocks are the area under detection.

There are three detection areas for your choice:

Press "▲" or "◀" once to broaden the detection area.

Press "▼" or "▶" once to narrow the detection area.

4) LS (Level of Sensitivity) (Selected models only)

"LS" is to set the sensitivity of comparing two different images. The smaller the value is, the higher sensitivity for motion detection.

5) SS (Spatial Sensitivity) (Selected models only)

"SS" is to set the sensitivity for detecting the size of one object (the number of the grids) on the screen. The smaller the value is, the higher sensitivity for motion detection.

Note: The default setting of SS is 03, which means once an object is detected more than 3 grids, the system will get triggered. So the value of SS must be less than the number of grids that you set up for the motion detection area.

6) TS (Time of Sensitivity) (Selected models only)

"TS" is to set the sensitivity regarding how long one object stays in the detection area and triggers the recording. Depending on the model you have, you may see either of the following methods:

a). Select a value -- The smaller the value is, the higher sensitivity for motion detection.

b). Select an option – HIGH / NORMAL.

7) RE (Reference) (Selected models only)

"RE" is to set a reference for detection. The default value is 10, which means the DVR will compare 10 continuous images at one time according to the sensitivity of LS, SS, TS simultaneously.

8) ALARM (Selected models only)

Select N.C. (Normally Closed) / N.O. (Normally open) / OFF for the alarm polarity. The default alarm value is OFF.

7.1.3 Alert

In this menu list, you can set alerts for different kinds of situations, such as when HDD is full.

Move to "ALERT", and press "ENTER". You will see the following screen:

ALERT	
EXT. ALERT	ON
INT. BUZZER	ON
KEY BUZZER	ON
VLOSS BUZZER	ON
MOTION BUZZER	ON
ALARM BUZZER	ON
HDD BUZZER	ON
ALARM DURATION (SEC)	05
HDD NEARLY FULL (GB)	05

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING

↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below:

1) EXT. ALERT

Select to enable or disable the sound when any external alarm is triggered (ON / OFF).

2) INT. BUZZER

Select to enable or disable the sound (ON / OFF) for all the internal buzzers: KEY BUZZER, VLOSS BUZZER, MOTION BUZZER, and ALARM BUZZER.

Note: When this item is set to OFF, item 3) to item 6) will be disabled even though they are set to ON.

---

3) KEY BUZZER

Select to enable or disable the sound when pressing the buttons on the front panel (ON / OFF).

4) VLOSS BUZZER

Select to enable or disable the sound when video loss happened (ON / OFF).

5) MOTION BUZZER

Select to enable or disable the sound when any motion alarm is triggered (ON / OFF).

6) ALARM BUZZER

Select to enable or disable the sound when any internal alarm is triggered (ON / OFF).

7) HDD BUZZER

Select to enable or disable the sound (ON / OFF) when the HDD remaining capacity reaches to the value set in “HDD NEARLY FULL (GB)”.

8) ALARM DURATION (SEC)

Press ▲ / ▼ to set the duration time of alarm recording in second (5 / 10 / 20 / 40).

9) HDD NEARLY FULL (GB)

If HDD BUZZER is enabled, press ▲ / ▼ to have a buzzer notification when the HDD available capacity is 5/10/15/20 GB left.

7.1.4 Network

In this menu list, you can set up the network.

Move to “NETWORK”, and press “ENTER” to enter the submenu. You will see the following screen:

NETWORK	
NETWORK TYPE	STATIC
IP	192 . 168 . 001 . 080
GATEWAY	192 . 168 . 001 . 080
NETMASK	255 . 255 . 255 . 000
PRIMARY DNS	168 . 095 . 001 . 001
SECONDARY DNS	139 . 175 . 055 . 244
PORT	0080

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below:

- **STATIC**

1) NETWORK TYPE

Select the network type as STATIC and set all the information needed in the DVR.

2) NETWORK INFORMATION (IP / GATEWAY / NETMASK)

Key in all the network information obtained from your ISP (Internet Service Provider).

3) DNS (PRIMARY DNS / SECONDARY DNS)

Key in the IP address of the domain name server obtained from your ISP (Internet Service Provider).

4) PORT

The valid number ranges from 1 to 9999. The default value is 80. Typically, the TCP port used by HTTP is 80. However in some cases, it is better to change this port number for added flexibility or security.

See the example below:

STATIC	
NETWORK TYPE	STATIC
IP	192 . 168 . 001 . 080
GATEWAY	192 . 168 . 001 . 080
NETMASK	255 . 255 . 255 . 000
PRIMARY DNS	168 . 095 . 001 . 001
SECONDARY DNS	139 . 175 . 055 . 244
PORT	0080

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

- **PPPOE**

1) NETWORK TYPE

Select the network type as PPPOE.

2) USER NAME / PASSWORD

Set “username” and “password” subscribed from your ISP supplier

3) DNS (PRIMARY DNS / SECONDARY DNS)

Key in the IP address of the domain name server obtained from your ISP (Internet Service Provider).

4) PORT

The valid number ranges from 1 to 9999. The default value is 80. Typically, the TCP port used by HTTP is 80. However in some cases, it is better to change this port number for added flexibility or security.

See the example below:

PPPOE	
NETWORK TYPE	PPPOE
USER NAME	ac123456
PASSWORD	tech123456
IP	000 . 000 . 000 . 000
GATEWAY	000 . 000 . 000 . 000
NETMASK	000 . 000 . 000 . 000
PRIMARY DNS	168 . 095 . 001 . 001
SECONDARY DNS	139 . 175 . 055 . 244
PORT	0080

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

Note: The PPPOE function needs to have one “username” and one “password” subscribed from one ISP supplier and a “DDNS account” to transforming the dynamic IP corresponding to a specific “Hostname”.

- **DHCP**

1) NETWORK TYPE

Select the network type as DHCP.

2) DNS (PRIMARY DNS / SECONDARY DNS)

Key in the IP address of the domain name server obtained from your ISP (Internet Service Provider).

3) PORT

The valid number ranges from 1 to 9999. The default value is 80. Typically, the TCP port used by HTTP is 80. However in some cases, it is better to change this port number for added flexibility or security.

See the example below:

DHCP	
NETWORK TYPE	DHCP
IP	000 . 000 . 000 . 000
GATEWAY	000 . 000 . 000 . 000
NETMASK	000 . 000 . 000 . 000
PRIMARY DNS	168 . 095 . 001 . 001
SECONDARY DNS	139 . 175 . 055 . 244
PORT	0080

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

Note: This DHCP function needs to be supported by a router or a cable modem network with DHCP services and a “DDNS account” to transforming the dynamic IP corresponding to a specific “Hostname”.

7.1.5 SNTP

In this menu list, you can set to synchronize your DVR time with the networked computer systems.

Note: Before using this function, please connect your DVR to Internet.

Move to “SNTP”, and press “ENTER” to enter the submenu. You will see the following screen:

SNTP	
GMT	(GMT+08:00) TAIPEI
NTP SERVER	tock.stdtime.gov.tw
SYNC PERIOD	DAILY

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

1) GMT

Select your time zone. There are 75 time zones for you to choose.

2) NTP SERVER

Users can change the default NTP server to another server they’re familiar with.

3) SYNC PERIOD

Select to synchronize the DVR time everyday (DAILY), or turn this function off (OFF).

7.1.6 Display

In this menu list, you can set up the settings of display.

Move to “DISPLAY”, and press “ENTER” to enter the submenu. You will the following screen:

DISPLAY	
DE-INTERLACE	ON
QUAD DWELL DURATION (SEC) *(Selected Models Only)*	03
FULL SCREEN DWELL DURATION (SEC)	03
VGA OUTPUT *(Selected Models Only)*	1024 x 768
DISPLAY COVERT	ON
HDD DISPLAY MODE	SIZE

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below:

1) DE-INTERLACE

Select to enable or disable the de-interlace function (ON / OFF).

Note: If you set the recording image size as “FRAME”, please TURN ON de-interlace function.
If you set the recording image size as “CIF”, please TURN OFF the de-interlace function.

---

2) QUAD DWELL DURATION (SEC) *(Selected Models Only)*

Set the quad dwell duration time (3 / 5 / 10 / 15 seconds).

3) FULL SCREEN DWELL DURATION (SEC)

Set the full screen dwell duration time (3 / 5 / 10 / 15 seconds).

4) VGA OUTPUT *(Selected Models Only)*

Select the VGA output resolution. There are seven options for your choice:
800 x 600 / 1024 x 768 (default) / 1280 x 1024 / 1440 x 900 / 1400 x 1050 / 1680 x 1050 / 1600 x 1200

Note: To have the best image quality on your LCD monitor, make sure (1) the selected DVR VGA output resolution is supported by your monitor, and (2) the VGA output settings on both the LCD monitor and DVR are consistent.
If the image is not positioned or scaled properly, please go to your monitor’s menu for adjustment. For details, please refer to the user manual of your LCD monitor.

---

5) DISPLAY COVERT

Select “ON” or “OFF” to display or hide the wording “COV.” when covert recording is activated in “CAMERA”.

6) HDD DISPLAY MODE

Select “SIZE” to show the remaining HDD capacity for recording in GB, or “TIME” to show the remaining recording time.

7.1.7 Record

In this menu list, you can set up the settings of display.

Note: Please DO NOT change the date or time of your DVR after the recording function is activated. Otherwise, the recorded data will be disordered and you will not be able to find the recorded file to backup by time search. If users change the date or time accidentally when the recording function is activated, it’s recommended to clear all HDD data, and start recording again.

Move to “DISPLAY”, and press “ENTER” to enter the submenu. You will the following screen:

RECORD	
MANUAL RECORD ENABLE	ON
EVENT RECORD ENABLE	ON
TIMER RECORD ENABLE	ON
EVENT RECORD IPS	100
TIMER RECORD IPS	100
OVERWRITE	ON
EVENT RECORD ALL CHANNELS	ON
KEEP DATA LIMIT (DAYS)	07

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below:

1) MANUAL RECORD ENABLE

Set the manual recording function on / off.

2) EVENT RECORD ENABLE

Set the event recording function on / off.

3) TIMER RECORD ENABLE

Set the timer recording function on / off.

4) EVENT RECORD IPS

Select the images per second for EVENT RECORD (Recording that is triggered by alarm or motion).

Note: For different model’s actual recording IPS, please see “1.3 Specifications” at page 2.

5) TIMER RECORD IPS

Select the images per second for TIMER RECORD (Recording that is activated according to the scheduled time).

Note: For different model’s actual recording IPS, please see “1.3 Specifications” at page 2.

6) OVERWRITE

Select “ON” to overwrite previous recorded data in your HDD when the HDD is full. When this function is on and the HDD is full, the DVR will clear 8GB data from the oldest for continuous recording without notice.

7) EVENT RECORD ALL CHANNELS

Select to record all channels (ON) or record the channel with an event only (OFF) for any event.

8) KEEP DATA LIMITS (DAYS)

Assign the maximum days to keep recorded data from 01 to 31, and the data older than the specified days will be removed, or select “OFF” to disable this function.

7.1.8 Remote

In this menu list, you can set up remote devices to work properly.
Move to “REMOTE”, and press ”ENTER”. You will see the following screen:

REMOTE				
TITLE	DEVICE	ID	PROTOCOL	RATE
CH1	PTZ	000	NORMAL	2400
CH2	CAMERA	000	NORMAL	2400
CH3	CAMERA	000	NORMAL	2400
CH4	CAMERA	000	NORMAL	2400
CH5	CAMERA	000	NORMAL	2400
CH6	CAMERA	000	NORMAL	2400
CH7	CAMERA	000	NORMAL	2400
CH8	CAMERA	000	NORMAL	2400
CH9	CAMERA	000	NORMAL	2400
CH10	CAMERA	000	NORMAL	2400
NEXT				

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

The submenu items are described below:

1) TITLE

Show the camera title of each channel set in “CAMERA”.

2) DEVICE

Select the device type (CAMERA / PTZ) according to the connected camera for each channel.

3) ID

Set the ID number (0 ~ 255) for a PTZ camera.
After connecting to a PTZ camera correctly, the default ID of the PTZ camera will be shown on the screen.

4) PROTOCOL

Select NORMAL (our protocol), P-D (PELCO-D) or P-P (PELCO-P) protocol.

5) RATE

Set the baud rate of each channel (2400 / 4800 / 9600 / 19200 / 57600 / 115200).
For the connected cameras, such as PTZ and speed dome cameras, etc., please make sure their baud rate setting is the same as the setting here.

7.2 System Info

In this menu list, you can check or change some system settings.

Move to “  ”, and you will see a similar screen as the following:

SYSTEM INFO		
	SERIAL TYPE	RS485
	BAUD RATE	2400
	HOST ID	0
	PASSWORD	XXXX
	RESET DEFAULT	RESET
	CLEAR HDD	HDD-EXT-252
	UPGRADE	START
	R.E.T.R. (MIN) *(Selected Models Only)*	05
	AUTO KEYLOCK (SEC)	NEVER
	LANGUAGE	ENGLISH
	VIDEO FORMAT	PAL
	VERSION	1083-1028-1009-1013-02-0000
PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING ↑↓ SELECT ← BACK → NEXT ↵ ENTER		

The submenu items are described below:

1) SERIAL TYPE

Here shows the serial type of the DVR (RS-485).

2) BAUD RATE

Set the baud rate of the DVR (2400 / 9600 / 19200 / 38400 / 57600 / 115200).

3) HOST ID

Set the ID of the DVR (0 ~ 254).

4) PASSWORD

Reset the password for accessing the DVR system. You can set the password up to 4 digits.

5) RESET DEFAULT

Press “ENTER” to reset all settings as default, and select “YES” to confirm or “NO” to cancel.

6) CLEAR HDD

Select the HDD. Press “ENTER” and select “YES” to confirm to clear HDD or “NO” to cancel.

