FULL MANUAL: (960H Recording & Full HD Display): Version 0.1.0

by

Publication date 2014/03/14 18:07:12 (r2804)

Chapter 1. Product Configuration

1.1. Features

- 4/8/16ch Stand-alone HD Display Real time DVR (1080p)
- Independent for each channel resolution, quality and frame rate setting
- Quick search using up to 256 times normal speed playback feature
- Bookmark during playback, Repeat playback
- Using bookmark backup
- Self-diagnostic capabilities in the network connection
- Set your own domain name is possible with default Mac. address based domain name
- Possible to recover system by power outages during upgrade
- S.M.A.R.T. function for Harddisk
- E-mail notification function
- Admin + 100 users account setting
- Mac Windows 100% compatible CMS
- iPhone, iPAD, Android support
- Audio support

1.2. Components

- DVR
- Program/Manual CD
- Power Adaptor
- 8pins Connector(2ea)(8/16ch only)
- Screws

1.3. Name and Function of Each Part

1.3.1. Front Panel

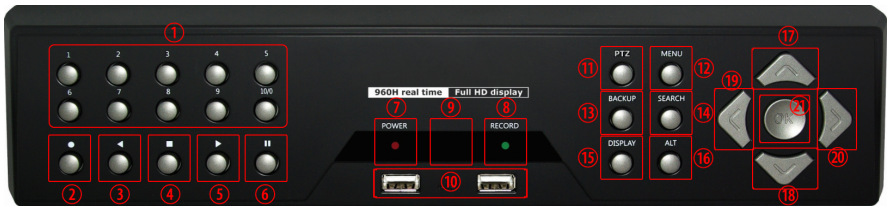

Figure 1.1. Front Panel

No.	Name	Function
1	Numeric Button	Channel selection, Number input
2	RECORD	Record button
3	REVERSE	Reverse Playback
4	STOP	Stop of Playback
5	PLAY	Playback
6	PAUSE	Pause
7	Power LED	Power LED
8	Record LED	Record LED
9	IR receiver	Remote controller receiver
10	USB PORT	USB Port(Memory Stick, Mouse)
11	PTZ	PTZ control Button
12	MENU	Menu Button
13	BACKUP	Backup Button
14	SEARCH	Search Button
15	DISPLAY	Multi-channel switch button
16	ALT	Alternative function button
17	UP	Move up in the menu, Increase the channel number
18	DOWN	Move down from the menu , decrease the channel number
19	LEFT	Move left in the menu
20	RIGHT	Move right in the menu
21	OK	Select in the menu

Table 1.1. Explaination of Front Pannel

1.3.2. Rear Panel

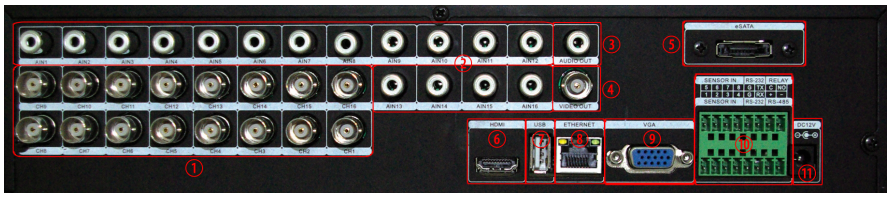

Figure 1.2. 16CH Rear Panel

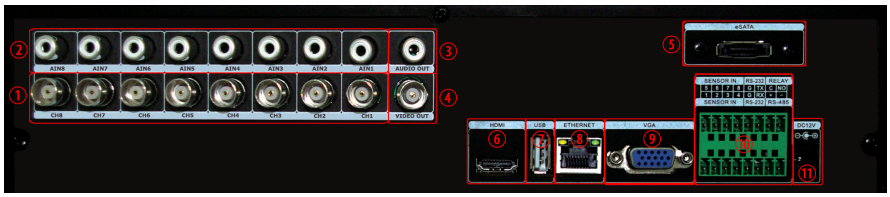

Figure 1.3. 8CH Rear Panel

No.	Name	Function
1	VIDEO IN	Camera video input

No.	Name	Function
2	AUDIO IN	Camera audio input
3	AUDIO OUT	Audio Output
4	SPOT	SPOT output
5	eSATA	eSATA connector
6	HDMI PORT	HDMI output
7	USB PORT	USB Port
8	ETHERNET	Ethernet connector
9	VGA PORT	VGA output
10	MULTI PORT	Sensor input, RS-232, RS-485, Relay output
11	POWER INPUT	Power input connector (Adaptor)

Table 1.2. Rear connector description

1.3.3. Spec

Item		H3004	H3008	H3016
Video input	No. of channel	4ch BNC	8ch BNC	16ch BNC
Video Output	Monitor	1ch HDMI, 1ch Spot (Multi channel), 1ch VGA		
Multitasking		Quadplex		
Video Compression		H.264		
Recording	Resolution	960x480, 704x480, 704x240, 352x240(NTSC) / 960x576, 704x576, 704x288, 352x288(PAL)		
	No. of Frame	1,2,3,4,5,6,8,10,15,30 (NTSC,10 Steps) / 1,2,3,4,5,7,9,13,20,25 (PAL,10 Steps)		
	Quality	4 Levels (Low, Medium, High, Super)		
	Max. Speed	120fps at 960H (NTSC) / 100fps at 960H (PAL)	240fps at 960H (NTSC) / 200fps at 960H (PAL)	480fps at 960H (NTSC) / 400fps at 960H (PAL)
	Mode	Schedule, Event(Sensor, Motion Detection), Manual, Continuous, Continuous+Event		
Display	Max. Speed	120fps (NTSC) 100fps (PAL)	240fps (NTSC) 200fps (PAL)	480fps (NTSC) 400fps (PAL)
	Resolution	Up to HD 1080p		
Search	Mode	Quick, Calendar, Bookmark, Event (Sensor, Motion Detection), USB		
Playback	Speed	x1,x2,x4,x8,x16,x32,x64,x128,x256, Field by Field (Forward, Backward) x1/4, x1/2 Slow Motion (Forward Only), Repeat A-B		
	Multi Screen	1, 4ch	1, 4, 9ch	1, 4, 9, 16ch
Sensor Input		4 (NO/NC Selectable)	8 (NO/NC Selectable)	8 (NO/NC Selectable)
Alarm(Relay) Output		1 Relay Output		
Audio	No. of Input	4ch	8ch	16ch
	No. of Output	1ch		
Network	Speed	10/100Base-T (Static, DHCP, E-mail), DDNS server available		

Item		H3004	H3008	H3016
	Codec	Dual Codec. (H.264)		
	Bandwidth Limit	Yes		
Motion Detection		22x15 (NTSC) / 22x18 (PAL), 8Level Sensitivity		
Storage	No. of HDD(SATA)	2(Internal) / 1(Internal) + 1 eSATA(External)		
Backup		USB Flash Memory, Network		
Password Protection		101 Level (admin / 100 users)		
Interface	PTZ Control	RS-485		
	Serial Port	RS-232 (TTL Level)	RS-232	
SW Upgrade	Method	USB Flash Memory, Network		
	Blackout Protection	Yes		
Power Source Consumption		+12VDC/4A Adaptor (100-240VAC, 50Hz/60Hz, 60W)		
Dimension(mm)		320(W) x 340(D) x 70(H)		
Weight(Kg)		5Kg (net)		
Operating Temperature		+5 ~ +40 (Celsius)		

Table 1.3. Specification Table

Chapter 2. Operation

2.1. Product Installation

2.1.1. Harddisk installtion

Install SATA harddisk drivers to the DVR, using the provied rack brackets.

2.1.2. Connecting the camera

Connect the cameras.

2.1.3. Power supply

Connect the power supply to operate the product.

2.1.4. Product configuration

Using the default setting is sufficient, also the user can change the recording setting depending on the purpose, the network setting for one's network environment.

2.2. System operating

2.2.1. The boot image



Figure 2.1. The boot image

During the booting time, boot image will appear. Booting takes about one minute to complete.

2.2.2. Start Menu

Two methods are available in the start menu. The start menu that appears at the bottom of the screen and the Mouse menu that appears when you click the right button of the mouse.

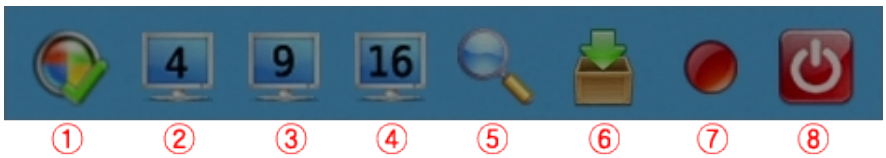

Figure 2.2. Start Menu

No.	Name	Function
1	Setup	Enter the setup menu
2	4split	4-split screen
3	9split	9-split screen
4	16split	16-split screen
5	Search	Enter the search menu
6	Backup	Enter the backup menu
7	Record	Turning on and off the recording
8	Power	Power off

Table 2.1. Start Menu



Figure 2.3. Mouse menu

No.	Name	Function
1	View1	Single screen selection menu

No.	Name	Function
2	View4	4-split screen selection menu
3	View9	9-split screen selection menu
4	View16	16-split screen selection menu
5	SEQ	Running the sequence mode
6	PTZ	PTZ menu (only single screen mode)
7	Freeze	Runnning freeze
8	ZOOM	Running zoom (only single xcreen mode)
9	RECORD	Turning on and off the recording
10	Menu	Enter the setup menu
11	Search	Enter the search menu
12	Backup	Enter the backup menu
13	Remote DVR	View a Remote DVR
14	Log off	Log off
15	Power off	Power off

Table 2.2. Mouse menu

2.3. Setup

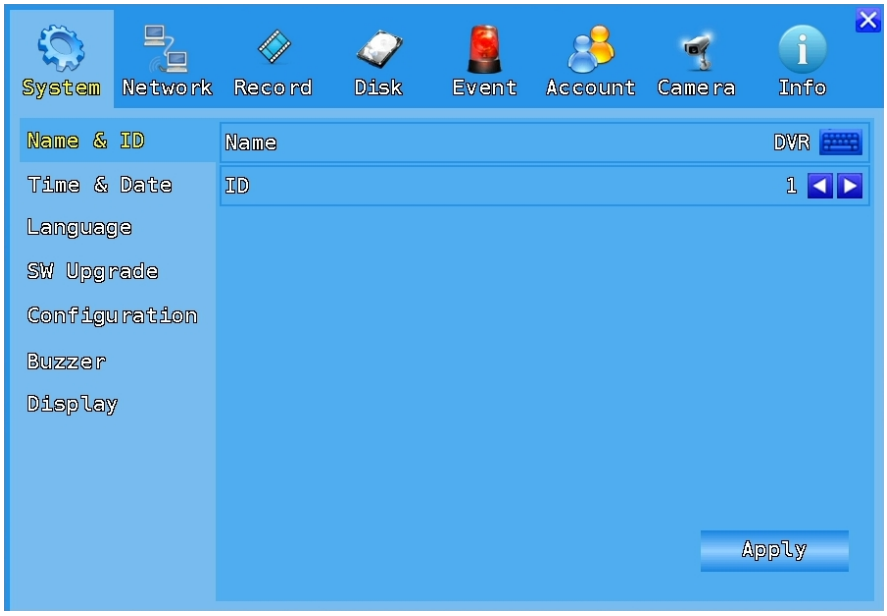

Figure 2.4. Setup menu

DVR setup menu. For more information, see the setup menu chapter.

2.4. Search

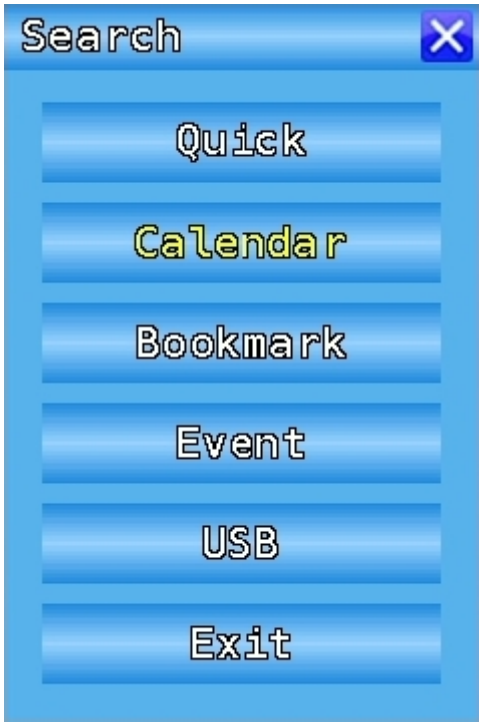

Figure 2.5. Search menu

Search menu displays as shown above . Depending on search method, Quick, Calendar, Bookmark, Event, USB search options are available.