7) UPGRADE (For upgrading firmware / OSD)

Before using the USB flash drive, please use your PC to format the USB flash drive to FAT32 format first.
Save the upgrade file in a compatible USB flash drive, and insert it into the USB port at the front panel.
Then, press “ENTER” and select “YES” to confirm upgrade or “NO” to cancel.

Note: For the list of compatible USB flash drives, please refer to “APPENDIX 2 COMPATIBLE USB FLASH DRIVE BRAND” at page 54.

---

8) R.E.T.R. (MIN) *(Selected Models Only)*

Select the timeout after which the R.E.T.R. function will be activated (03 / 05 / 10 / 30).

- **R.E.T.R. On**

  Press the R.E.T.R. key on the IR remote controller to enable the timeout function. Key in the password, and the R.E.T.R. delay icon “  ” (in green background) will be shown on the screen. When the RETR function is activated, the R.E.T.R. on icon “  ” (in red background) will be shown on the screen.

- **R.E.T.R. Off**

  Press any key (except “POWER”) and enter the password to turn off the RETR function.

9) AUTO KEYLOCK

Set the time-out in second after which the key lock function is activated (Never / 10 / 30 / 60).

10) LANGUAGE (Multilingual OSD)

Select the language of the OSD.

11) VIDEO FORMAT

Here shows the information of the DVR video format (NTSC / PAL).

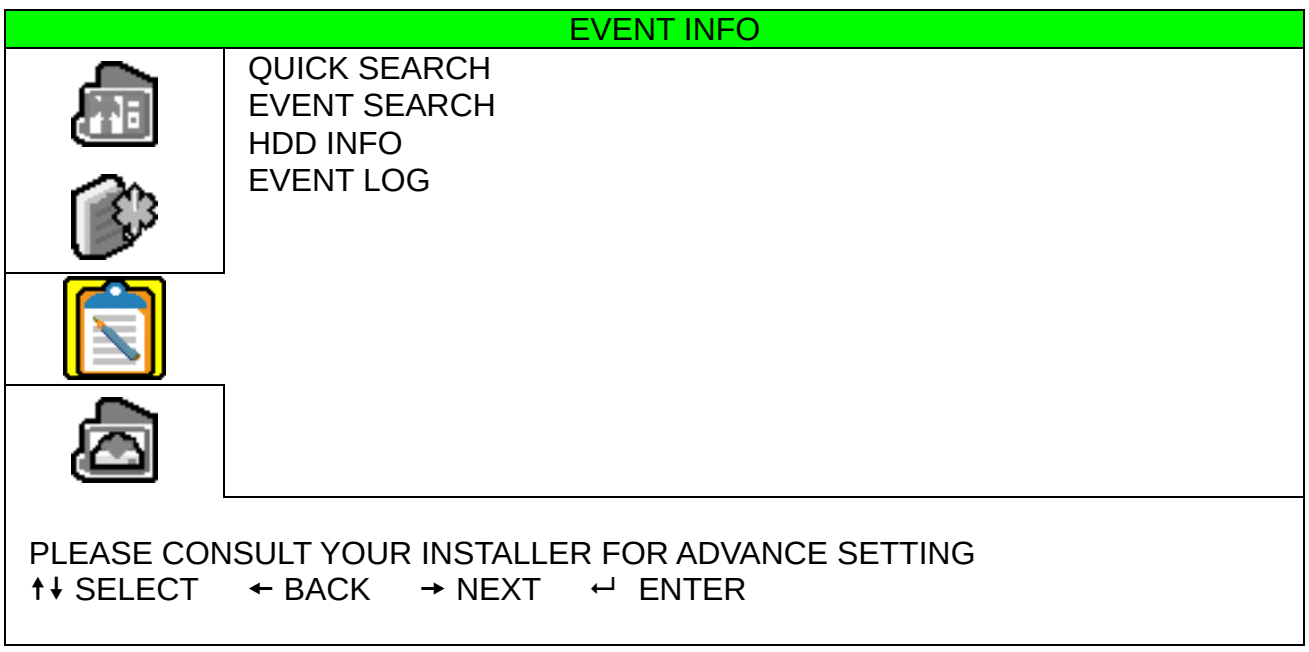
12) VERSION

Here shows the firmware version information

7.3 Event Info

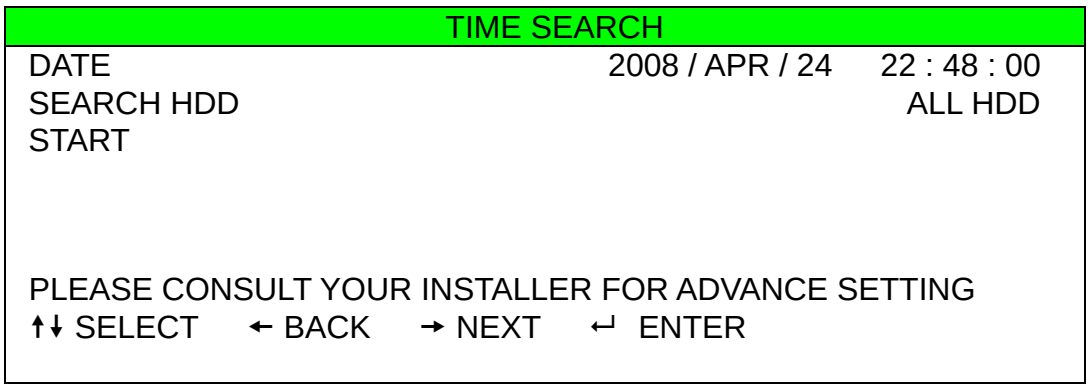
In this menu list, you can quickly search the recorded file by time or event, and check all the HDD and event information (event type, time and channel).

Move to “  ”, and press “ENTER”. You will the following screen:



7.3.1 Quick Search

In this menu list, you can search any specific events by time and directly play the file you find.
Move to “QUICK SEARCH”, and press “ENTER”. You will see a similar screen as the following:



The submenu items are described below:

1) DATE

Select the specific time period (YEAR / MONTH / DAY / HOUR / MIN) that you want to search.

2) SEARCH HDD

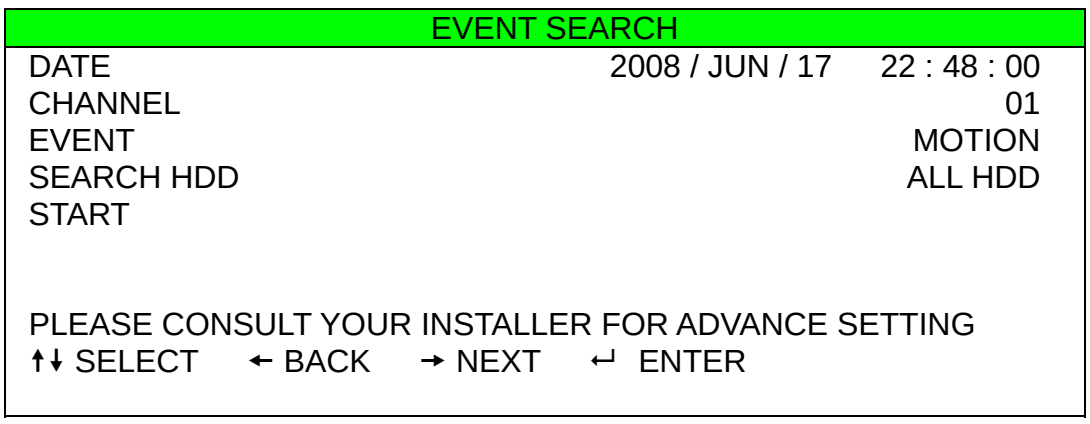
Change to the HDD you want to search if there are more than one HDD in your DVR by pressing ▲ / ▼.

3) START

Move to “START” and press “ENTER” to search and directly playback the recorded files.

7.3.2 Event Search

Move to “EVENT SEARCH”, and press “ENTER”. You will see the following screen:



The submenu items are described below:

1) DATE

Set the date and time you want to search for events.

2) CHANNEL

Press ▲ / ▼ to select the channel.

3) EVENT

Select the event type: MOTION or ALARM.

4) SEARCH

Change to the HDD you want to search if there are more than one HDD in your DVR by pressing ▲ / ▼.

5) START

Move to “START” and press “ENTER” to search and directly playback the recorded files.

7.3.3 HDD Info

In this menu list, you can view the remaining capacity of all the connected HDDs in this device.
Move to “HDD INFO”, and press “ENTER”. You will see a similar screen as the following:

HDD INFO

HDD NUM	HDD SIZE (GB)	HDD NUM	HDD SIZE (GB)
HDD–MASTER–1	233	HDD–SLAVE–1	NO HDD
HDD–MASTER–2	NO HDD	DISK-RW	NO DISK

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

7.3.4 Event Log

In this menu list, you can view all the event information (event type, time and channel) or clear all log records.
Move to “EVENT LOG”, and press “ENTER”. You will see a similar screen as the following:

EVENT LOG

EVENT	TIME		COMMENT
NET LOGIN	2008 / APR / 24	10:36:50	
NET LOGIN	2008 / APR / 24	10:33:12	
NET LOGIN	2008 / APR / 24	10:28:15	
KEY UNLOCK	2008 / APR / 24	10:27:14	
VLOSS	2008 / APR / 24	10:23:34	04
VLOSS	2008 / APR / 24	10:23:34	03
VLOSS	2008 / APR / 24	10:23:34	02
VLOSS	2008 / APR / 24	10:23:34	01
POWER ON	2008 / APR / 24	10:23:30	
KEY UNLOCK	2008 / APR / 23	14:37:30	

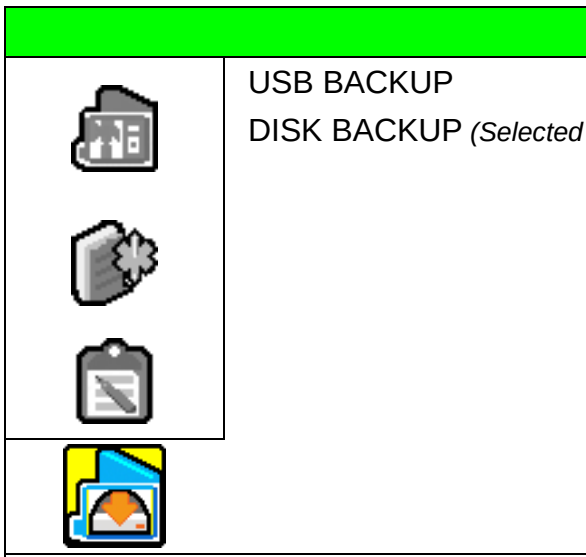
PREV NEXT CLEAN

PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTING
↑↓ SELECT ← BACK → NEXT ↵ ENTER

7.4 Backup

In this menu list, you can choose to make a copy for a specified period time to a compatible USB flash drive for your own purpose.

Move to  , and press “ENTER”. You will the following screen:



7.4.1 USB BACKUP

Before making USB backup, please check if:

a) The USB flash drive is supported by your DVR. If not, the message “USB ERROR” will be shown on the screen.
For the list of the compatible USB flash drives, please refer to “APPENDIX 2 COMPATIBLE USB FLASH DRIVE BRAND” at page 54.

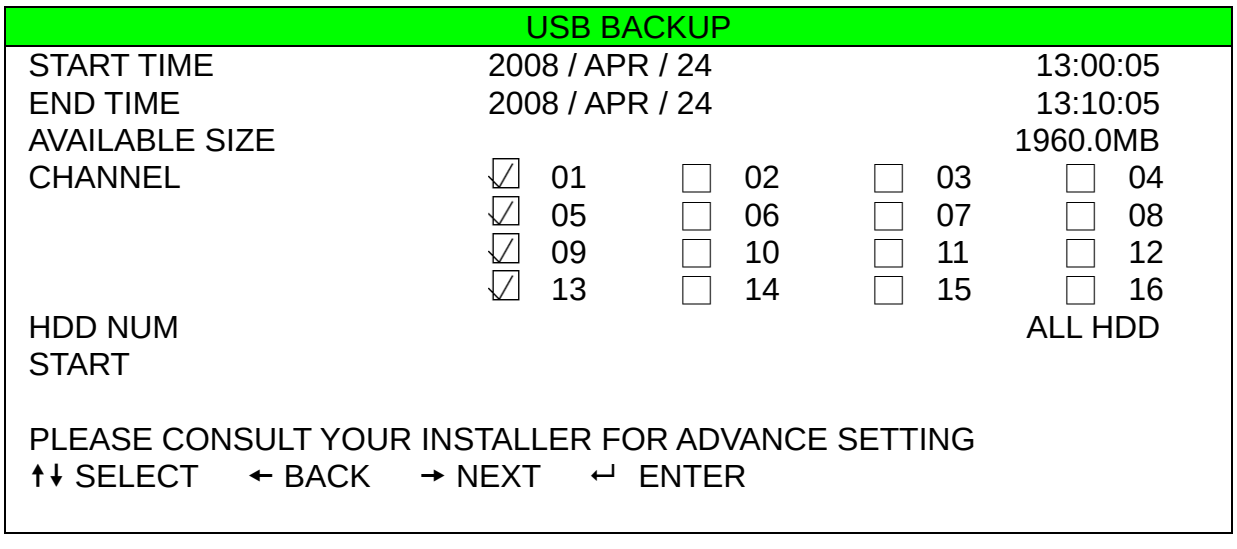
b) The format of your USB flash drive must be "FAT 32". If not, please format it to “FAT 32” in your PC.

c) There is no data in the USB flash drive. If yes, it’s recommended to clear all data in the USB flash drive before starting the backup.

Note: When USB backup starts, it’s not allowed for OSD menu operation or network backup in order to keep the consistency of the video data.

Note: You can backup up to 2GB video data for one-time USB backup. To backup more data, please set the time & channel(s) you want, and start USB backup again.

Move to “USB BACKUP”, and press “ENTER”. You will see a similar screen as the following:



The submenu items are described as below:

1) START TIME

Select the start time of the backup.

2) END TIME

Select the end time of the backup.

3) AVAILABLE SIZE

Display the available capacity in the inserted USB flash drive.

4) CHANNEL

Select channels by pressing “ENTER” to change the symbol in front of the channel number.
Symbol “ ☑ ” means that this channel is selected to backup.
Symbol “ ☐ ” means that this channel is not selected to backup.

5) HDD NUM

Press “ENTER” to select the HDD containing the data you need.

6) START

Press “ENTER” to start copying the chosen data to the USB flash drive.

7.4.2 DISK BACKUP *(Selected Models Only)*

Before making disk backup, please check if the type of your CD or DVD is CD-R or DVD-R. The maximum number of backup files in the CD or DVD is 41.

Note: During the backup process, a file player will also be copied into your disk, and you will see a message “BACKUP PLAYER” shown on the screen.

Move to “DISK BACKUP”, and press “ENTER”. You will see a similar screen as the following:

DISK BACKUP				
START TIME	2008 / APR / 24			19:00:05
END TIME	2008 / APR / 24			21:00:05
AVAILABLE SIZE				3.79 GB
CHANNEL	☑ 01	☐ 02	☐ 03	☐ 04
	☑ 05	☐ 06	☐ 07	☐ 08
	☑ 09	☐ 10	☐ 11	☐ 12
	☑ 13	☐ 14	☐ 15	☐ 16
HDD NUM				ALL HDD
START				
PLEASE CONSULT YOUR INSTALLER FOR ADVANCE SETTINGS				
↑↓ SELECT ← BACK → NEXT ↵ ENTER				

The submenu items and their functions are almost the same as USB BACKUP. For the description of the submenu items, please refer to the previous page.

The process below describes how to make a disk backup:

a) Press “EJECT” to open the disk tray. Put a CD or DVD into the DVD writer, and press “EJECT” again to close the disk tray.

Note: Check if the type of your CD or DVD is CD-R or DVD-R. The maximum number of backup files in the CD or DVD is 41.

b) Press “MENU”, and go to “ADVANCE” → “BACKUP”. Select “DISK BACKUP”, and you will see the submenu items almost the same as USB BACKUP.
For the description of the submenu items, please refer to “5.8.1. USB BACKUP”.

c) Set the start time, end time, channels and HDD.

d) Move to “START”, and press “ENTER” to start backup.

While disk backup is processing, users will see the backup completed percentage on the screen.

Note: During the backup process, a file player will also be copied into your disk, and you will see a message “BACKUP PLAYER” shown on the screen.

e) After disk backup is completed, “BACKUP SUCCESS” will be prompted on the screen. Press “EJECT” to eject the disk tray and get your disk.

f) Put the CD or DVD into the DVD-ROM drive of your PC. Install the file player “PLAYER.EXE”, and double click any backup file to play it directly in your PC and see if the backup is successful.

Note: The supported PC operation systems are Windows Vista, XP & 2000.

8. REMOTE OPERATION

You can also control the DVR remotely via the supplied licensed software “Video Viewer”, Internet Explorer web browser, and Apple’s QuickTime player.

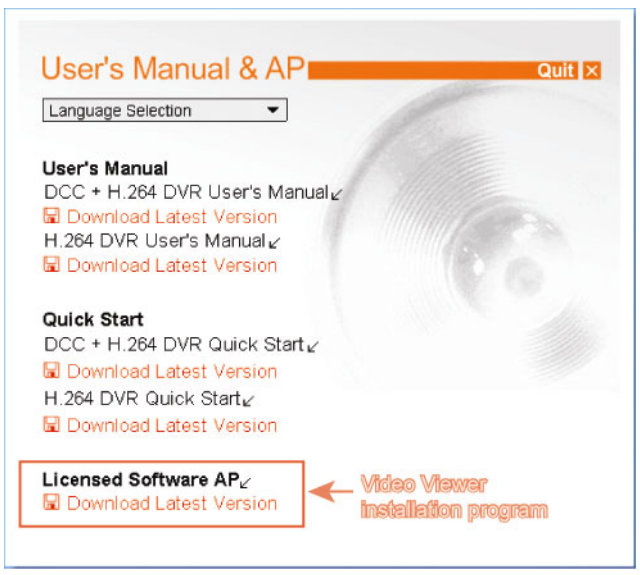
8.1 Supplied Licensed Software

The sections below describe frequently-used functions of the Video Viewer. For details about this software and network settings, please download its extended user manual from the following link:
http://www.surveillance-download.com/user/CMS.pdf

8.1.1 Installation & Network Connection

1) Install the software

Step1: Place the supplied CD into your CD-ROM or DVD-ROM drive. The program will be automatically run.



Step2: Click “Licensed Software AP” to install Video Viewer, or click “Download Latest Version” under “Licensed Software AP” to download the latest version of Video Viewer from the Internet.

Step3: Follow the on-screen instructions to finish the installation. When the installation is completed, a shortcut icon “” will be placed on your PC desktop.

2) Network Connection

➢ Local Connection (via LAN)

LAN is used when it’s the first time to remotely access the DVR and you need to configure the network setting of your DVR based on your network type in advance.

1) Connect the DVR to your PC via a RJ45 network cable. The default DVR values are as follows:

Item	Default Value
IP address	192.168.1.10
User name	admin
Password	admin
Port	80

2) Set the PC’s IP address as “192.168.1.XXX” (1~255, except 10) in order to make the PC and DVR under the same domain.

3) Double-click “” icon on your PC desktop to enter the control panel. By defaults, the “Address Book” panel will be displayed on the right side of the control panel.

4) Click “” → “” to key in the default IP address, user name, password, and port number of the DVR you intend to connect.

OR

Click "  " → "  " to search the available IP address(es) of other DVR(s) under the same domain as your PC's IP address. The found address(es) will be listed, and can be added into the address book by clicking "  ".

5) Double-click the IP address you just added into the address book to log in.

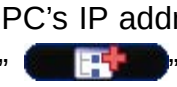
➢ Remote Connection (via Internet)

When the network configuration of your DVR is completed, you can access your DVR remotely via Internet.

1) Double-click "  " icon on your PC desktop to enter the control panel. By defaults, the "Address Book" panel will be displayed on the right side of the control panel.

2) Click "  " → "  " to key in the IP address, user name, password, and port number of the DVR you intend to connect.

OR

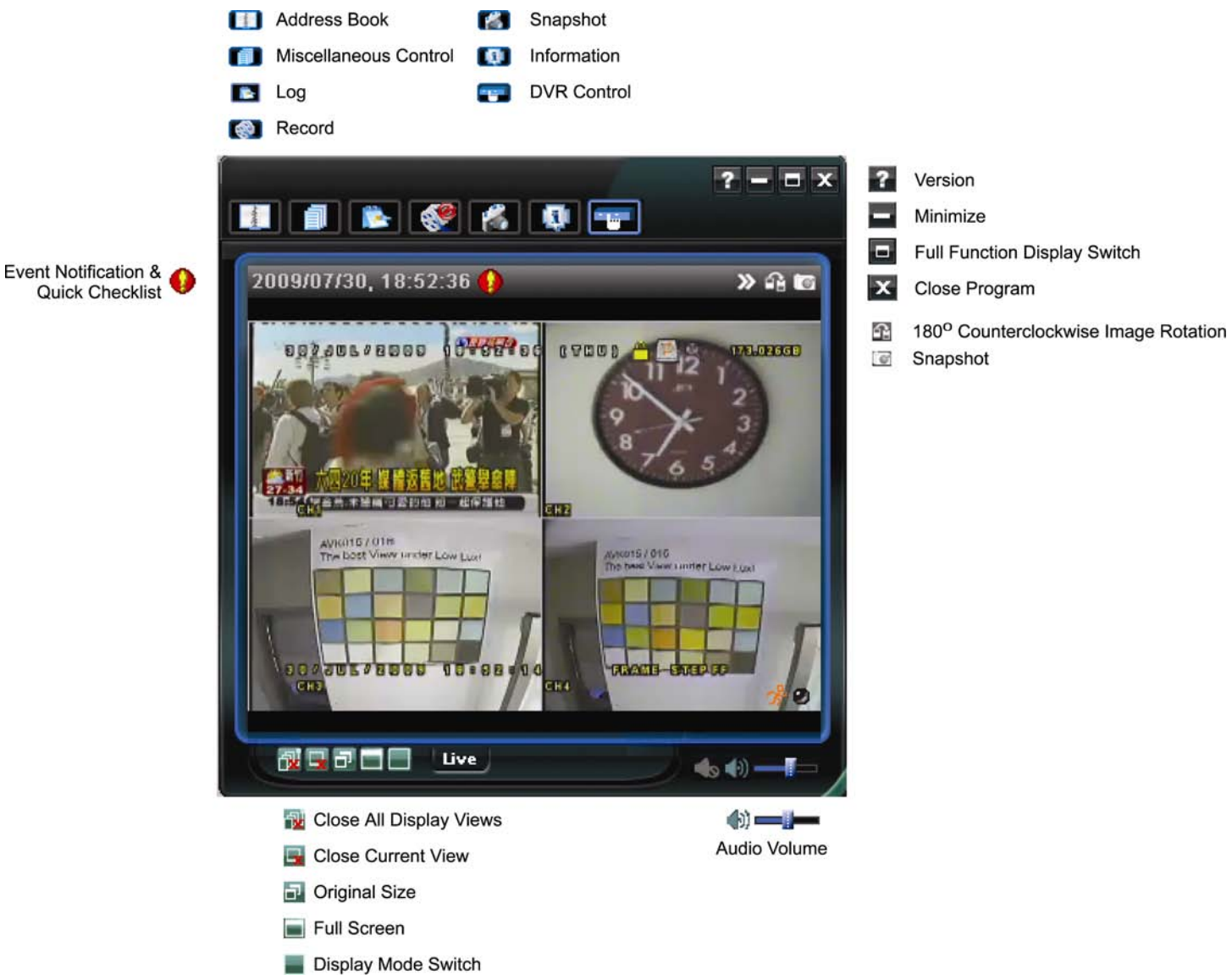
Click "  " → "  " to search the available IP address(es) of other DVR(s) under the same domain as your PC's IP address. The found address(es) will be listed, and can be added into the address book by clicking "  ".

3) Double-click the IP address you just added into the address book to log in.

8.1.2 Control Panel Overview

Two control panels are available and can be switched depending on your use habit.

<u>Simplified Version (Default)</u>



Full Function Version

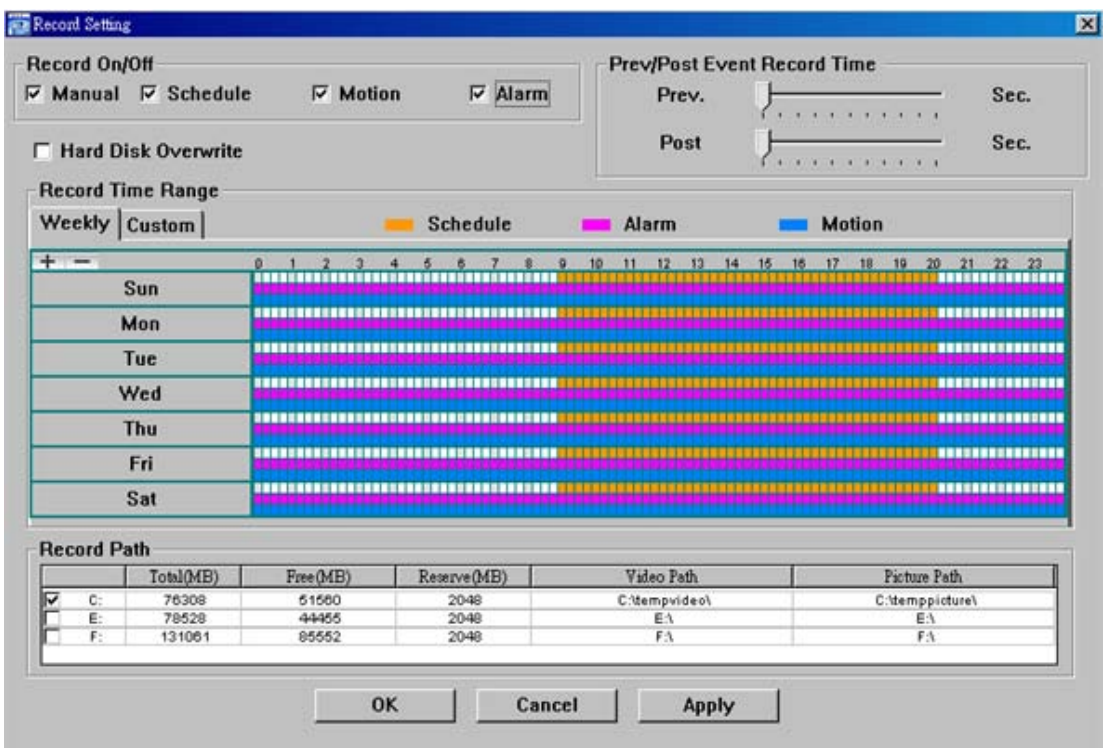
Main Button Overview

Button		Function	Description		
Simplified	Full Function				
		Address Book	Click to show the predefined IP address(es). You can add, remove or search the IP address to log in the DVR remotely.		
		Miscellaneous Control		Remote Config	Click to go into the detailed DVR setting.
				Record Setting	Click to go to the detailed record setting.
				Custom Setting	Click to choose the language of this program. The language change will take effect when this program is closed and executed again.
		Log	Click to view all event and recording logs, search the desired log(s) by date, or playback the recording of the selected log.		
		Record / Record Stop	Click to start / stop the manual recording.		
		Snapshot	Click to take a snapshot of the current view. The snapshot will be saved in the path you specified in “Record Setting”.		
		Information	Click to show the current network connection details.		
		DVR Control	Click to go to the DVR control panel to operate the DVR remotely.		