2.4.1. Quick Search



Figure 2.6. Quick Search

Search menu window appeares as shown above. Select the playback start time.

- 2 minutes ago : Playback the video just two minutes ago from the current time.
- 10 minutes ago : Playback the video just 10 minutes ago from the current time.
- 1 hour ago : Playback the video just 1 hour ago from the current time.
- 6 hours ago : Play the video just 6 hours ago from the current time.
- 1 day ago : Playback the video just 1 day ago from the current time.

2.4.2. Calendar Search

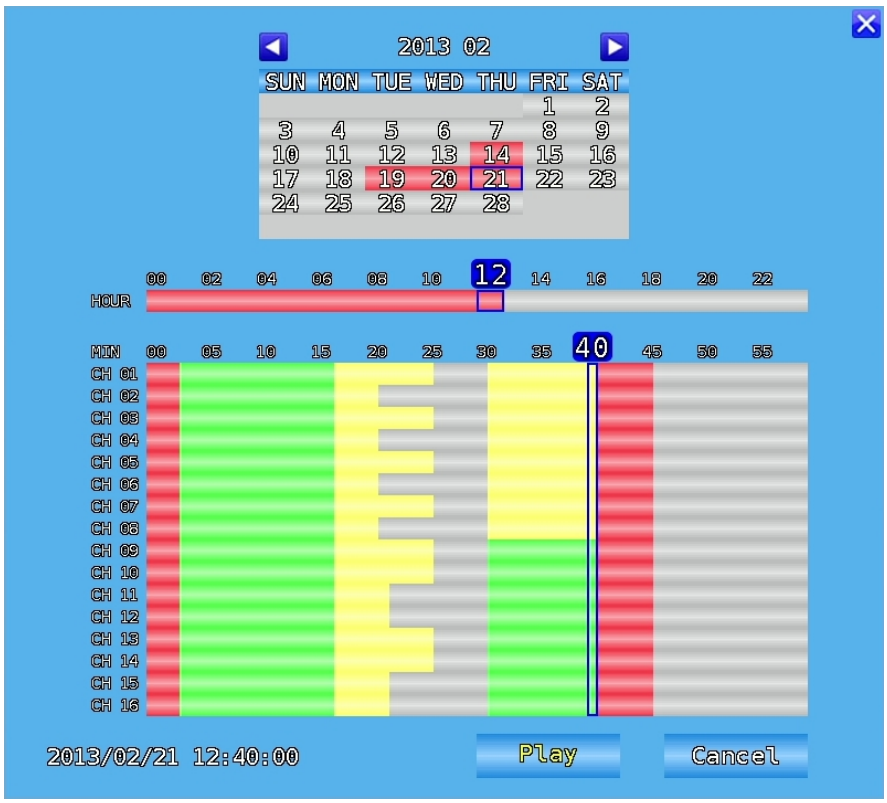

Figure 2.7. Calendar Search

Calendar search function is supported. Identifying the presence of recorded video per channel is easy. The time zone which the recording data exists is displayed with different colors. Red(Manual or Continous record), Green(Motion record), Orange(Sensor record).

2.4.3. Bookmark to play

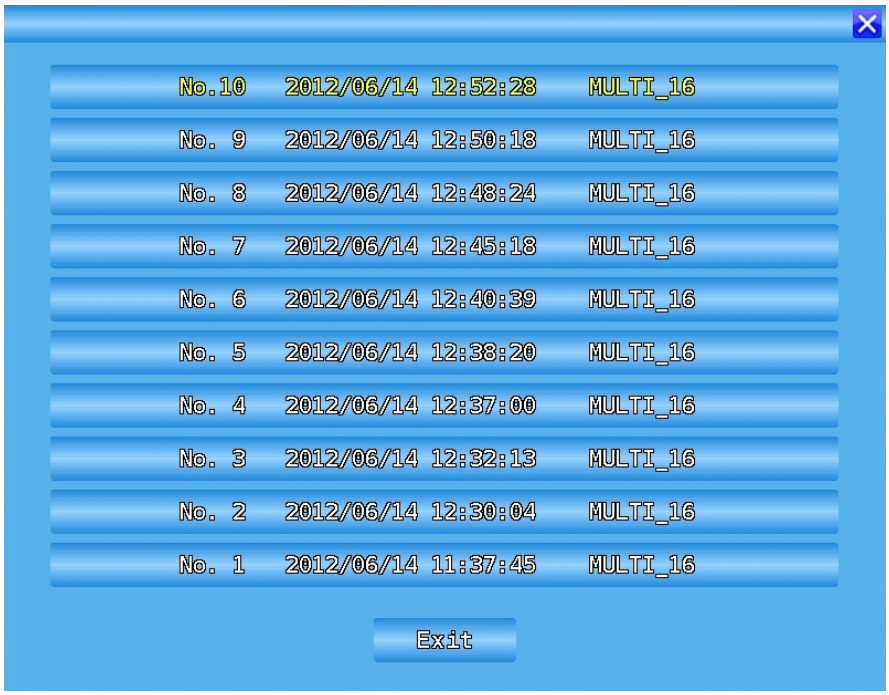

Figure 2.8. Bookmark to play

Bookmark search function is supported. The list of bookmarks are displayed. It is convenient to use bookmarks on the plaback buckup.

2.4.4. Event

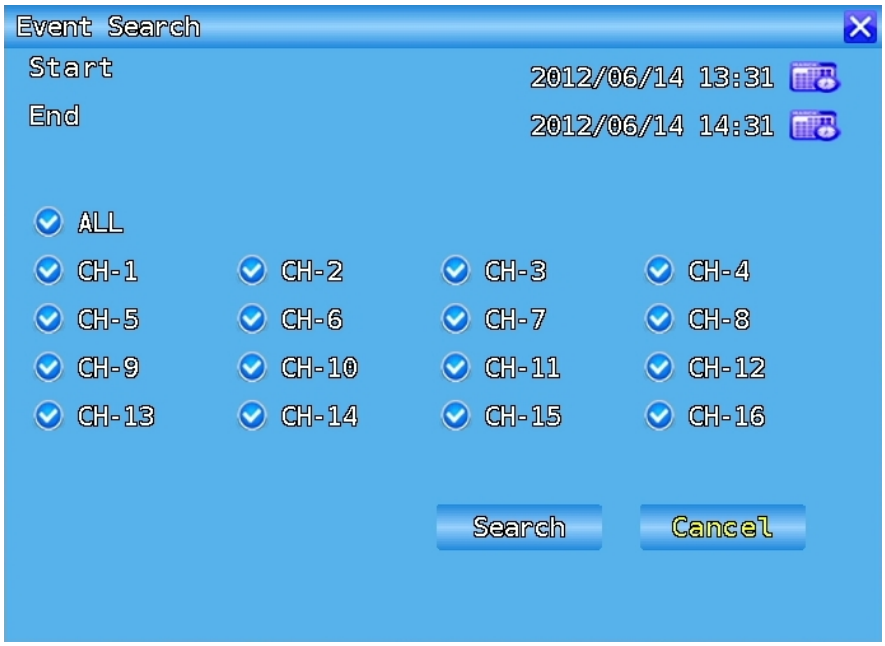

Figure 2.9. Event

Event search is supported. Select start time, end time and channels that you want to search in the event search menu, then event lists that occurred during that time period are displayed.

2.5. Playback

2.5.1. Playback menu bar



Figure 2.10. Playback menu bar

Split-screen seletion, playback related buttons are displayed.

No.	Name	Function
1	Time	Display Playback time
2	Playback speed	Display Playback speed
3	Stop	Stop of Playback
4	Reverse	Reverse Playback
5	Playback	Playback
6	Pause	Pause
7	Slow Playback	Slow playback (x1/4 ~ x1/2)
8	Fast Playback	Fast playback (x2 ~ x256)

Table 2.3. Playback menu

2.5.2. Playback Mouse menu

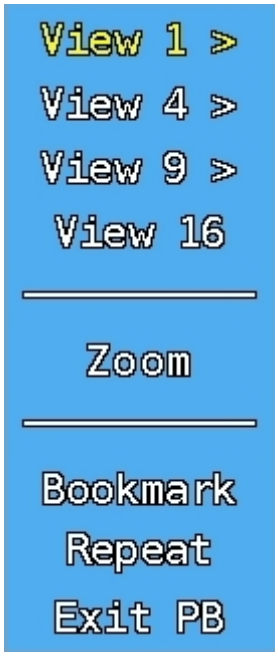

Figure 2.11. Playback Mouse menu

User can select the playback screen mode which is single, 4-split, 9-split, 16-split. support zoom fuction at display mode. User can set a bookmark during playback. The saved bookmarks are used A-B repeat during playback.

2.6. Backup

2.6.1. Backup menu

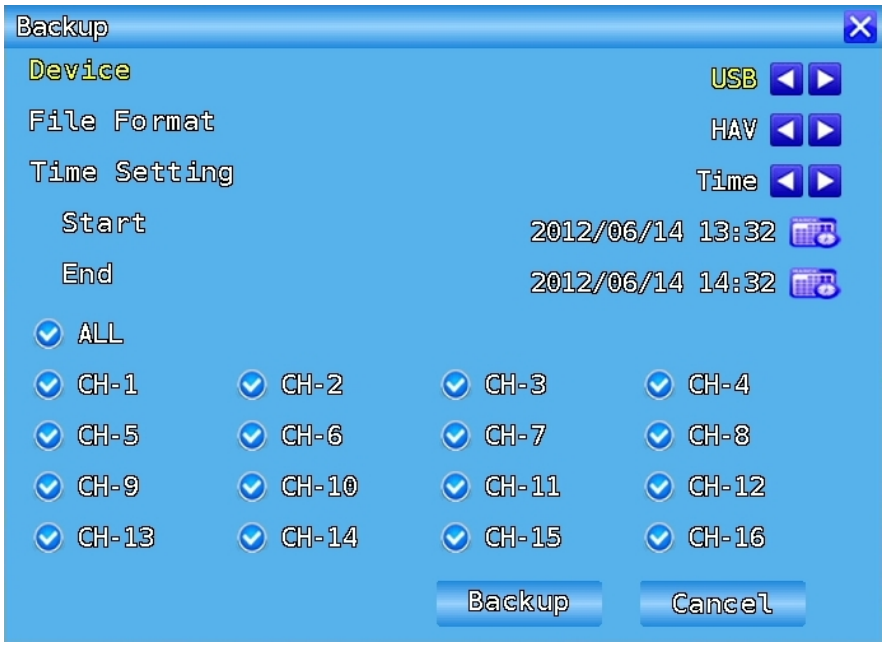

Figure 2.12. Backup menu

- Device : Select the device you want to back up. USB memory is available.
- File Format : Select the file format to back up. HAV, AVI can be selected. EZPlayer will be stored together when HAV format is selected. The backed up data is displayed using EZPlayer without an additional program installation. The backed up files using AVI format can be playbacked as a normal media player.
- Time Setting : Select the time to back up. Start and end time of backup can be set by time or bookmarks.
- Channel Selection : All channel or individual channel can be selected. After selecting the channel, you can back up by pressing the Backup button. During backup, the progress bar is displayed for noticing the status.