8.1.3. General Operation

Record

To record remotely at the same time for any event or alarm at the DVR side, click “  ” or “  ” → “  ” to go to the “Record Setting” page.



In the “Record Setting” page, you can set the following items:

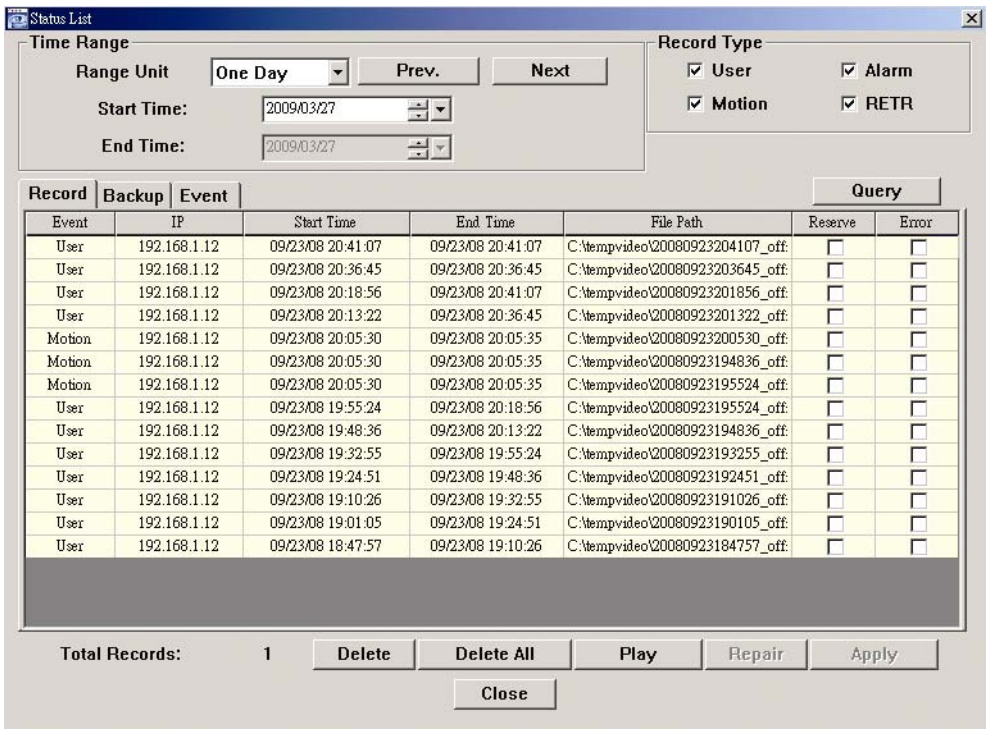
- Record type
- Hard disk overwriting
- Pre- / post-alarm record time
- Record time setting
- Record path

If “Manual” is checked, click “  ” or “  ” on the main control panel to start the manual recording immediately, and the recordings will be saved in the specified location. The red text indication “REC” will be shown at the top left corner of the image display view.

If “Motion” and / or “Alarm” are checked, the recording function will also be enabled at the remote side when any event is triggered at the DVR side, and the recordings will be saved in the specified location.

Playback

To play a recording, click “  ” or “  ”, and select the “Record” tab or “Backup” tab. A list of all the recordings will be shown by defaults, and you can also sort out the logs you want to speed up the search time.

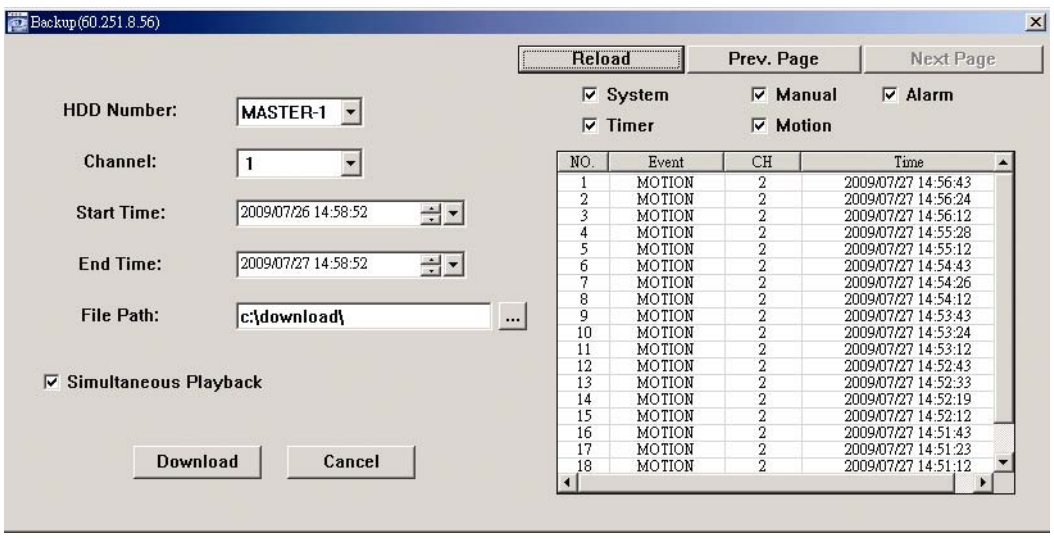


To immediately play a recording, select a log from the list, and click “Play”, or double-click the selected log.

Network Backup

Click “  ” → “  ”, or click “  ” to go into the “Backup” page as follows, and you can select a specific time range or event to make a video backup remotely.

The file(s) you backup will be from the currently selected IP address.



Function	Description
HDD Number / Channel	Specify the hard disk (HDD Number) and channel number (Channel) within which have the video data you need.
Download by Time	Specify the time range within which has the video data you want in the “Start Time” and “End Time” columns.
Download by Event	Select an event log from the event list. This list shows all logs in the specified DVR from the latest to the earliest. ・To quickly find the events you need, check or uncheck the event type “System” / “Manual” / “Alarm” / “Motion”, and select the log you want. ・To view the earlier or later logs that are not shown in the current page, click “Prev. Page” or “Next Page”. ・To refresh the event list, click “Reload”.
File Path	Assign the location where the backup files are saved.
Simultaneous Playback	To view the backup images simultaneously when the download process is in progress, select the checkbox “Simultaneous Playback”. You will see the backup images while the images are being downloaded to the PC or notebook.

Function	Description
	To simply backup images without previewing, deselect the checkbox “Simultaneous Playback”. You will only see a message box indicating the total time needed, the current status and the saving location.
Download / Cancel	Click “Download” to start or “Cancel” to discard the video backup.

8.1.4. E-Map

Video Viewer is also a Central Management System (CMS) software, which allows network device control & management for up to 16 devices simultaneously.

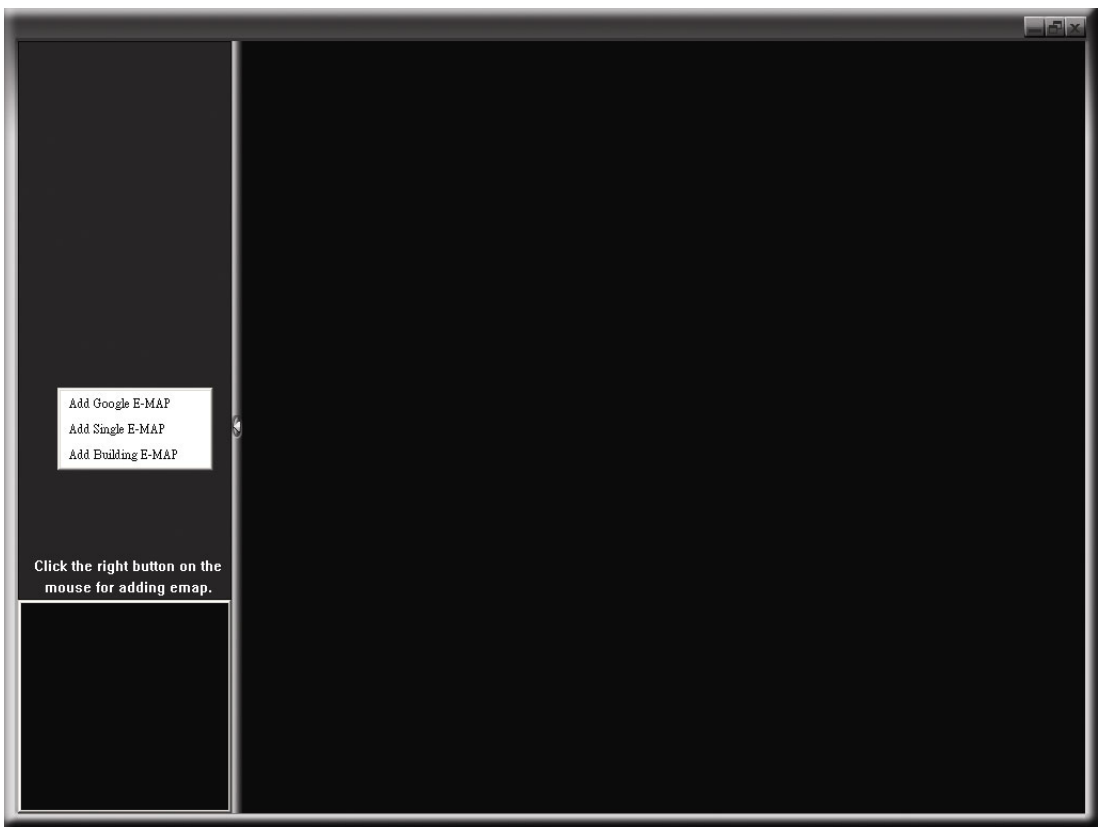
Note: Before using this function, make sure Video Viewer is connected to all the devices (up to 16) you want to monitor.

E-Map is **ONLY** available when the control panel is switch to the full function version.

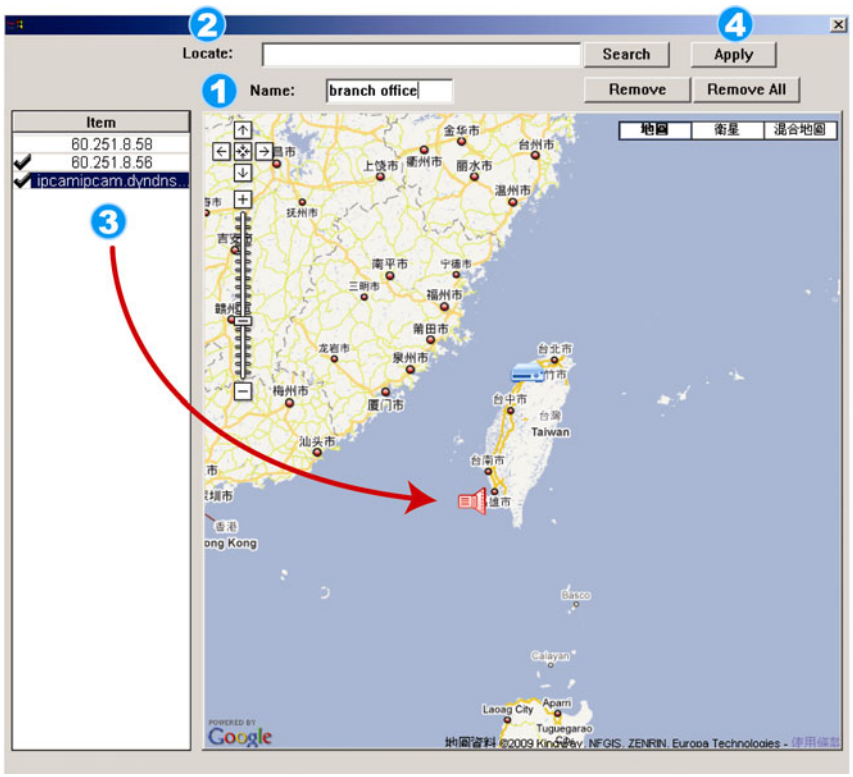
How to Add an E-Map Group

STEP1: In the simplified version, click “  ” to switch the control panel to the full function version, and click “  ” to enter the E-Map page as follows.

Note: To know where the buttons are, please refer to “Simplified Version (Default) at page 39, and “Full Function Version” at page 40.

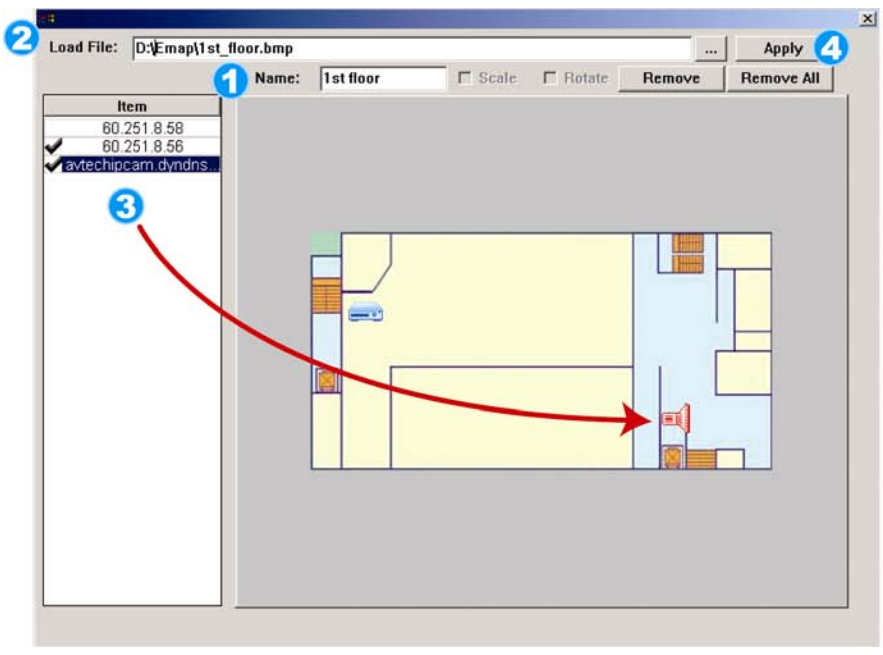


STEP2: Right-click to show the shortcut menu on the top-left panel, and select the E-Map group you want to add. There are three E-Map groups you can add: Google E-MAP, Single E-MAP, and Building E-MAP.