2.7. Network monitoring

2.7.1. CMS

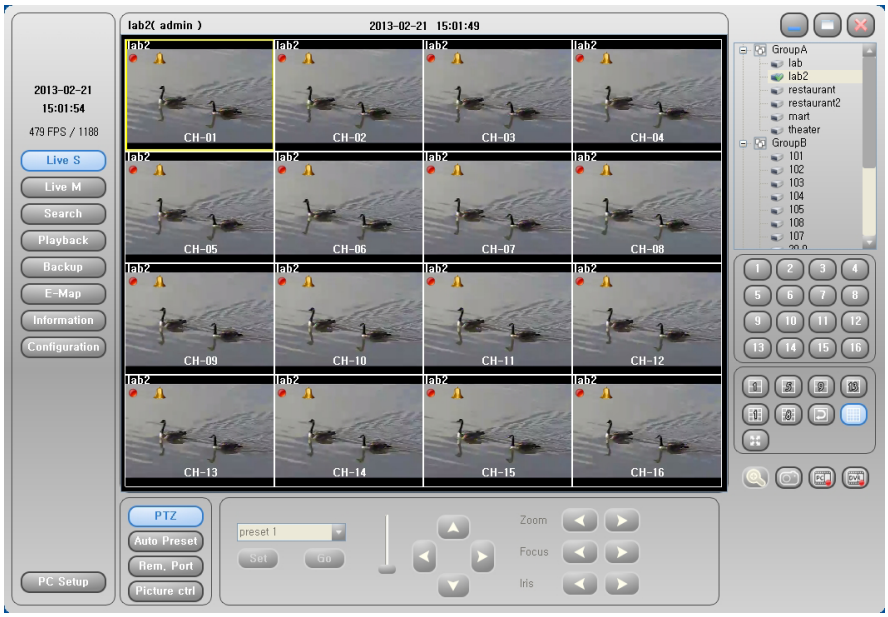

Figure 2.13. CMS

Network monitoring program is provided. It supports Windows PC and Mac PC.

2.7.2. Mobile

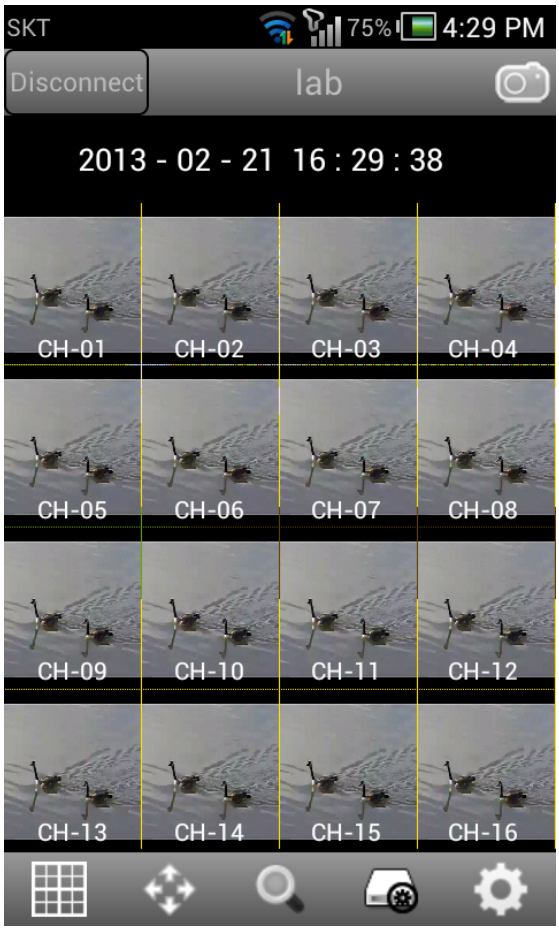

Figure 2.14. Mobile

Smart Phone application is also supported. iPhone, iPAD, Android smartphones are supported.

Chapter 3. Setup menu

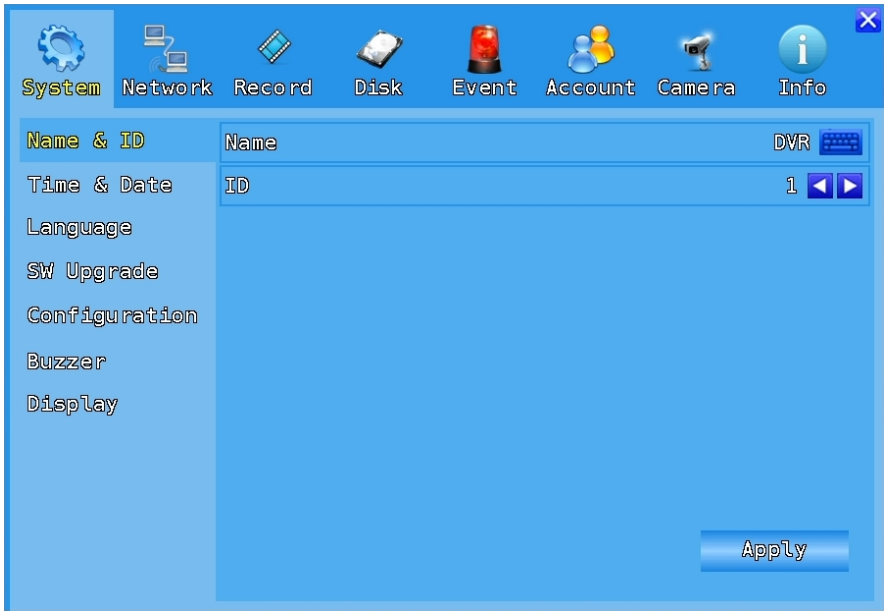

Figure 3.1. Setup menu screen

Level 1	Level 2	Level 3	Level 4
System	Name ID	Name	
		ID	
	Time Date	Data Format	
		Time Format	
		Time Zone	
		NTP	
		Date	
	Language		
	SW Upgrade	Type	Application, Kernel
	Configuration	Factory Default	
		Conf. file export	
		Conf. file import	
	Buzzer	Sensor	
		Motion	
		Video Loss	
		Record Fail	
		Record Warning	
	Display	Camera Name	
		Motion Icon	
		Sensor Icon	
		Record Icon	
		Status Bar	

Level 1	Level 2	Level 3	Level 4
		Resolution	
		HDMI/VGA	
		VGA Only	
Network	TCP/IP	Type	Auto UPnP
			Static
			DHCP
	DDNS	Default	
		Hostname	
	Stream	Channel	
	Status	IP Address	
		EXT. IP Address	
		Network Test	
		UPnP Test	
		DNS Test	
		DDNS Test	
	Client Info		
	Remote DVR		
Record	Channel	Channel	ALL, CH1 ~ CH16
		Resolution	360x240, 720x240, 720x480, 960x480
		Quality	LOW,MEDIUM,HIGH,SUPER
		Framerate	
		Mode	MANUAL, CONTINUOUS, MOTION, SENSOR, MOTION+SENSOR, CONTINUOUS +EVENT, SCHEDULE
	Schedule	Number	1~4
	Misc	Record	Audio Record
			Time Overlay
	Playback	Channel	1CH ~ 16CH, ALL
		Start Point	First Data, 2 minutes ago, 10 minutes ago, 1 hour ago, 6 hours ago, 1 day ago
		Audio Play	
Harddisk	Mode	Mode	OVERWRITE, ONCE
		Forced Deletion	OFF,1day ~ 99days
	S.M.A.R.T.	S.M.A.R.T.	ON, OFF
		Check Interval	6hours, 12hours, 24hours
	Format		

Level 1	Level 2	Level 3	Level 4
	Information1	Model, Usage	
	Information2	Model, Temperature, SMART test result	
	Record Time	Available Record Time	
Event	Motion	Channel	Sensitivity
			Detection Zone
			Pop Up
		Pop Down	CONT, 5SECS, 10SECS, 30SECS
	Sensor	Number	Type
			Link Channel
			Pop Up
		Pop Down	CONT, 5SECS, 10SECS, 30SECS
	Relay	Sensor	
		Motion	
		Record Fail	
		Record Warning	
		Keep Time	NONE, 5SECS, 10SECS, 30SECS
	Email	Address	Sender, Receiver
		SMTP	Address, Port, ID, Password, SSL, MIME
		Condition	Period, Prohibition
		Contents	Motion, Sensor, Video Loss, Record Status, System Access
	Post Record	Post Alarm Record	NONE, 10SECS ~ 60 SECS
Account	Admin	Password	
	User	Name	
		Password	
		Permission	CH-1 ~ CH-16, PTZ, Playback, Backup, Network, Network Timeout
	Log off	Auto	
		Wait Time	30SECS, 1MIN, 3MINS, 5MINS, 10MINS
Camera	Name		
	Covert		
	Adjustment	Contrast	
		Brightness	

Level 1	Level 2	Level 3	Level 4
		Sharpness	
	PTZ	Channel	CH-1 ~ CH-16
		Model	PELCO_D
		ID	0 ~ 255
		Reverse Control	Pan, Tilt, Zoom, Focus
		Baudrate	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
	Sequence	Channel	CH-1 ~ CH-16, M1-4, M5-8, M9-12, M13-16, M1-9, M8-16, M1-16
		Dwell Time	1SEC, 2SECS, 4SECS, 5SECS, 8SECS, 10SECS, 15SECS, 30SECS
	Spot	Mode	Single, Quad, 9Split, Sequence, 16Split
Information	Event Log		
	System Log		
	Information	Model	
		Video Type	
		Version	Hardware, Kernel, Software
		MAC Address	

Table 3.1. Menu tree

3.1. System

3.1.1. Name and ID

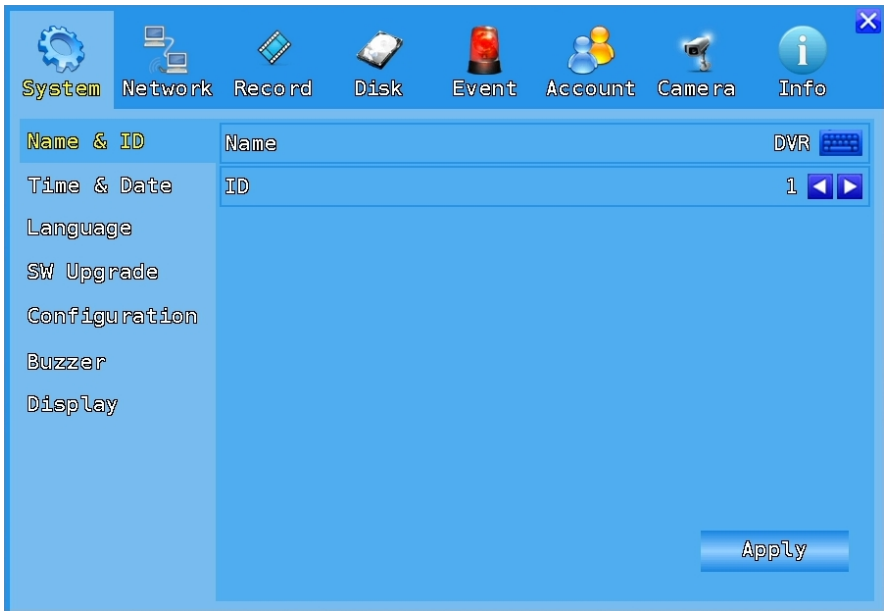

Figure 3.2. Name and ID

3.1.1.1. Name

Set the name of the DVR. When keyboard button is clicked, the keyboard input window opens. Set the name you want. Press the CapsLock button for switching input mode of the letters. OK button saves the information you entered and CANCEL button exits to the previous menu without saving.

3.1.1.2. ID

IDs are used to distinguish DVR when several DVR's are controlled by a remote controller or RS-485 controller. You must click the Apply button to save your selections.

3.1.2. Time and Date



Figure 3.3. Time and Date

3.1.2.1. Date format

Select date format. YYYY/MM/DD, MM/DD/YYYY, DD/MM/YYYY three options are available.

3.1.2.2. Time format

Select time format. 24 hours / 12 hours method is possible.

3.1.2.3. Time zone

Select a time zone where the DVR is installed. Daylight saving time is set by the time zone.

3.1.2.4. NTP

Select whether to use NTP. When it is ON states, it takes time from network time server and applys to DVR. Depending on the selected time zone, daylight saving time will be applied automatically. Only ON condition, an NTP server address can be entered. The address of the default NTP server is pool.ntp.org.

3.1.2.5. Date

Date of DVR is manually selected.

3.1.2.6. Time

Time of DVR is manually selected.