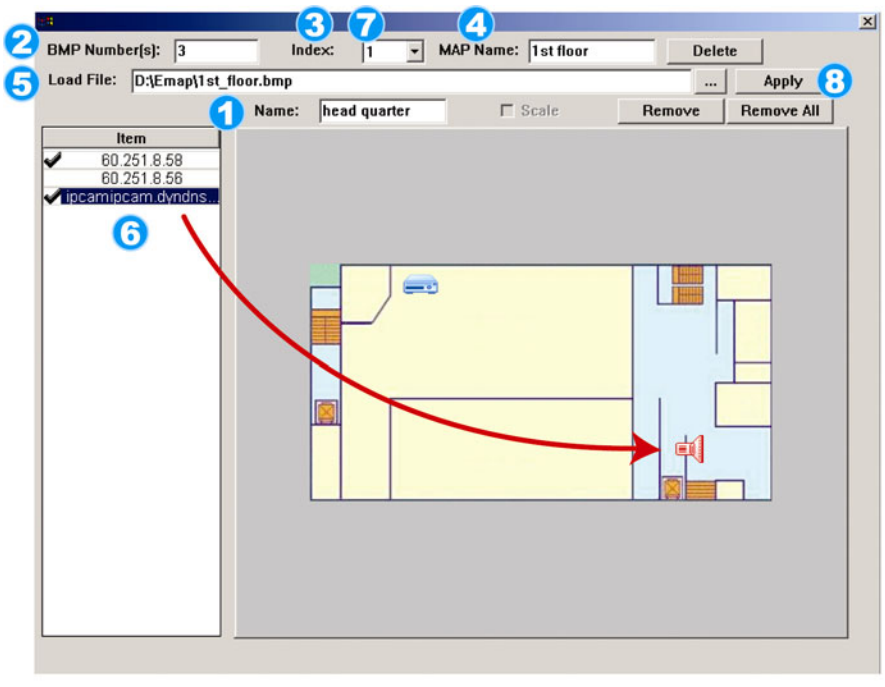
How to add a Google E-Map group:

1. Enter the name of this Google E-Map group.
2. Enter a specific address or landmark, and click “Search”.
   OR
   Move to the map and drag to the location you want.
3. Click and drag the IP address to where it’s located in the current level.
4. Click “Apply” to save and finish.



How to add a single E-Map group:

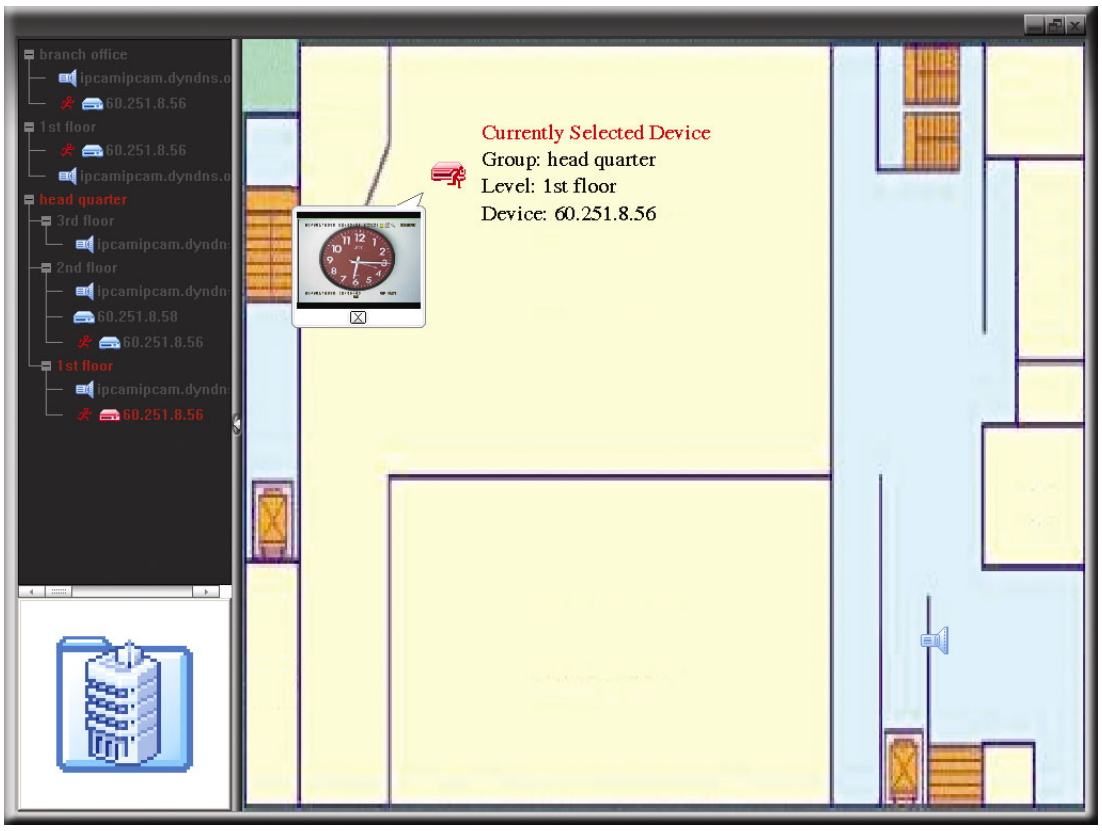
1. Enter the name of this single E-Map group.
2. Click “...” to browse the map file in BMP or JPEG.
3. Click and drag the IP address to where it’s located in the current level.
4. Click “Apply” to save and finish.



How to add a building E-Map group:

1. Enter the name of this building E-Map group.
2. Enter the total levels of this building.
3. Select the level of the building from the drop-down list.
4. Enter the name of the level.
5. Click “...” to browse the map file in BMP or JPEG.
6. Click and drag the IP address to where it’s located in the current level.
7. Go back to STEP 3 to select other level of the building, and repeat from STEP 3 to 6 until the setup for all levels are finished.
8. Click “Apply” to save and finish.

STEP3: When the E-Map group is created, you will see the tree on the top-left panel, showing all the devices you've added to this group.



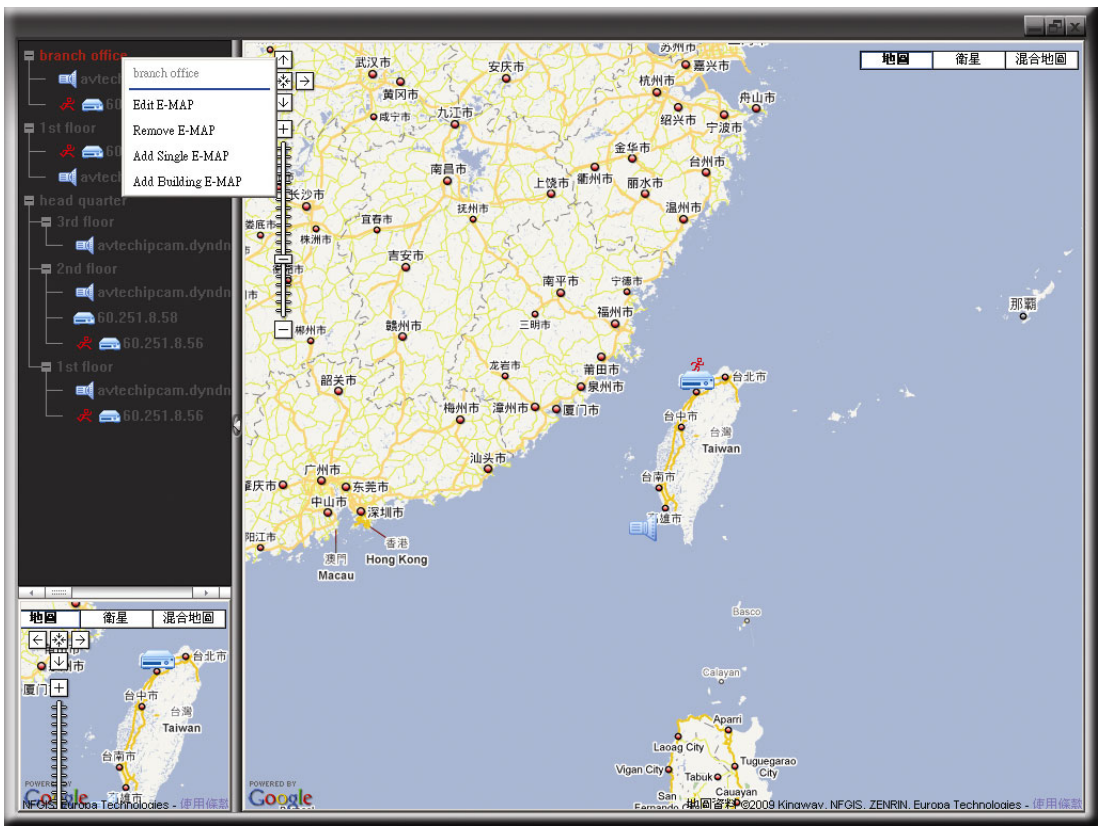
Icon	Description
	The connected device is camera. When it's selected, it will become red.
	The connected device is DVR. When it's selected, it will become red.
	For any motion or alarm event, it will appear on the screen to catch your attention. To know what's happening quickly, double-click the device icon on the E-Map to show the live view.

How to Edit / Remove an Existing E-Map Group

➢ For Google E-Map Group

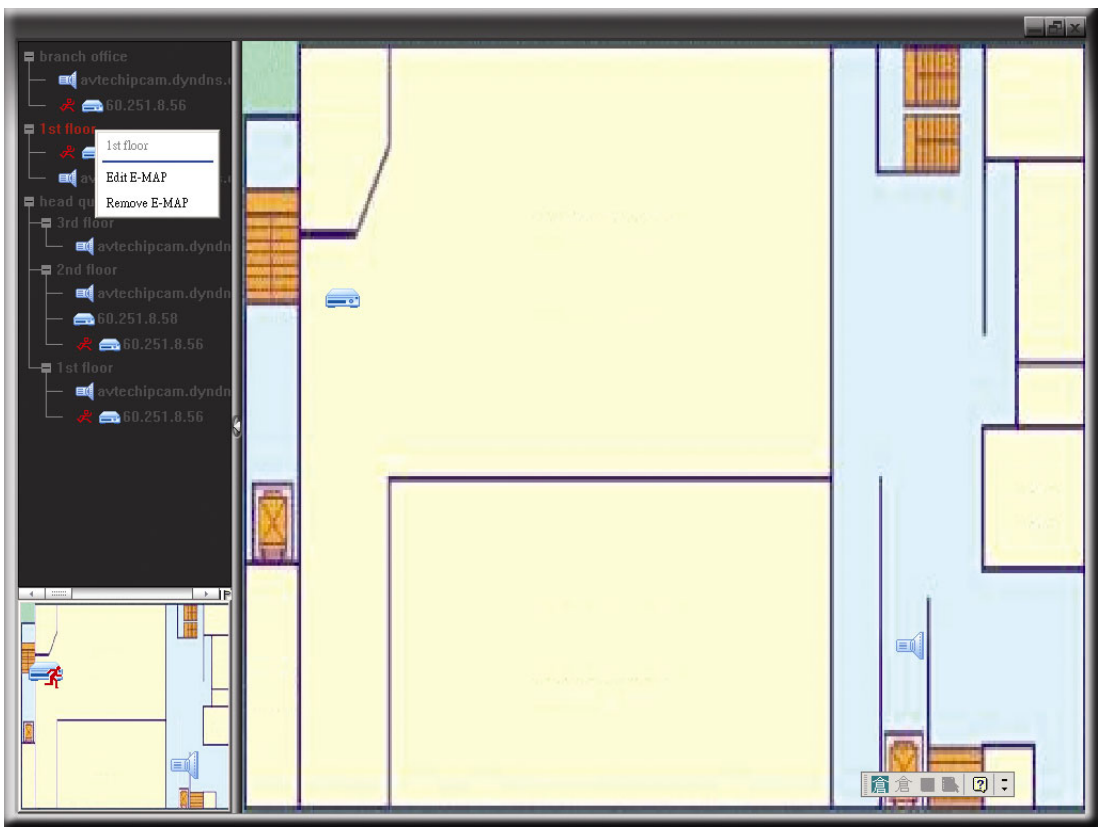
Right-click on the group name to show the shortcut menu list, and select "Edit E-MAP" or "Remove E-MAP" as needed.

You can also add a single E-Map group (Add Single E-MAP) or Building E-Map group (Add Building E-MAP) into the existing Google E-Map group.