3.1.3. Language

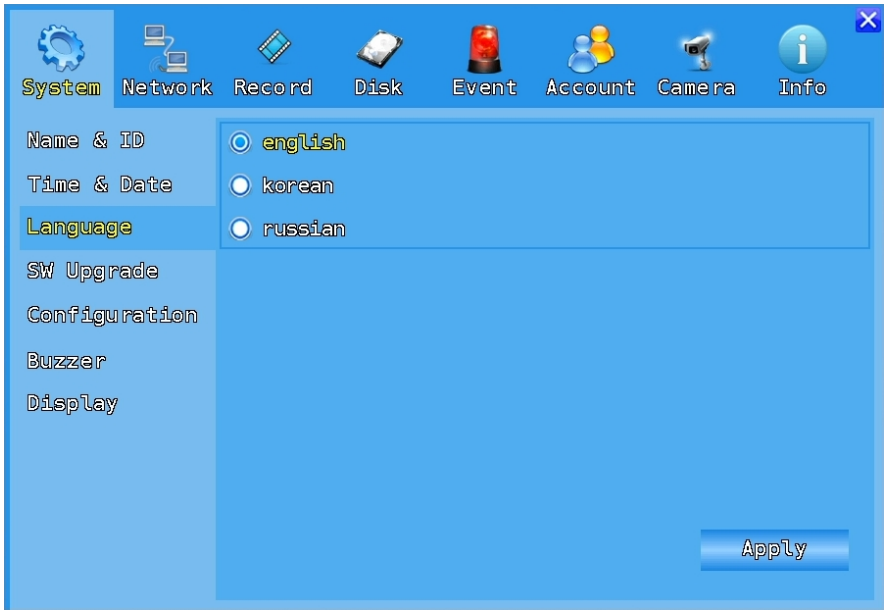

Figure 3.4. Language

3.1.3.1. Language

Select the language to use.

3.1.4. Upgrade software.

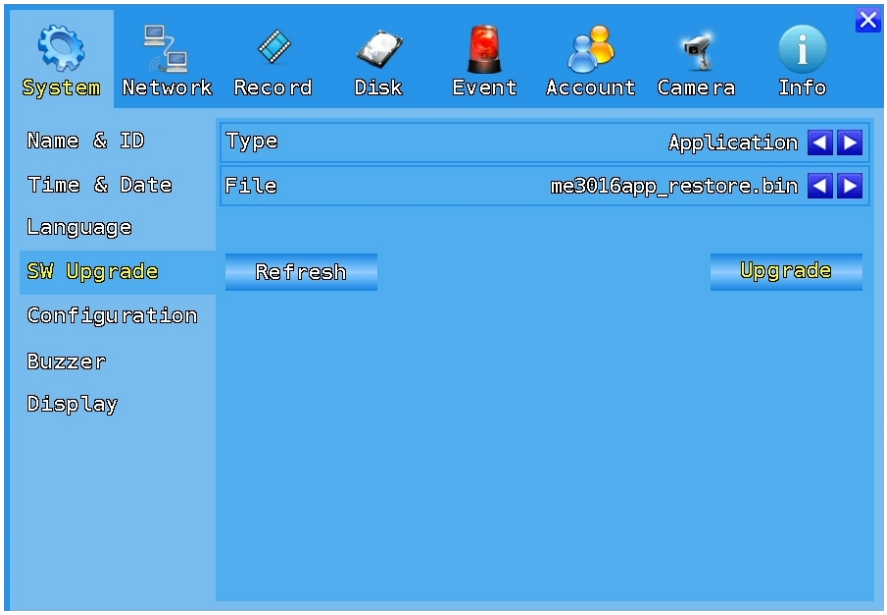

Figure 3.5. Upgrade software.

Application or kernel of the DVR can be upgraded by USB memory. After receiving an upgrade file from homepage, you can copy it to a USB memory.

3.1.4.1. Type

Select the program to upgrad. Application, kernel two options are available.

3.1.4.2. File

Press refresh button after inserting a USB memory to the USB port of the DVR. Upgrade will be in progress when upgrade button is pressed after selecting the upgrade file. Be careful not to turn off during the upgrade DVR. If the power outage occurs during the upgrade, the emergency recovery method using USB memory will recover the DVR. Please refer to the emergency recovery mathod on the appendix.

3.1.5. Setup

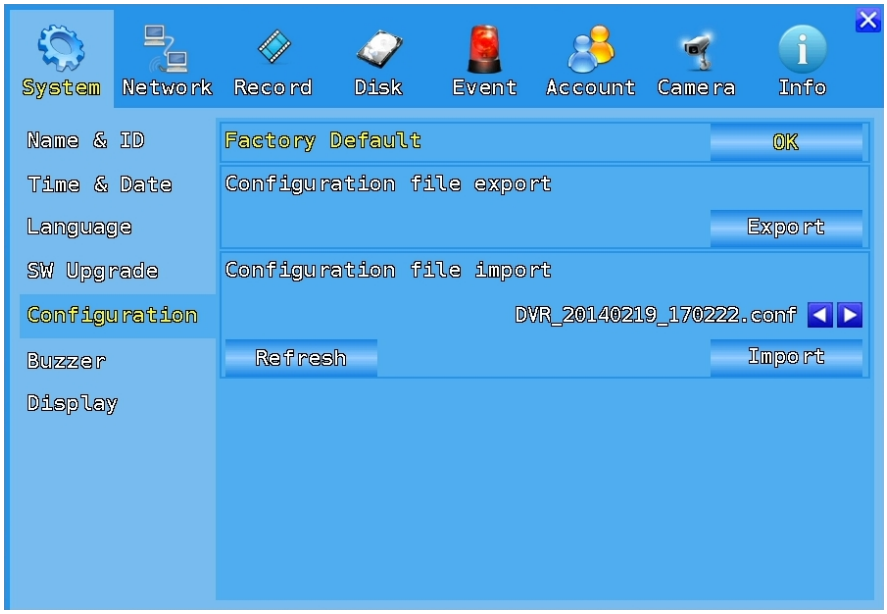

Figure 3.6. Setup

3.1.5.1. Factory default

DVR setting is initialized to the factory default.

3.1.5.2. Export a configuration file

The current DVR's setting is stored in USB memory.

3.1.5.3. Import a configuration file

Read the setting stored in the USB memory and apply to the DVR. After inserting the USB memory, press the refresh button to read files in the USB and select a file. Pressing Import button applies the setting values to the DVR.

3.1.6. Buzzer



Figure 3.7. Buzzer

The operation of the buzzer is depending on the status of the DVR.

- Sensor : Select whether to operate the buzzer when sensor inputs are detected.
- Motion : Select whether to operate the buzzer when motions are detected.
- Video Loss : Select whether to operate the buzzer when video loss is detected.
- Record Fail : Select whether to operate the buzzer when record fail is occurred.
- Record Warning : Select whether to operate the buzzer when recording warning is occurred.

3.1.7. Display



Figure 3.8. Display

Select whether to display information on the screen.

- Camera Name : Select whether to display camera name on the screen.
- Motion Icon : Select whether to display motion detection icon on the screen.
- Sensor Icon : Select whether to display sensor detection icon on the screen.
- Record Icon : Select whether to display recording status icon on the screen.
- Status Bar : Select whether to display status bar on the screen.
- Resolution : Select the output resolution for HDMI and VGA ports. Selectable resolutions are 1024x768, 1280x720, 1280x1024, 1440x900, 1920x1080.
- HDMI/VGA : Adjust the display parameters of HDMI, VGA port. Luminance, Contrast, Hue, Saturation can be adjusted.
- VGA Only : Adjust the display parameters of VGA port only. Luminance, Contrast, Hue, Saturation, Color Gain can be adjusted.

3.2. Network

3.2.1. TCP/IP

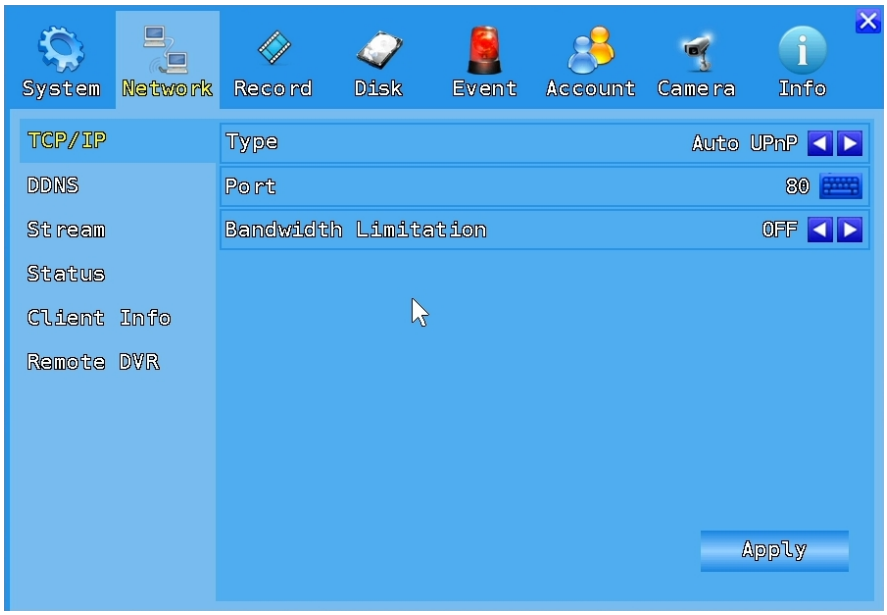

Figure 3.9. TCP/IP

3.2.1.1. Type

Select the type of network. Auto UPnP, STATIC, DHCP can be selected.

3.2.1.1.1. Auto UPnP

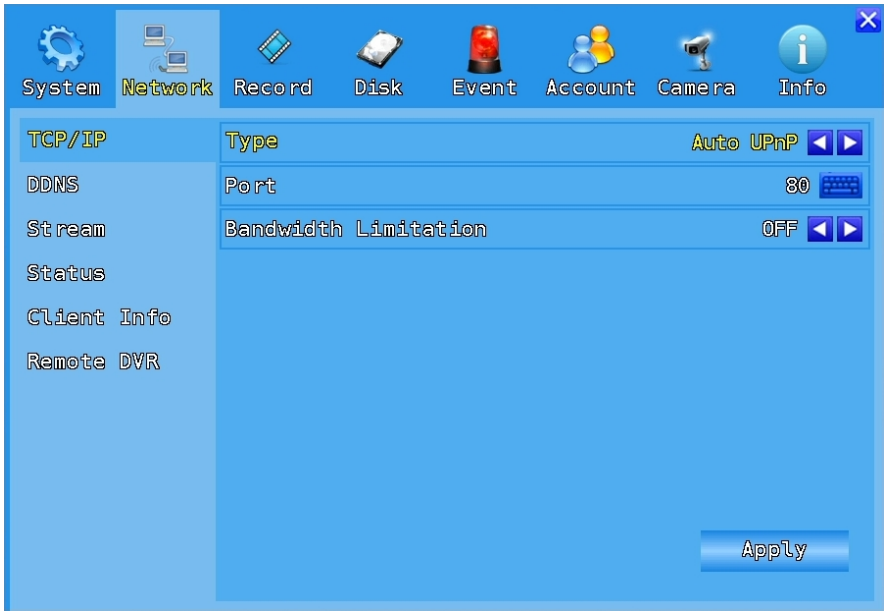

Figure 3.10. Auto UPnP

Select when a router supports Auto UPnP mode under an evironment that uses a router. Default port is 80 and the user can choose. If there are no problems on the status menu, then network settup is done. Bandwidth Limitation function is used for limiting the network data bandwidth.

3.2.1.1.2. Static



Figure 3.11. Static

- IP Address : Click the keyboard icon and enter the IP address to use.
- Subnet Mask : Click the keyboard icon and enter the Subnet mask.
- Gateway : Click the keyboard icon and enter the gateway number.

- Port : Click the keyboard icon and enter the port number. From 1 to 65,535 can be selected. the number is used for the CMS program.
- UPnP : Select whether to use UPnP function.
- DSN IP : It shows current DNS IP. The default number is google's public DNS IP(8.8.8.8). User can choose a DNS IP wanting to use.
- DDNS Link : Select whether to use the DDNS connection. To access the DVR from an external network, in most cases, user must choose it ON. Only access from the internal network or using Public Static IP, then user can choose OFF.
- Bandwidth Limitation : Use to limit the bandwidth of network transmission data.

3.2.1.1.3. DHCP

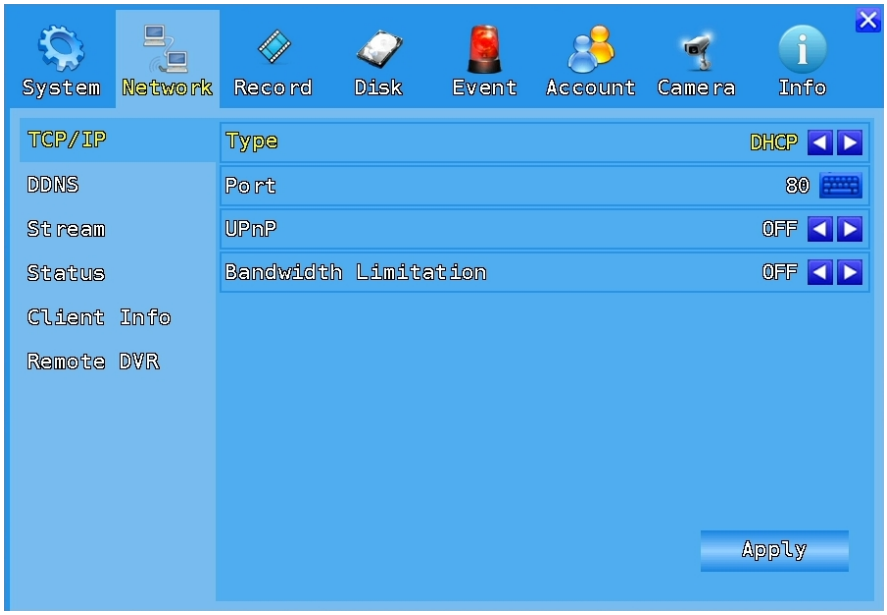

Figure 3.12. DHCP

- Port : Click the keyboard icon and enter the port number. From 1 to 65,535 can be selected. the number is used for the CMS program.
- UPnP : Select whether to use UPnP function.
- Bandwidth Limitation : Use to limit the bandwidth of network transmission data.

3.2.2. DDNS

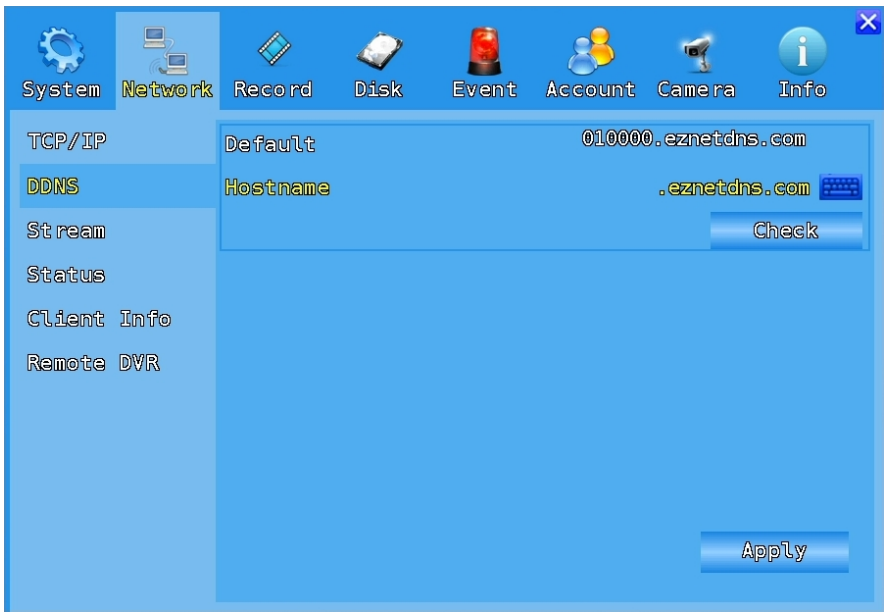

Figure 3.13. DDNS

3.2.2.1. Default

Show the default address based on MAC address for network access.

3.2.2.2. Hostname



Figure 3.14. Hostname Input Window

Hostname input window is opened by pressing the keyboard icon. After entering the name that user wants, press the OK button to save.

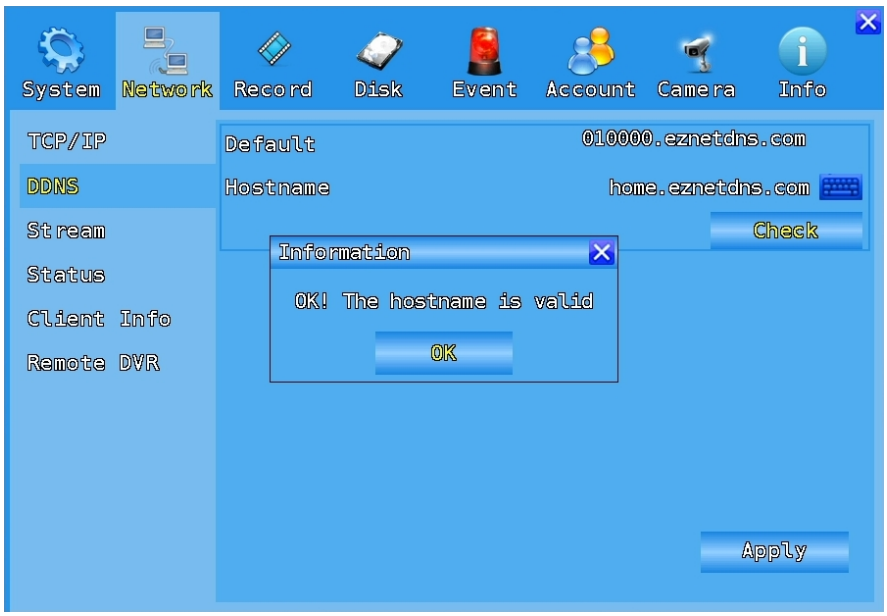

Figure 3.15. Hostname Check OK

After entering the Hostname, press the Check button to check availability from the DDNS server.

3.2.3. Stream

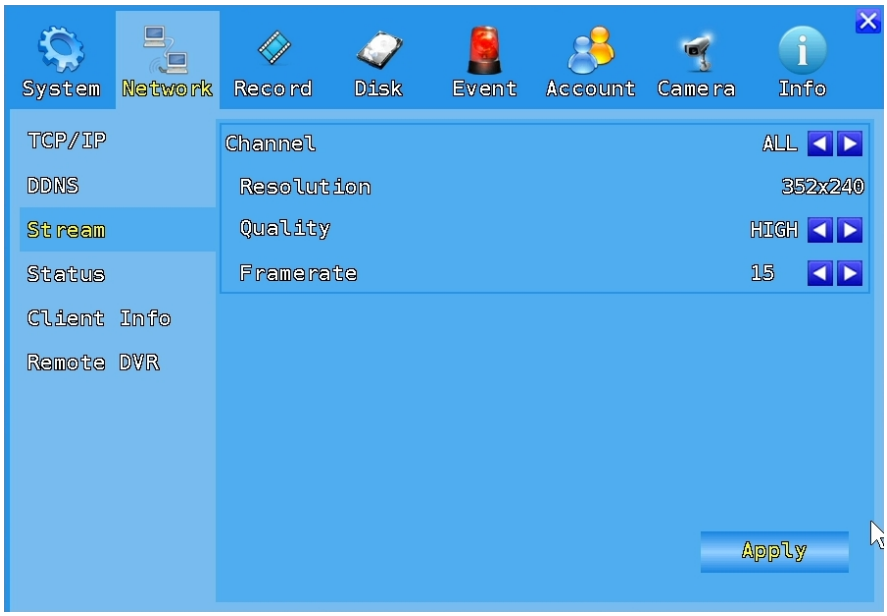

Figure 3.16. Stream

3.2.3.1. Channel

Network stream type is H.264. Individual channel setup or all channel setup is possible.

- Resolution : 352*240(NTSC) / 352*288(PAL) only
- Quality : 4 different modes(LOW, MEDIUM, HIGH, SUPER) can be selected.
- Frame rate : Up to 15fps for each channel.

3.2.4. Status



Figure 3.17. Status

After setting the network, user can check the current state of the network.



Figure 3.18. Status testing

Presse the Test button in order to check the current status of the network.



Figure 3.19. Status test result

- IP Address : Display the currently assigned IP number.
- EXT. IP Address : Display the currently assigned external public IP address number.
- Network Test : Display the results of connection test with the router.
- UPnP Test : Check the operation state of UPnP function.
- DNS Test : Check the state of the DNS server's operation.
- DDNS Test : Verify the information that is successfully registered on the DDNS.

3.2.5. Client Info

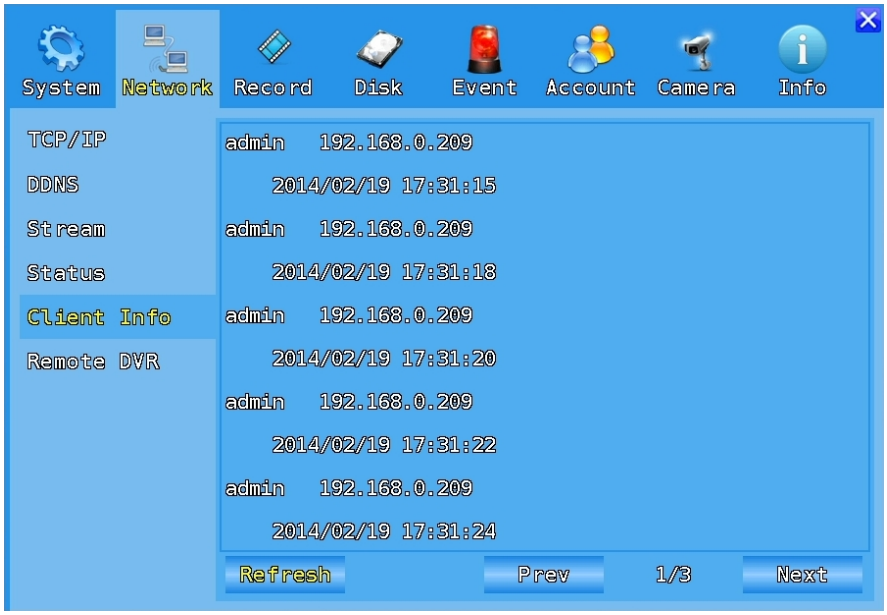

Figure 3.20. Client Info

Display the client information that has been connected to the DVR. Press the Refresh button to update the client information.

3.2.6. Remote DVR



Figure 3.21. Remote DVR

Add, delete, modify the information of remote DVR to connect.



Figure 3.22. Input the information of remote DVR

Input the network information of remote DVR. Press Add button to input the information.

- Name : Name of the remote DVR
- Address : IP address of the remote DVR

- Port : Port No.
- User : ID
- Password : Password

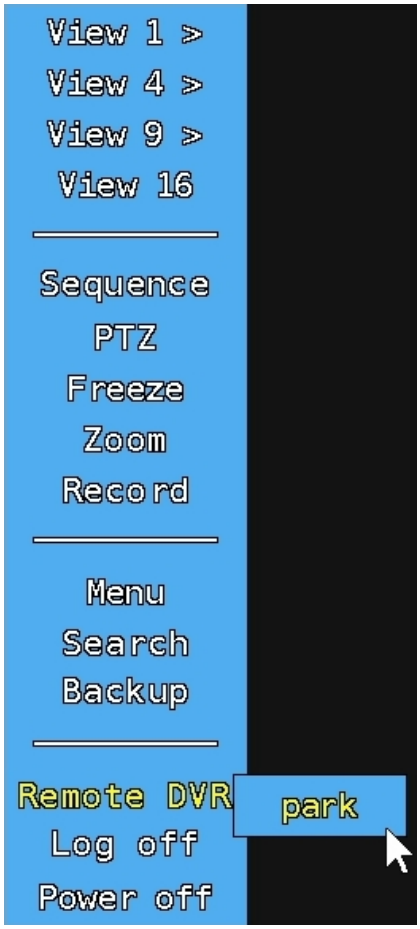

Figure 3.23. Connecting the remote DVR

On the mouse menu, click Remote DVR in order to connect the remote DVR that you set in the menu.