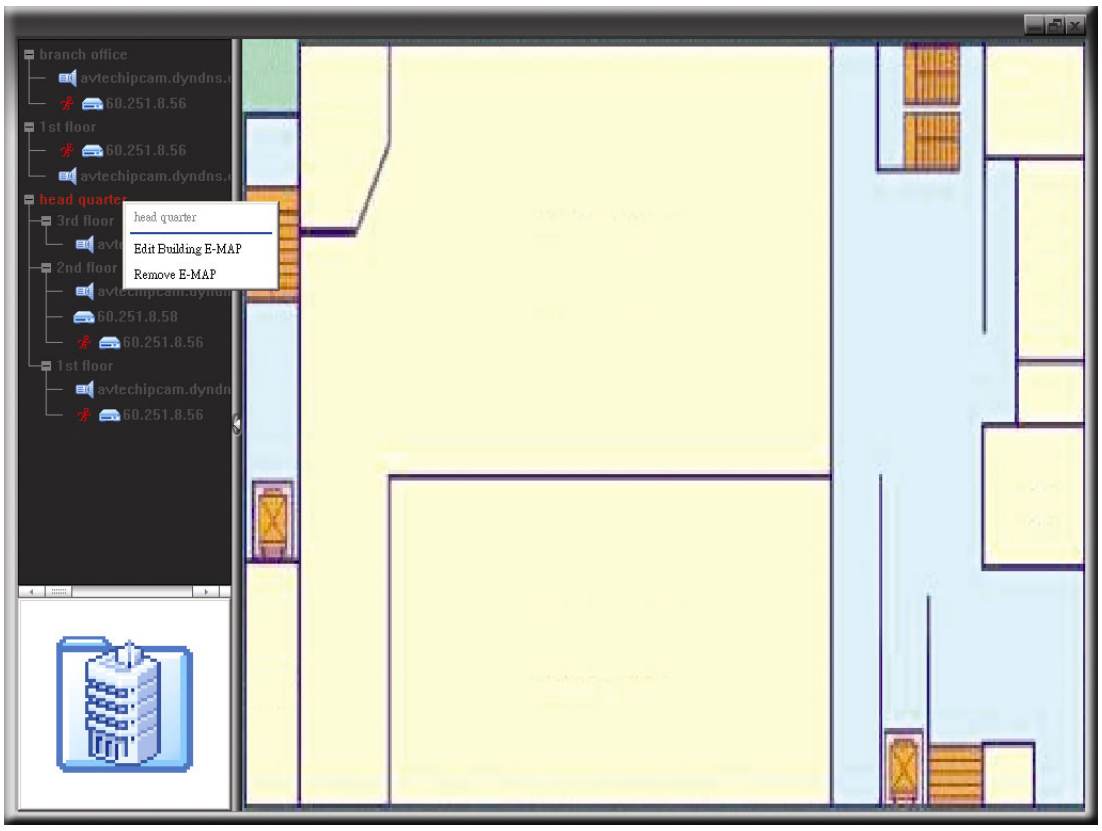
➢ For Single E-Map Group

Right-click on the group name to show the shortcut menu list, and select “Edit E-MAP” or “Remove E-MAP” as needed.



➢ For Building E-Map Group

Right-click on the group name to show the shortcut menu list, and select “Edit Building E-MAP” or “Remove E-MAP” as needed.



To edit or remove a certain level of the building E-Map group, right click on the level name, and select “Edit E-MAP” or “Remove E-MAP” as needed.

8.2 IE Web Browser

You can view the images or operate your DVR with IE web browser.

Note: The supported PC operation systems are Windows 2000 and Windows XP and Vista

Step 1: Key in the IP address used by your DVR in the URL address box, such as 60.121.46.236, and press Enter. You will be prompted to enter the user name and password to access the DVR.
If the port number your DVR used is NOT 80, you need to key in the port number additionally. The format is ***ipaddress*:*portnum***. For example, for IP address 60.121.46.236 and port No. 888, please key in ”http://60.121.46.236:888” into the URL address box, and press “Enter”.

Step 2: Enter the user name and password, the same as the ones used at AP login, and click “OK”. You will see a similar screen as the following when the login information is correct.

Note: The buttons and functions described below are taking 4CH DVR model as an example.

NO.	Function	Description
1	Home	Click to go to the main page of the DVR
2	Config.	Click to go to the detailed DVR setting.
3	PTZ	Click to enter the PTZ mode.
4	Channel Selection	Click one of the number to switch to the channel you want to see in full screen.
5	Selection	Click or to go to the previous / next channel, or change setting.
6	Display Mode	: Click to show 4-cut display. : Click to display each channel one by one, starting from CH1. When the last channel is displayed, it will start from CH1 again. To exit from this display mode, press any other channel display button.
7	Menu and Arrow Keys	: Click to enter the menu / exit the menu mode. / : Move up / down to select the previous / next menu or sub-menu function, or change the setting. / : Move left / right to the previous / next sub-menu items.
8	Event	Click to enter the playback search settings screen.

NO.	Function	Description
9	Snapshot	Click  to take a snapshot for the current view, and open another browser window to display the captured image.
10	Key Lock	Click  to enable the DVR key lock function. To unlock the DVR, key in your password, and press  .
11	Enter	Click  to confirm the setting or enter your selection.
12	Digital Zoom	Click  to zoom in / out the selected channel image.
13	Search	Click  to enter the DVR full search menu. You can check all the logs here, and select one of them to payback.
14	Playback control buttons	 (Stop) /  (Play) /  (Rewind) /  (Forward) /  (Pause) /  (Slow Playback) **Rewind / Forward** Click once to get 4X fast rewind / forward, twice to get 8X, three times to get 16X, and four times to get 32X the highest. **Slow Playback** Click once to get 4X slow playback and twice to get 8X slow playback.
15	Web Transmission	**H.264 / M-JPEG / QuickTime (Depending on the model you have)** QuickTime is Apple Inc.'s multimedia software. You need to have QuickTime installed in you operation system first. When "QuickTime" is selected, you will be promoted to enter the user name and password to access the server of the DVR.
16	Change Quality	**BEST / HIGH / NORMAL / BASIC** Click to change the image quality.
17	Change Resolution	**4 CIF / CIF** Click to change the image resolution (4CIF: 704*480 / CIF: 352*240)
18	Remote Independent Operation Off / On	 Click it to disable / enable the network independent function.
19	Audio Channel Selection	 Select the audio channel you want for listening to the live audio (in the live mode) or playback audio (in the playback mode). **Note:** You need to connect the camera which supports audio recording to the audio input of the DVR. For details, please refer to "2.2 Rear Panel" at page 6.  means no camera which supports audio recording is connected to the DVR.

8.3 Quick Timer Player

You can also use the QuickTime player to remotely log into the DVR and check the live view only.

Note: QuickTime is Apple's multimedia software. You need to have QuickTime installed in you operation system first, and you can access the DVR to see the live view.
If you have installed QuickTime, please skip Step 1.

Note: The latest version of QuickTime is V6.4 at the time this manual goes to press, and the supported operation systems are Windows Vista / XP / 2000, and Apple Mac.

Step 1: Go to Apple's official website to download QuickTime. The website address is as follows:
http://www.apple.com/quicktime/win.html

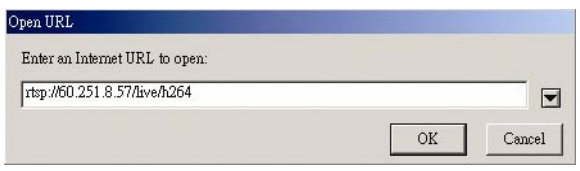
a). Click "Free Download" to go into the download page, and select to download the free player.

b). Leave your Email address, and click "Free Download Now" to download the latest QuickTime player.

c). When the download is completed, execute the "QuickTimeInstaller.exe" file, and follow the on-screen instructions to finish the installation procedure.

Step 2: Open your QuickTime player. Select "File" → "Open URL in New Player…", and key in the URL address.

The URL format is "rtsp://***ipaddress:portnum***/live/h264" (For example, "rtsp://**60.251.8.57:88**/live/h264").



Click "OK" to continue.

Step 3: A pop-up window will appear and prompt you to enter the authentication information.

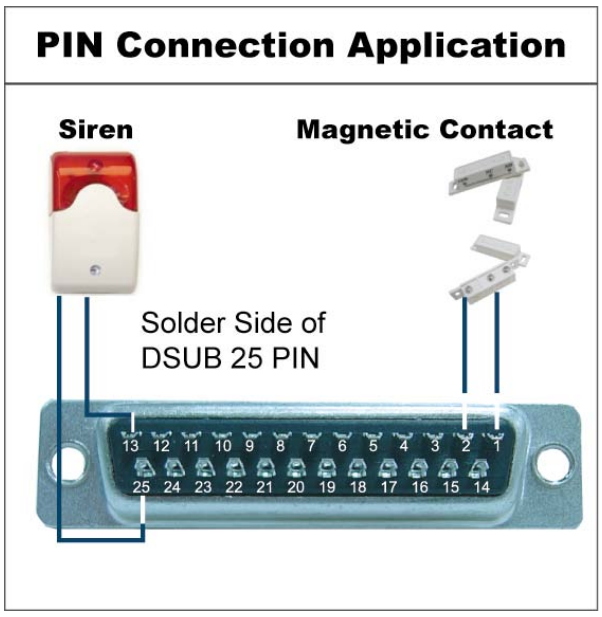
Key in the user name and password for accessing your DVR. The user name and password are the same as the ones you use to log into Video Viewer. If the information is correct, click "OK" to go on. If not, click "Cancel" to quit the accessing.

Note: If you're not prompted to enter the authentication information, and the error message 10060 appears, go to "Edit" → "Preferences" → "QuickTime Preferences", and select "Streaming Transport" front he drop-down list. Select "Use HTTP", and keep the port ID as 80.

Step 4: When the login is successful, you will see the live view.

APPENDIX 1 PIN CONFIGURATION

- **For Model 1, & 4**

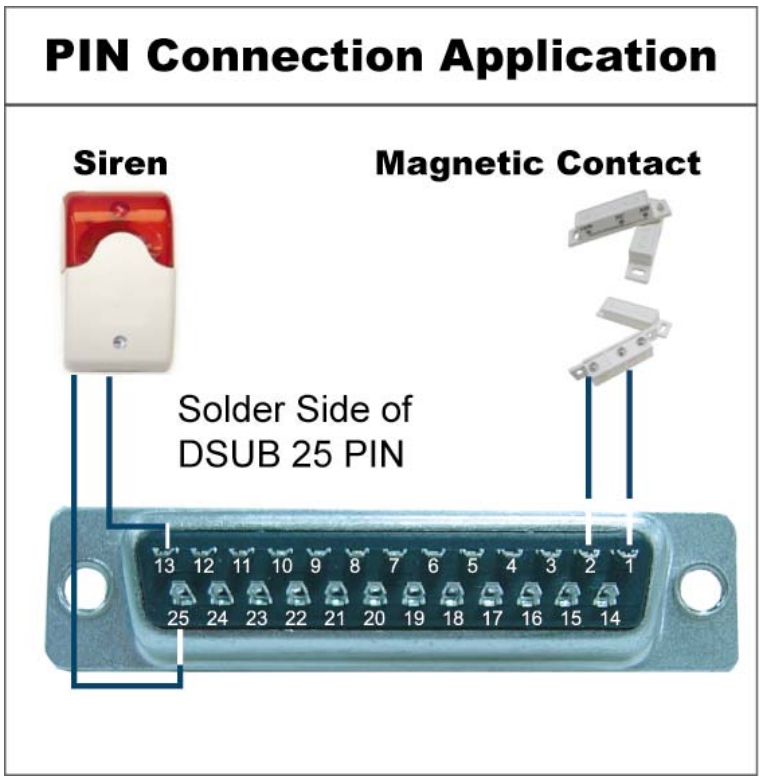


Siren: When the DVR is triggered by alarm or motion, the COM connects with NO and the siren with strobe starts wailing and flashing.

Magnetic Contact: When the magnetic contact is opened, the alarm will be triggered and the recording is on.

PIN	FUNCTION	DESCRIPTION
1	GND	GROUND
2~9	ALARM INPUT	Connect ALARM INPUT (PIN 2 -- 9) and GND (PIN 1) connector with wires. Once an alarm is triggered, the DVR will start recording and the buzzer will be on. PIN 2 is Alarm 1. Once the alarm is triggered, the CH1 of the DVR will start alarm-triggered recording. PIN 3 is Alarm 3. Once the alarm is triggered, the CH3 of the DVR will start alarm-triggered recording. PIN 4 is Alarm 5. Once the alarm is triggered, the CH5 of the DVR will start alarm-triggered recording. PIN 5 is Alarm 7. Once the alarm is triggered, the CH7 of the DVR will start alarm-triggered recording. PIN 6 is Alarm 9. Once the alarm is triggered, the CH9 of the DVR will start alarm-triggered recording. PIN 7 is Alarm 11. Once the alarm is triggered, the CH11 of the DVR will start alarm-triggered recording. PIN 8 is Alarm 13. Once the alarm is triggered, the CH13 of the DVR will start alarm-triggered recording. PIN 9 is Alarm 15. Once the alarm is triggered, the CH15 of the DVR will start alarm-triggered recording.
10~12	PIN OFF	NA
13	EXTERNAL ALARM NO	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.
14	PIN OFF	NA
15~22	ALARM INPUT	Connect ALARM INPUT (PIN 15 – 22) and GND (PIN 1) connector with wires. Once an alarm is triggered, the DVR will start recording and the buzzer will be on. PIN 15 is Alarm 2. Once the alarm is triggered, the CH2 of the DVR will start alarm-triggered recording. PIN 16 is Alarm 4. Once the alarm is triggered, the CH4 of the DVR will start alarm-triggered recording. PIN 17 is Alarm 6. Once the alarm is triggered, the CH6 of the DVR will start alarm-triggered recording. PIN 18 is Alarm 8. Once the alarm is triggered, the CH8 of the DVR will start alarm-triggered recording. PIN 19 is Alarm 10. Once the alarm is triggered, the CH10 of the DVR will start alarm-triggered recording. PIN 20 is Alarm 12. Once the alarm is triggered, the CH12 of the DVR will start alarm-triggered recording. PIN 21 is Alarm 14. Once the alarm is triggered, the CH14 of the DVR will start alarm-triggered recording. PIN 22 is Alarm 16. Once the alarm is triggered, the CH16 of the DVR will start alarm-triggered recording.
23~24	PIN OFF	NA
25	EXTERNAL ALARM COM	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.