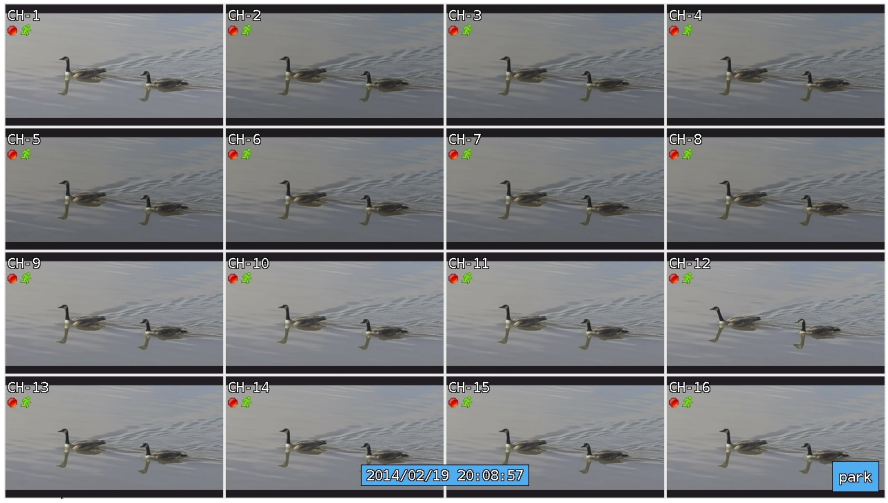

Figure 3.24. Live screen of remote DVR

Live screen of the remote DVR is displayed and the name of the remote DVR is displayed on the lower right corner.

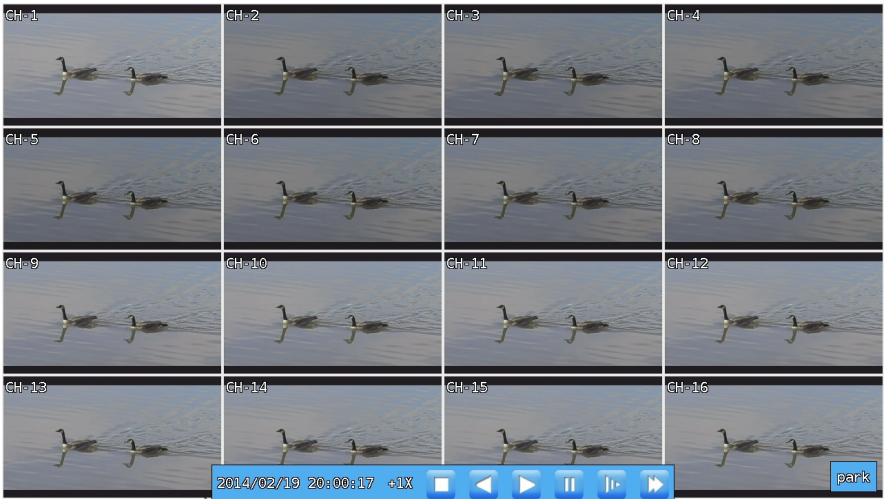

Figure 3.25. The playback screen of the remote DVR

The recorded data in the remote DVR can be searched using same user interface and playbacked.

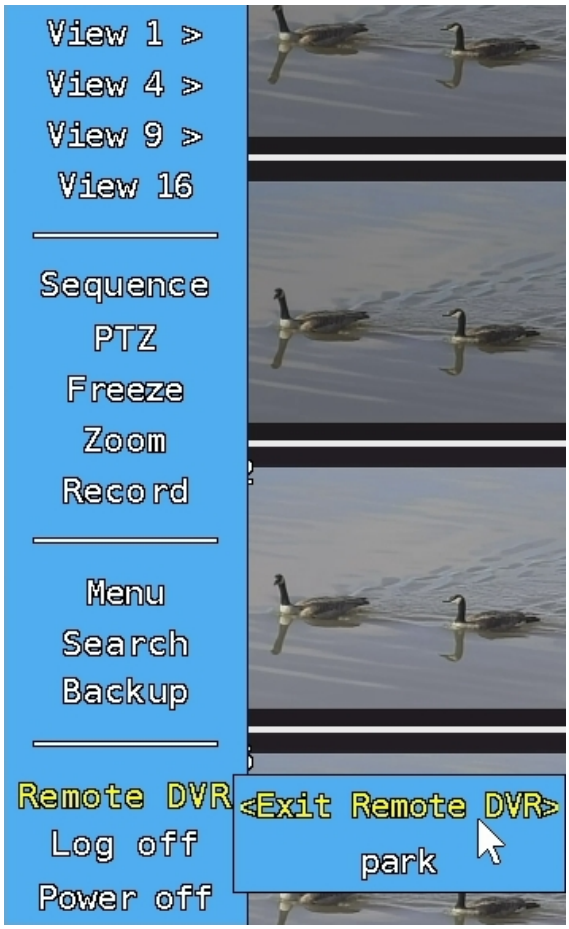

Figure 3.26. Disconnecting the remote DVR

On the mouse menu, click Exit Remote DVR in order to disconnect the remote DVR.

3.3. Record

3.3.1. Channel



Figure 3.27. Channel

It is used to set resolution, quality, frame rate, record mode for all channel or each channel.

- Channel : possible to set ALL or indivisual channel. ALL function is conveniant when user set all channel wite same setting value.
- Resolution : 4 different modes(360x240, 720x240, 720x480, 960x480) can be selected.
- Quality : 4 different modes(LOW, MEDIUM, HIGH, SUPER) can be selected.
- Framerate : Each channel can be set independently up to 30fps(NTSC) / 25fps(PAL).
- Mode : MANUAL, CONTINUOUS, MOTION, SENSOR, MOTION + SENSOR, CONTINUOUS + EVENT, SCHEDULE1 ~ SCHEDULE4 mode can be selected.



Figure 3.28. Channel CONT+EVENT mode

This is CONTINUOUS+EVENT mode. The image quality, frame rate can be set up differently at the Continuous mode and the Event mode.

3.3.2. Schedule

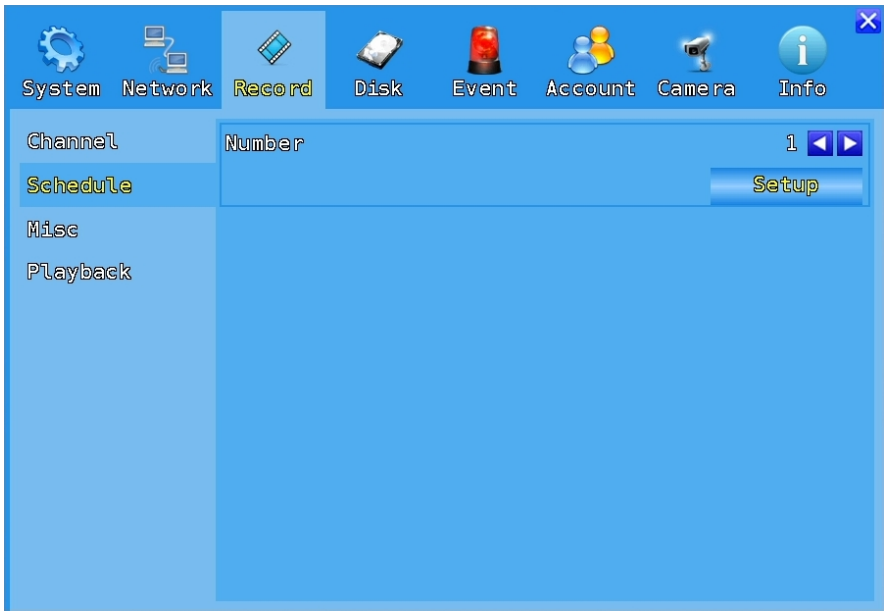

Figure 3.29. Schedule

Recording schedule can be set. Up to four different schedules are available.

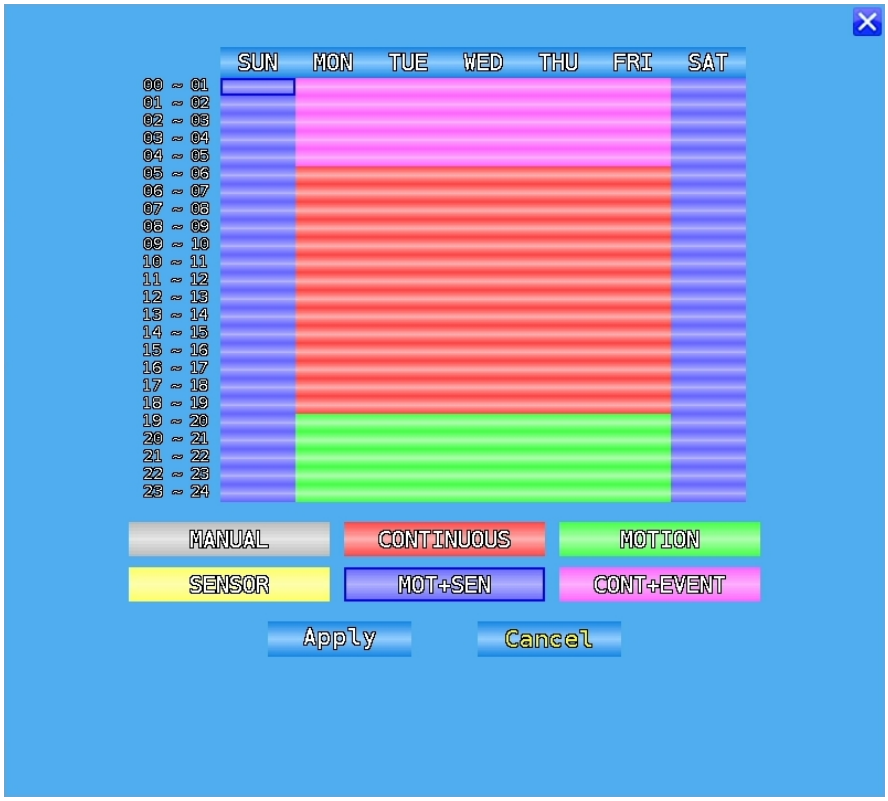

Figure 3.30. Schedule Setting window

Mode can be set per an hour. The configurable modes are MANUAL, CONTINUOUS, MOTION, SENSOR, MOT +SEN(MOTION+SENSOR) and CONT+EVENT(CONTINUOUS+EVENT). When you use a remote controller or the button of front panel, press the OK button to change the recording mode sequentially.

3.3.3. Misc

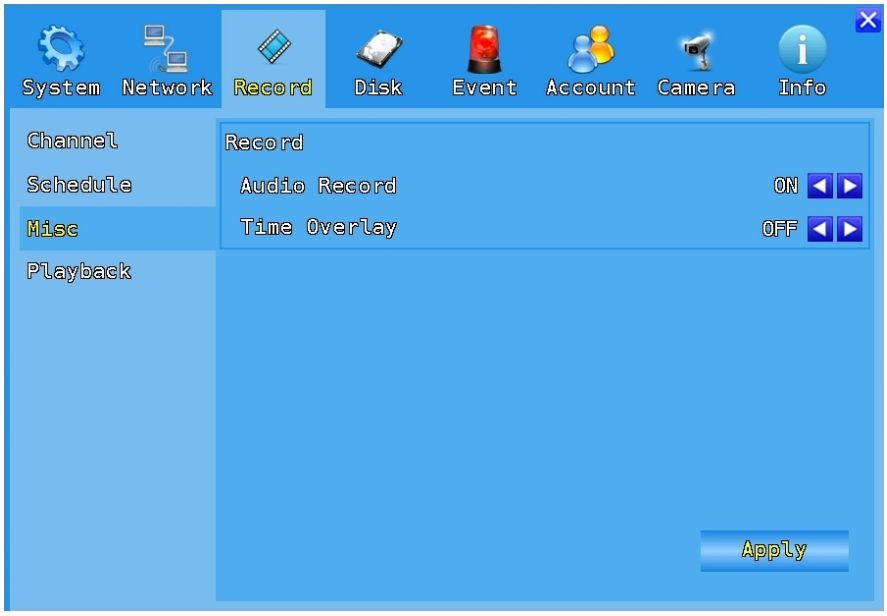

Figure 3.31. Misc

3.3.3.1. Record

- Audio Record : Select whether to record the audio.

- Time Overlay : Select whether to add the time information on the image.