- **For Model 2 & 6**

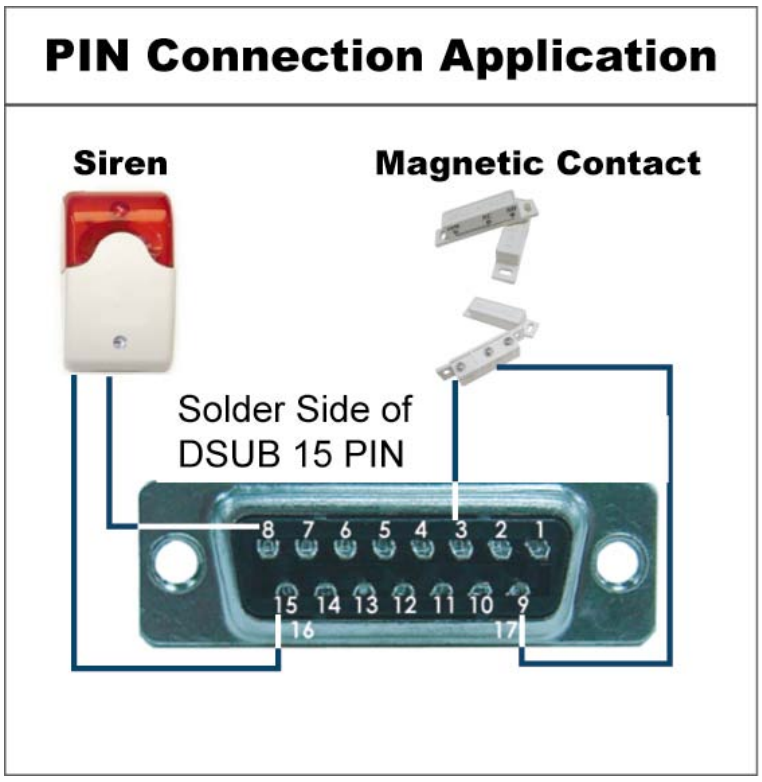


Siren: When the DVR is triggered by alarm or motion, the COM connects with NO and the siren with strobe starts wailing and flashing.

Magnetic Contact: When the magnetic contact is opened, the alarm will be triggered and the recording is on.

PIN	FUNCTION	DESCRIPTION
1	GND	GROUND
2~5	ALARM INPUT	Connect ALARM INPUT (PIN 2 – 5) and GND (PIN 1) connector with wires. Once an alarm is triggered, the DVR will start recording and the buzzer will be on. PIN 2 is Alarm 1. Once the alarm is triggered, the CH1 of the DVR will start alarm-triggered recording. PIN 3 is Alarm 3. Once the alarm is triggered, the CH3 of the DVR will start alarm-triggered recording. PIN 4 is Alarm 5. Once the alarm is triggered, the CH5 of the DVR will start alarm-triggered recording. PIN 5 is Alarm 7. Once the alarm is triggered, the CH7 of the DVR will start alarm-triggered recording.
6 ~ 12	PIN OFF	NA
13	EXTERNAL ALARM NO.	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.
14	PIN OFF	NA
15~18	ALARM INPUT	Connect ALARM INPUT (PIN 15 – 18) and GND (PIN 1) connector with wires. Once an alarm is triggered, the DVR will start recording and the buzzer will be on. PIN 15 is Alarm 2. Once the alarm is triggered, the CH2 of the DVR will start alarm-triggered recording. PIN 16 is Alarm 4. Once the alarm is triggered, the CH4 of the DVR will start alarm-triggered recording. PIN 17 is Alarm 6. Once the alarm is triggered, the CH6 of the DVR will start alarm-triggered recording. PIN 18 is Alarm 8. Once the alarm is triggered, the CH8 of the DVR will start alarm-triggered recording.
19~24	PIN OFF	NA
25	EXTERNAL ALARM COM	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.

- **For Model 3 & 8**



Siren: When the DVR is triggered by alarm or motion, the COM connects with NO and the siren with strobe starts wailing and flashing.

Magnetic Contact: When the magnetic contact is opened, the alarm will be triggered and the recording is on.

PIN	FUNCTION	DESCRIPTION
1~2	PIN OFF	NA
3~6	ALARM INPUT	Connect ALARM INPUT (PIN 3 – 6) and GND (PIN 9) connector with wires. Once an alarm is triggered, the DVR will start recording and the buzzer will be on. PIN 3 is Alarm 1. Once the alarm is triggered, the CH1 of the DVR will start alarm-triggered recording. PIN 4 is Alarm 2. Once the alarm is triggered, the CH2 of the DVR will start alarm-triggered recording. PIN 5 is Alarm 3. Once the alarm is triggered, the CH3 of the DVR will start alarm-triggered recording. PIN 6 is Alarm 4. Once the alarm is triggered, the CH4 of the DVR will start alarm-triggered recording.
7	NC	Under the normal operation, COM connects with NC and disconnects from NO. But when any alarm is triggered, COM disconnects with NC and connects with NO. Attention: The voltage restriction is under DC24V 1A.
8	NO	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.
9	GND	GROUND
10	RS485-B	Using RS-485 serial communication signals, DVR can be controlled by keyboard controller.
11	RS485-A	Using RS-485 serial communication signals, DVR can be controlled by keyboard controller.
12~14	PIN OFF	NA
15	EXTERNAL ALARM COM	Under the normal operation, COM disconnects with NO. But when any alarm is triggered, COM connects with NO. Attention: The voltage restriction is under DC24V 1A.

APPENDIX 2 COMPATIBLE USB FLASH DRIVE BRAND

Please upgrade the firmware of the DVR to the latest version to ensure the accuracy of the following table. If the USB flash drive is not supported by the DVR, the "USB ERROR" message will be shown on the screen.

Note: Please use your PC to format the USB flash drive as "FAT 32".

Note: You can backup up to 2GB video data for one-time USB backup. To backup more data, please set the time & channel(s) you want, and start USB backup again.

MANUFACTURER	MODEL	CAPACITY
Apacer	AH320	2G
	AH320A	8G
	AH220	1G
	AH320	4G
A-data	RB-18	1G
Transcend	JFV35	4G
	JFV30	8G
Sony	Micro Vault Tiny	1G
Sandisk	Cruzer Micro	2G
	Cruzer Micro	4G
	Cruzer4-pk	2G
MSI	F200	4G
PQI	U172P	4G
Netac	U208	1G

APPENDIX 3 COMPATIBLE HDD BRAND

Please upgrade the firmware of the DVR to the latest version to ensure the accuracy of the following table.

MANUFACTURER	MODEL	CAPACITY	ROTATION
Seagate	ST3320613AS	320GB	7200 rpm
	ST33500320AS	500GB	7200 rpm
	ST3750330AS	750GB	7200 rpm
	ST31000340AS	1000GB	7200 rpm
WD	WD3200AAKS	320GB	7200 rpm
	WD5000AACS	500GB	7200 rpm
	WD6400AAKS	640GB	7200 rpm
	WD7500AAKS	750GB	7200 rpm
	WD10EACS	1TB	7200 rpm
	WD10EADS	1TB	7200 rpm
	WD15EADS	1.5TB	7200 rpm
	WD20EADS	2TB	7200 rpm
Maxtor	STM3500320AS	500GB	7200 rpm
	STM3750330AS	750GB	7200 rpm
Hitachi	HDT725032VLA360	320GB	7200 rpm
	HDS721010KLA330	1000GB	7200 rpm

APPENDIX 4 TROUBLESHOOTING

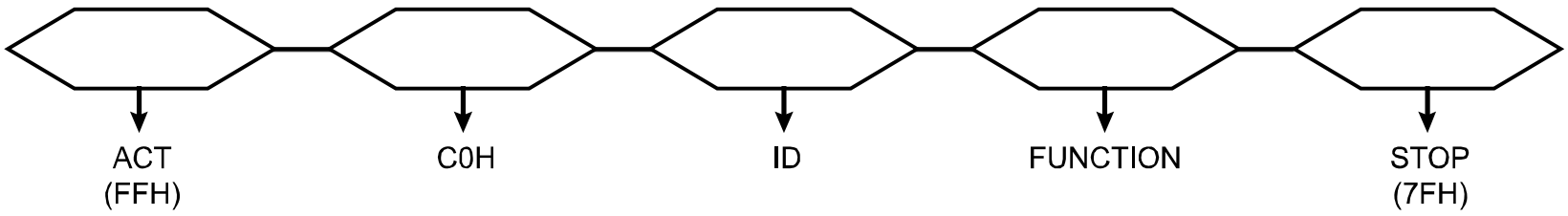
Please refer to the table below for easy troubleshooting. The table describes some typical problems and also their solutions. Please check them before calling your DVR dealer.

- **FAQ (Frequently ask question)**

Questions	Solutions
No power	Check power cord connection.
	Confirm that there is power supplied from the outlet.
DVR is not working when pressing any button	You might be under “Key Lock” mode. Press any key and enter the password to exit this mode.
HDD detection failed	Replace with another HDD for testing.
	Replace with another HDD cable for testing.
Can’t detect your USB flash drive	Replace with another USB flash drive for testing.
	Format the USB flash drive as FAT 32 format and try again.
No live video	Confirm the camera is power supplied.
	Check the setting of the camera lens.
	Check the monitor’s video cable and connection.
	Check the camera’s video cable and connection.
No recorded video	Check if the HDD is installed and connected properly.
	Check the “MANUAL RECORD ENABLE” is set to “ON”, and the record function in the “CAMERA” menu is set to “ON”, too.
Timer recording is not working	Check if “TIMER RECORD ENABLE” option is set to “ON” and the timer schedule has been arranged.
Motion detection recording is not working	Check if “EVENT RECORD ENABLE” option is set to “ON”.
	Check the detection function “DET” is set to “ON”.
	Check the detection area “AREA” has been setup.
Can’t play the recorded data on my DVR	There must be at least 8192 images of recorded data for playback to work properly. If not, your DVR will stop the playback. For example, if the IPS is set to 30, the recording time should be at least 273 seconds (8192 images / 30 IPS) for the playback to work properly.
Can’t backup the video with audio	Make sure the audio cameras are connected to the DVR channels which support the audio function.
Can’t view the DVR images over the network with IE web browser	Check the DVR firmware version.
	Please choose to allow the web browser ActiveX or applet in the pop-out message.
Failed to backup the recorded files of the DVR from remote PC side. (For details, please see “Network Backup” at page 42.)	Make sure your user level is SUPERVISOR.
	Check if the network connection information is correct (IP Address / Port / User Name / Password).
	Specify the hard disk (HDD Number) and channel number (Channel) within which have the recorded data you need.
Failed to upgrade the firmware / OSD file	Check the USB flash drive is format to FAT32.
	Check the firmware / OSD is correct.
Can’t use the IR remote control	Check whether if the batteries are installed or not.
	Aiming at the IR receiving zone to control the DVR operation.

APPENDIX 5 RS485 PROTOCOL

- Use PC keyboards to simulate DVR keypads.
- Data: REMOTE PROTOCOL uses 8 bit data, 1 start bit, 1 stop bit.



FUNCTION	CODE	ASCII	FUNCTION	CODE	ASCII
KEY_MENU	0x4D	M	KEY_SET_CHANNEL	0x6e	n
KEY_ENTER	0x0D	ENTER	KEY_DWELL	0x65	e
KEY_PLUS	0x6b	k	KEY_CH1	0x31	1
KEY_MINUS	0x6d	m	KEY_CH2	0x32	2
KEY_UP	0x55	U	KEY_CH3	0x33	3
KEY_DOWN	0x4E	N	KEY_CH4	0x34	4
KEY_LEFT	0x4C	L	KEY_CH5	0x35	5
KEY_RIGHT	0x52	R	KEY_CH6	0x36	6
KEY_POWER	0x57	W	KEY_CH7	0x37	7
KEY_REC	0x72	r	KEY_CH8	0x38	8
KEY_PLAY	0x50	P	KEY_CH9	0x39	9
KEY_SLOW	0x53	S	KEY_CH10	0x41	A
KEY_ZOOM	0x5A	z	KEY_CH11	0x42	B
KEY_KEY LOCK	0x4B	K	KEY_CH12	0x43	C
KEY_AUDIO	0x64	d	KEY_CH13	0x44	D
KEY_SEARCH	0x73	S	KEY_CH14	0x45	E
KEY_PTZ_MODE	0x70	p	KEY_CH15	0x46	F
KEY_PTZ_PRESET	0x71	q	KEY_CH16	0x47	G
KEY_PTZ_ZOOM_IN	0x69	i	KEY_EJECT_DVD	0x6a	j
KEY_PTZ_ZOOM_OUT	0x66	f	KEY_IRIS_NEAR	0x67	g
KEY_MODE	0x6f	o	KEY_IRIS_FAR	0x68	h
KEY_4 CUT	0x61	a	KEY_PTZ_LIGHT	0x6c	l
KEY_9 CUT	0x62	b	KEY_PTZ_WIPER	0x77	w
KEY_16 CUT	0x63	c			

APPENDIX 6 DVR BATTERY REPLACEMENT

DVR time reset after power failure, for example, caused by a power outage, will cause the disorder of the recorded data, and users may have problems in searching the event clip they want. To keep the DVR time from resetting, a non-chargeable lithium battery, *CR2032*, is installed in the DVR.

However, the DVR time might still get reset when the DVR battery is low or even running out of power. If so, please replace the DVR battery, CR2032, **right away** as instructed below.

➢ **How to replace CR2032**

Note: The lithium battery, CR2032, is a non-chargeable battery, and should be purchased separately. Please replace only with the same or equivalent type battery in case of danger.

Step1: Stop all DVR recording **immediately** to prevent the disorder of the recorded data. Then, back up the recorded data if necessary.

Step2: Power off the DVR, and disconnect the DVR power.

Step3: Remove the DVR cover, and find the battery on the mainboard. The battery is located close to the rear panel.

Step4: Push the release as indicated below to remove the battery.

Step5: Get a new battery with the side of “CR2032” facing up, and install it to the mainboard.

Step6: Replace the DVR cover.