3.3.4. Playback

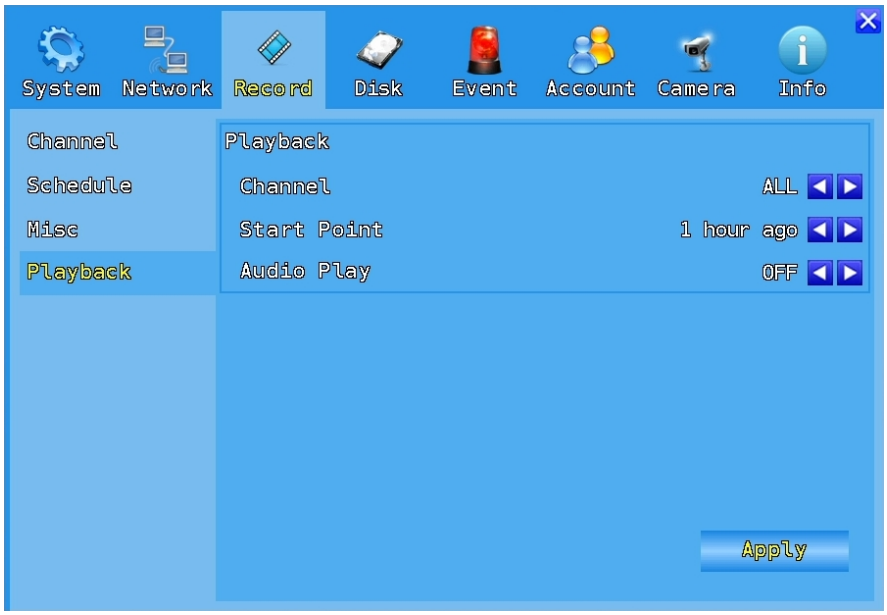

Figure 3.32. Playback

3.3.4.1. Playback

- Channel : Select the channel to playback. If ALL is selected, 16 channels will be playbacked simultaneously.
- Start Point : Choose the start point of the playback.
- Audio Play : Select whether to playback the audio.

3.4. Harddisk

3.4.1. Mode

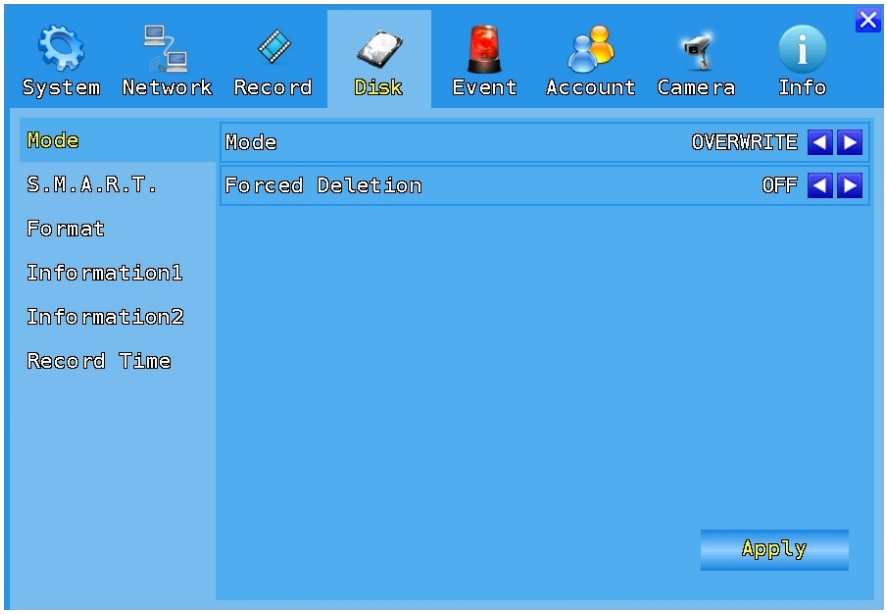

Figure 3.33. Mode

3.4.1.1. Mode

Choose How to save the images on your harddisk driver. OVERWRITE, ONCE can be selected. In the OVERWRITE mode, when the hard disk is full, DVR erases the oldest data while recording is in progress. In the ONCE mode, When the hard disk is full, DVR stops the recording.

3.4.1.2. Forced Deletion

It is a function that erases forcely the recorded data. Based on the current time, previous data will be erased forcely. It is meaningful only if the harddisk driver has enough capacity to store more data than the selected date. OFF, 1day ~ 99 days can be set.

3.4.2. S.M.A.R.T.

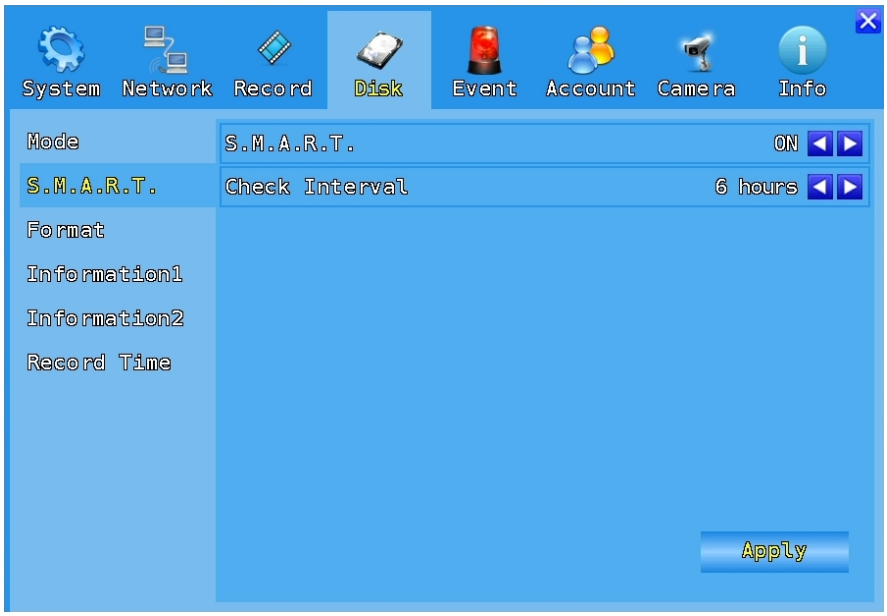

Figure 3.34. S.M.A.R.T.

3.4.2.1. S.M.A.R.T.

Choose whether to check S.M.A.R.T. test. The test works only ON condition in the check interval. The test results are recorded in the System Log. There are 3 results which are PASSED, WARNING, ERROR. WARNING is occured when even one kind of abnormal test is checked, It indicates a potential problem that is likely to occur. ERROR means that there is possibility to occure serious problems within 24 hours, so back up important data and need to replace the hard disk.

3.4.2.2. Check Interval

Select the S.M.A.R.T. test period. 6hours, 12hours, 24hours can be set.

3.4.3. Format

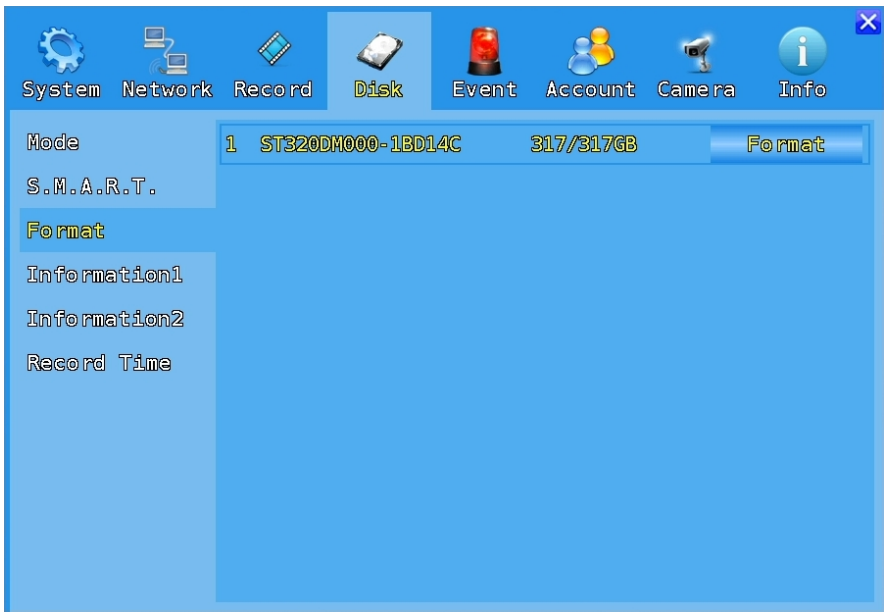

Figure 3.35. Format

Format the hard disk by the disk unit. Recording data is erased completely so be sure to backup the data.

3.4.4. Information1

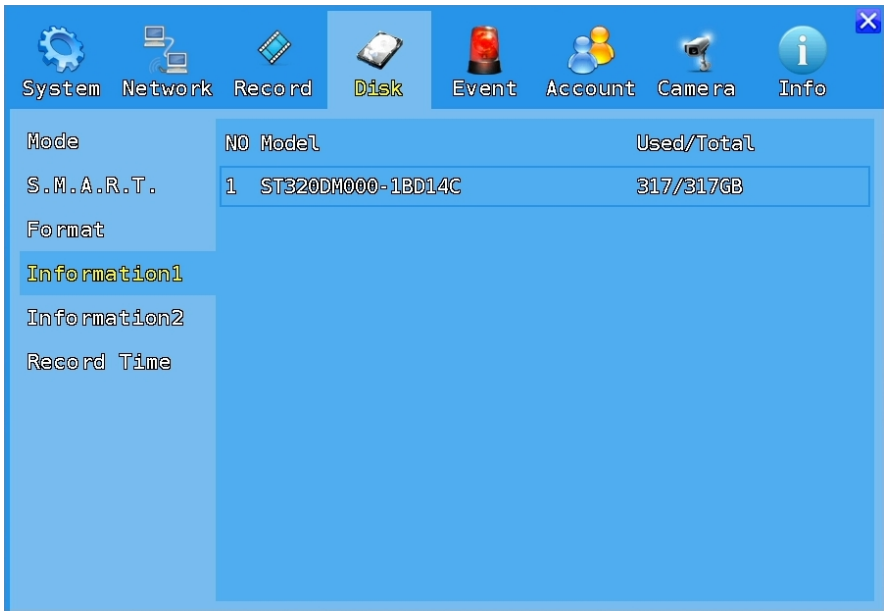

Figure 3.36. Information1

Display the information of harddisk. It shows the model name and used capacity of the harddisk driver.

3.4.5. Information2

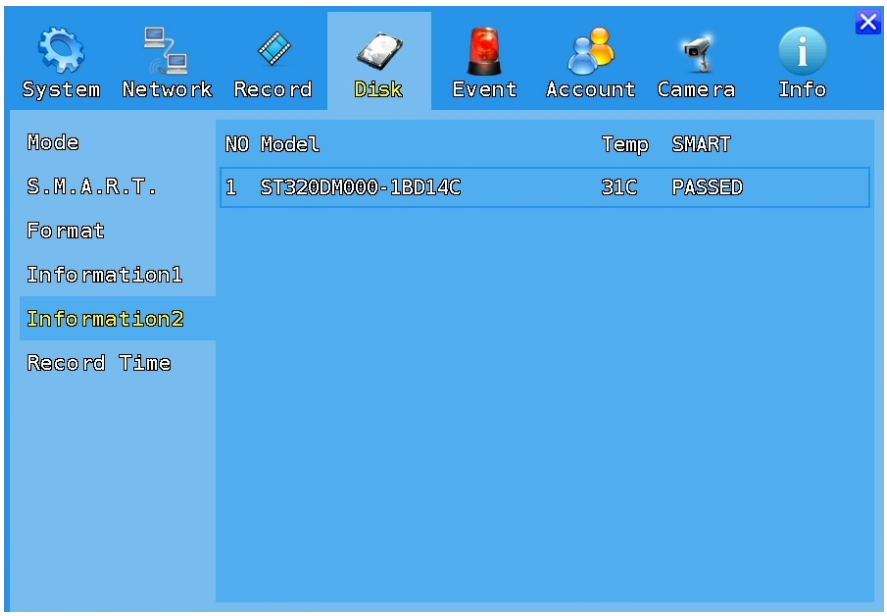

Figure 3.37. Information2

Display temperature and SMART test results.