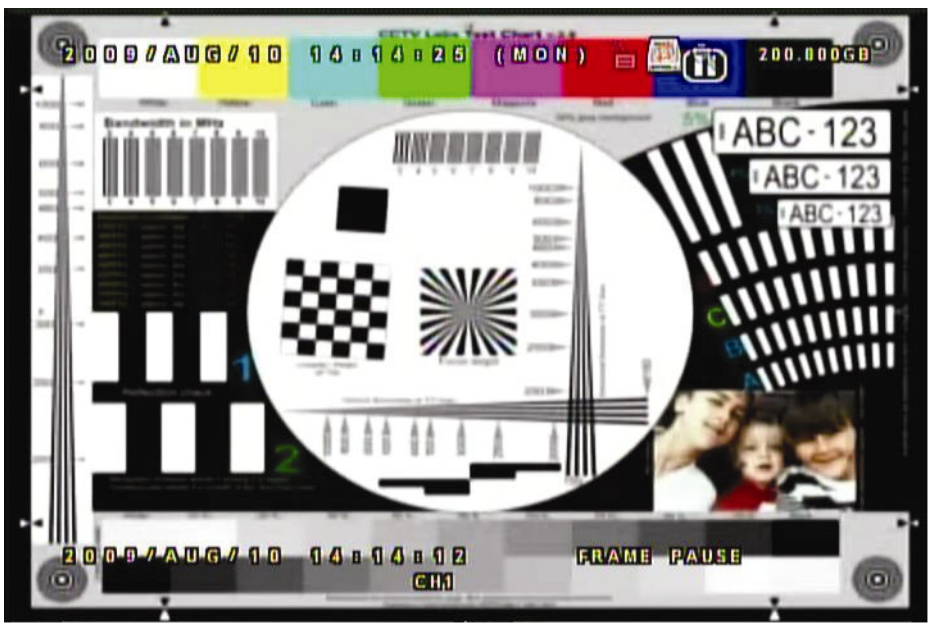
Step7: Connect to DVR power, and turn on the DVR.

Step8: Set DVR date & time, and resume recording. For details, please refer to “3.4 Date and Time Setting” at page 12, and “7.1.7 Record” at page 29.

APPENDIX 7 RECORDING TIME TABLE

Testing Environment

The static image source as follows are input to each DVR channel with the highest image quality and IPS in each record mode, and the video system is NTSC.



Recording Time

Please note that the recording time may vary depending on the following three factors, and the data below is for reference only.

- Different camera resolution;
- Different picture complexity;
- Different frequency of the object movement

Note: For the environment with dynamic images, the actual recording time may differ from the data below and needs to be tested based on the actual environment.

■ For 16CH Model

Record mode	Quality	IPS	GB/Hour	750GB Record Time (day)
FRAME	BEST	120	1.17	26.71
FIELD		240	0.977	31.99
CIF		480	3.39	9.22

■ For 8CH Model

Record mode	Quality	IPS	GB/Hour	750GB Record Time (day)
FRAME	BEST	60	0.679	46.02
FIELD		120	0.643	48.6
CIF		240	1.768	17.68

■ For 4CH Model

Record mode	Quality	IPS	GB/Hour	750GB Record Time (day)
FRAME	BEST	30	1.104	28.31
FIELD		60	1.062	29.43
CIF		120	1.23	25.41

APPENDIX 8 DVD WRITER INSTALLATION

Some DVR models allow users to install a DVD writer by themselves. To know whether your DVR supports this feature, please check with your local distributor or retailer.

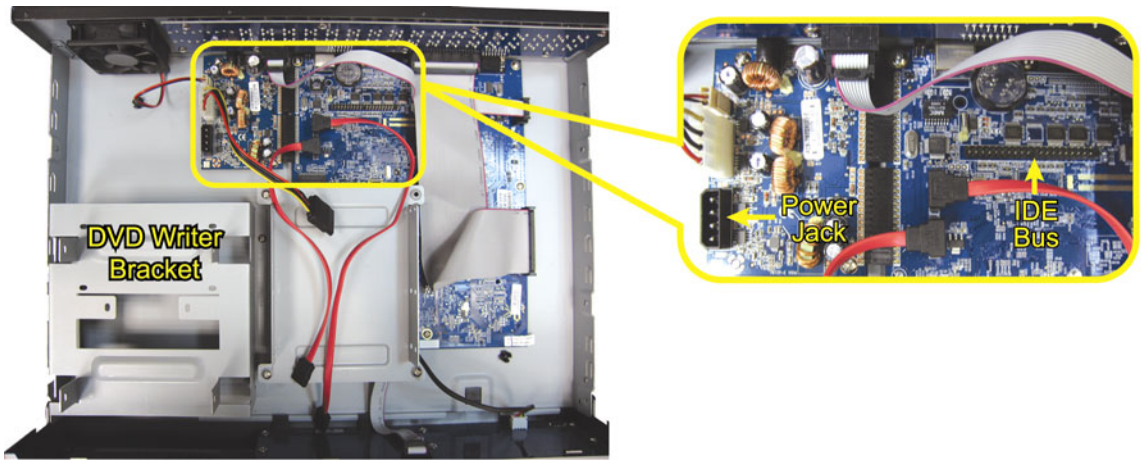
The supported DVD writer models are as follows. Please use only the suggested DVD writer models to ensure the compatibility.

Type	Brand	Model
IDE	Liteon	DH-20A4P
SATA	Liteon	iHAS120
	SONY	AD-7240S

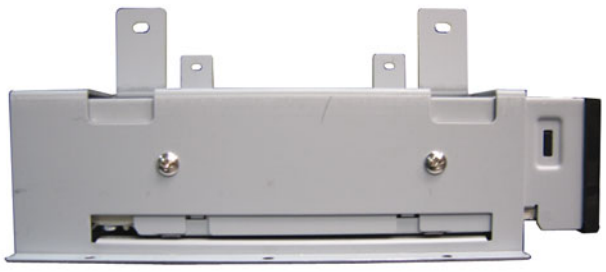
Note: Before installing the DVD writer, make sure your DVR is powered off and your DVR supports this feature.

For IDE DVD Writer

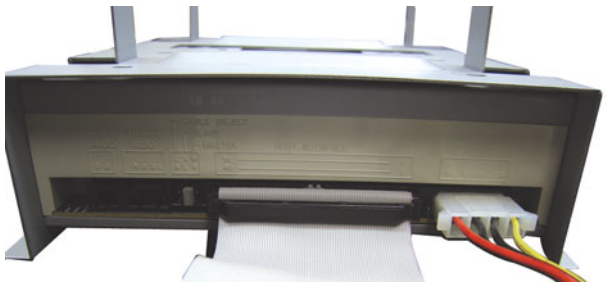
Step1: Remove the DVR cover, and find the DVD writer bracket to remove it.



Step2: Put the DVD writer in the bracket, and fix it to the bracket with two screws on each side.



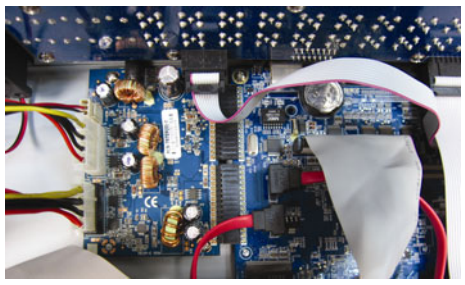
Step3: Connect the data bus and power cables*, and make sure the jumper is set to “Slave”.



**Data bus & power cables are optional.*

Step4: Replace the bracket to the DVR base and fix it.

Step5: Connect the data bus and power cables to the IDE bus and power jack on the DVR main board as illustrated in Step1.



Note: Please make sure the power cable of the DVD writer is plugged into the black jack. This power jack can supplied power to one hard disk and one DVD writer simultaneously.
The white jack is used to supply power to only one hard disk.

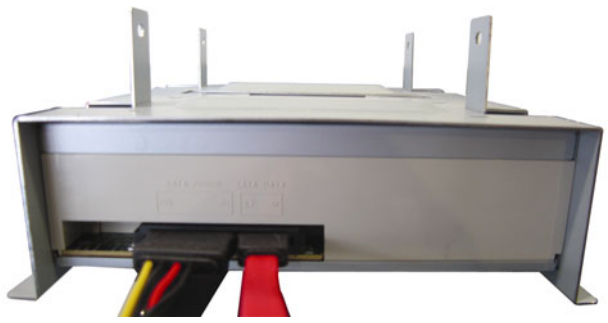
For SATA DVD Writer

Note: Before installing the DVD writer, make sure your current DVR mainboard supports SATA DVD writer installation or not. If not, you need to install an additional SATA sub-board to support this installation. For details, please refer to Step4 & Step5 below.

Step1: Remove the DVR cover, and find the DVD writer bracket to remove it.

Step2: Put the DVD writer in the bracket, and fix it to the bracket with two screws on each side.

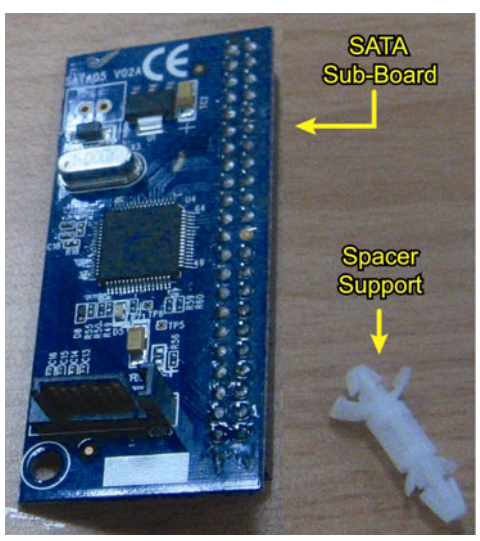
Step3: Connect the data bus and power cables* to the SATA DVD writer.



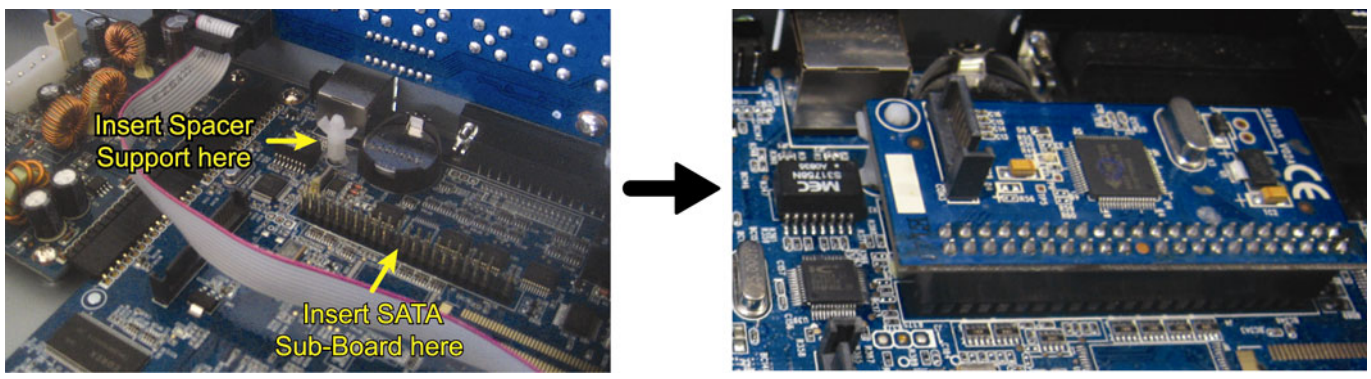
**Data bus & power cables are optional.*

Step4: *(This step is available only when your current DVR mainboard doesn't support SATA DVD writer installation.)*
Make sure you have a SATA sub-board and a spacer support.

Note: The SATA sub-board & spacer support are optional and need to be purchased separately.

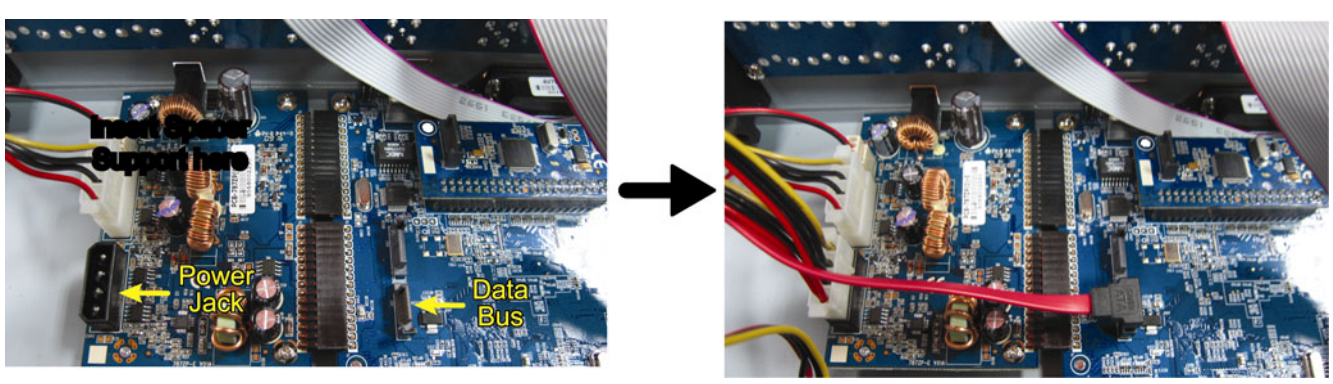


Step5: *(This step is available only when your current DVR mainboard doesn't support SATA DVD writer installation.)*
Insert the spacer support and SATA sub-board to the mainboard as illustrated below.



Step6: Connect the data bus and power cables to the data bus and power jack on the DVR main board as illustrated below.

Note: The data bus on the SATA sub-board is for HDD connection, **NOT** for DVD writer connection. Please do not plug the data cable of your DVD writer to it.



Note: Please make sure the power cable of the DVD writer is plugged into the black jack. This power jack can supplied power to one hard disk and one DVD writer simultaneously.
The white jack is used to supply power to only one hard disk.

Step7: Replace the bracket to the DVR base and fix it.