3.4.6. Record Time

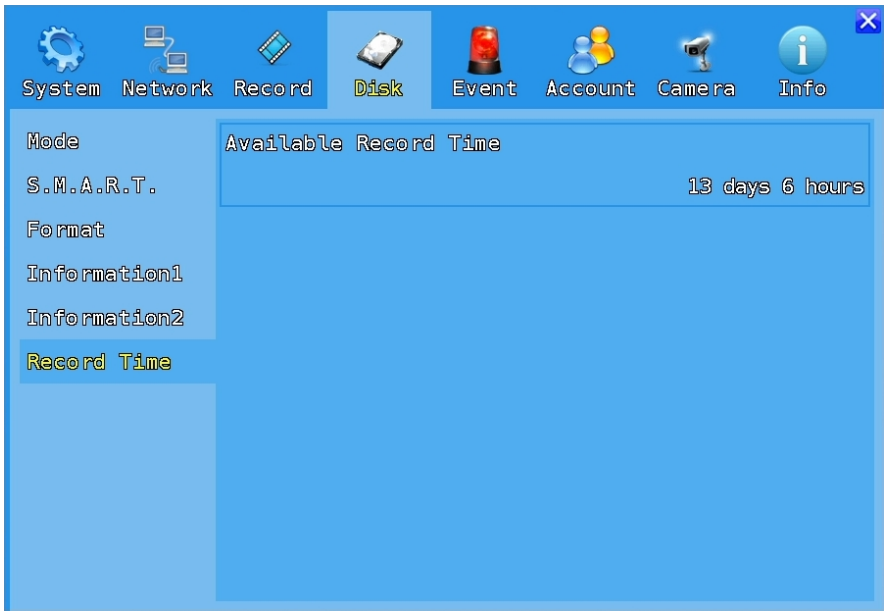

Figure 3.38. Record Time

The available record time will be displayed based on the current state. The available record time is automatically changed when the conditions are changed.

3.5. Event

3.5.1. Motion

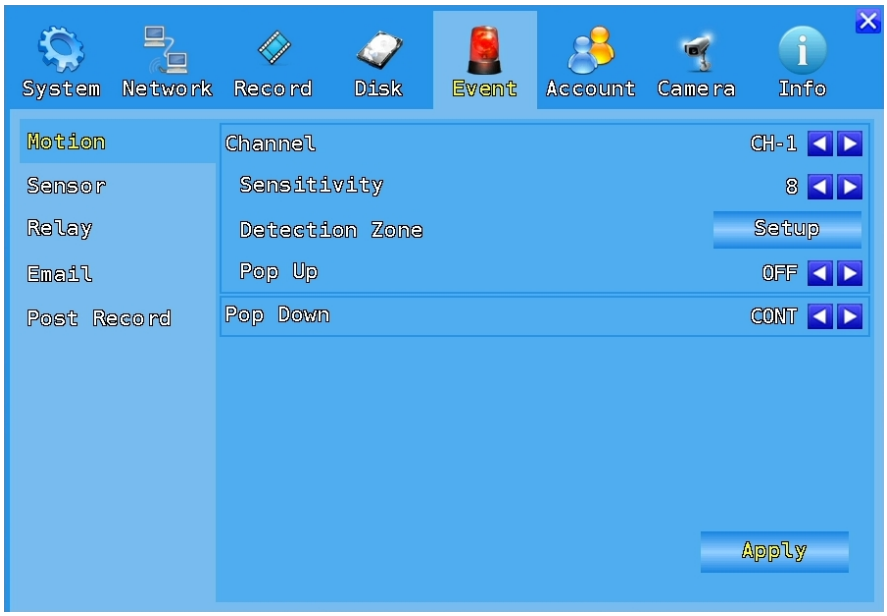

Figure 3.39. Motion

Motion detection setting. User can set the sensitivity, detection area, whether to pop up, the duration of the channel by channel.

3.5.1.1. Channel

Select a channel to make setting.

3.5.1.1.1. Sensitivity

Set the motion detection sensitivity. From 0 to 31, default value is 16. 0 is the highest sensitivity.

3.5.1.1.2. Detection Zone

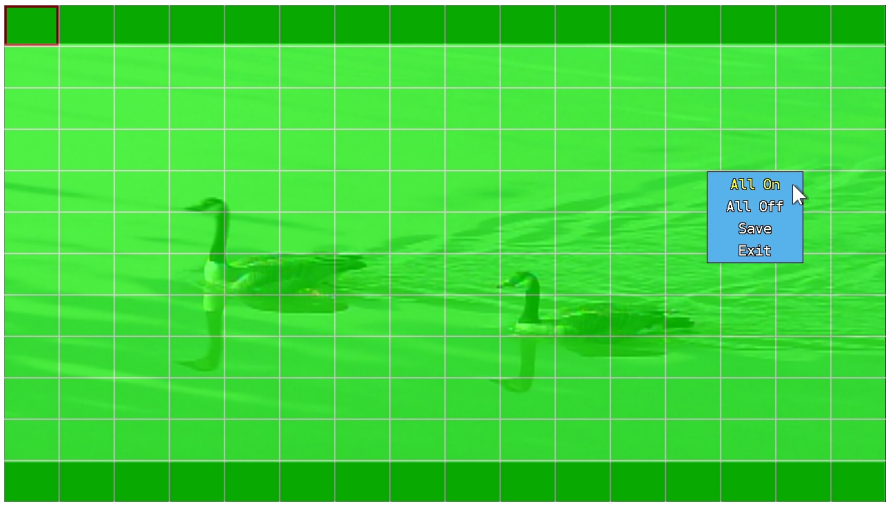

Figure 3.40. Detection Zone

Set up motion detection area. Area is consisted of 16x12 regions. When using the mouse, Hold down the left mouse button and drag to select the area. Hold down the right mouse button to release the area. Clicking the right mouse button or pressing the MENU button on the remote control or front keys, Motion Setting menu appears. All On, All Off, Save, Exit can be selected.

3.5.1.1.3. Pou Up

When the motion is detected whether to pop up the linked channel.

3.5.1.2. Pop Down

After releasing the motion detection, set how long to retain the pop up state. CONT, 5s, 10s, 30s can be selected.

3.5.2. Sensor

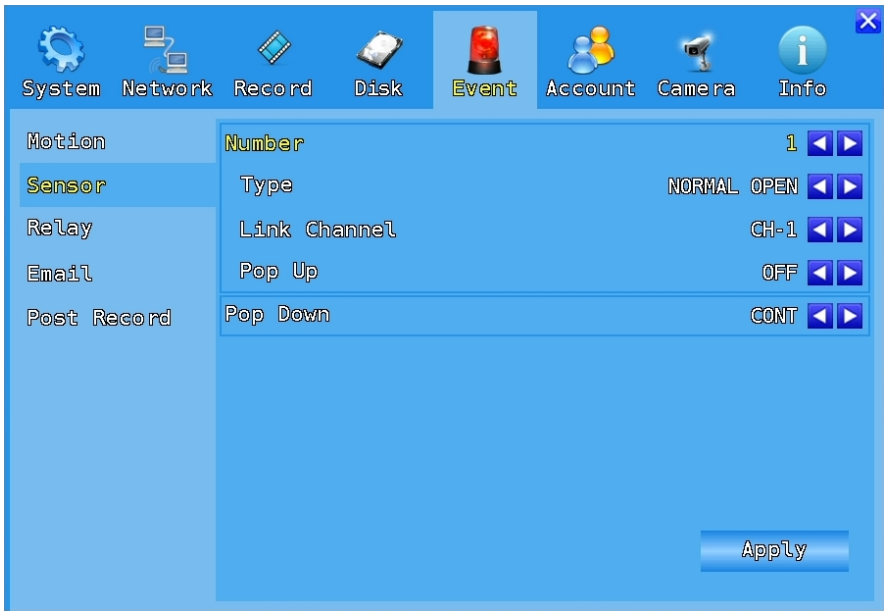

Figure 3.41. Sensor

It's for sensor setting. Action type, connection channels, whether to pop up the related channel on the sensor input condition, the dwelling time of the pop-up state can be set by each channel.

3.5.2.1. Number

Select the sensor number to make setting.

3.5.2.1.1. Type

Depending on the sensor, user can select NORMAL OPEN or NOMAL CLOSE.

3.5.2.1.2. Link Channel

Select the connecting channels with sensor. The channel will be recorded when the recording mode is associated with sensor and sensor is operated.

3.5.2.1.3. Pou Up

Determine whether to pop up the linked channel when the sensor is detected.

3.5.2.2. Pop Down

After the sensor detection is released, set the retaining time period of the pop up state. CONT, 5s, 10s, 30s can be selected.

3.5.3. Relay



Figure 3.42. Relay

Set the operating condition of the relay.

3.5.3.1. Sensor

Whether to output the relay when the sensor is detected.

3.5.3.2. Motion

Whether to output the relay when the motion is detected.

3.5.3.3. Record Fail

Whether to output the relay when the record fail is occured.

3.5.3.4. Record Warning

Whether to output the relay when the record warning is occured.

3.5.3.5. Keep Time

Set the relay hold time. NONE, 5s, 10s, 30s can be selected.

3.5.4. Email

The e-mail will be sent when a event occurs.

3.5.4.1. Address

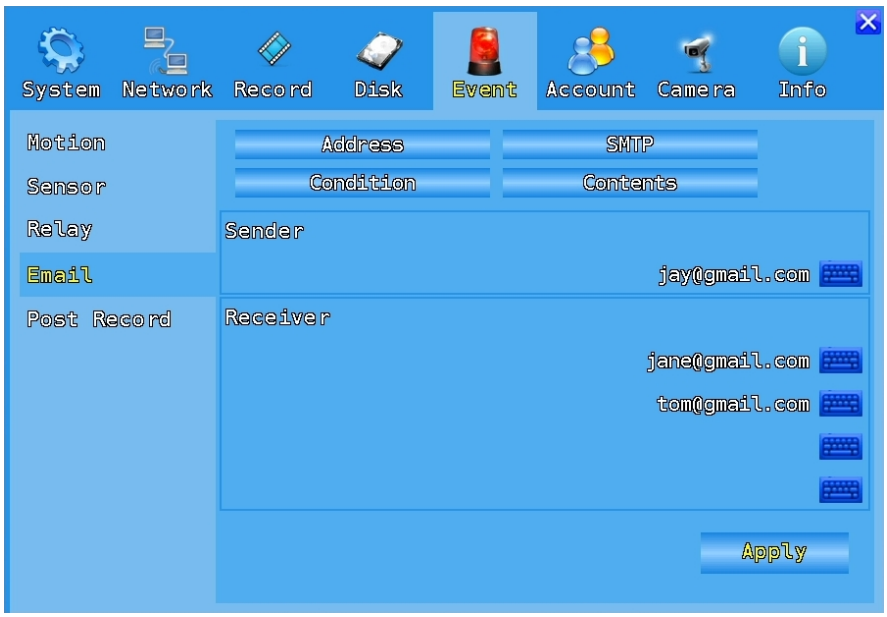

Figure 3.43. Address

- Sender : Enter the e-mail address of the sender. The email address to use must be registered in the SMTP server.
- Receiver : Enter the e-mail address of the recipient. Up to four can be set.

3.5.4.2. SMTP



Figure 3.44. SMTP

Enter the related SMTP information. It should be confimed from the SMTP service provider that you want to use.

- Address : Enter the address of the SMTP server to use. Default value is the Google's SMTP server.
- Port : Enter the SMTP port number. Default value is the Google's SMTP port number.

- Authentication : Depending on the SMTP server, it may require authentication. Select ON if authentication needs.
- ID : Enter ID to use.
- Password : Enter Password to use.
- SSL : The default is ON.
- MIME : The default is ON.

3.5.4.3. Conditon



Figure 3.45. Condition

Set the sending conditions of the email.

- Period : Set the sending period interval of the email. NO, 30min, 1hour, 2hours, 5hours, 12hours, 24hours, 2 min after event can be selected.
- Prohibition : Set the time not to send the e-mail. From Start to End time, DVR doesn't send the mail. Time format is applied to 24 hour time format.

3.5.4.4. Contents



Figure 3.46. Contents

Select the email content.

- Motion : Motion detection information is included in the email content.
- Sensor : Sensor operation information is included in the e-mail information.
- Video Loss : Video loss information is included in the email content.
- Record Status : Recording status is included in the email content .
- System Access : System log information is included in the email content.

3.5.5. Post Record

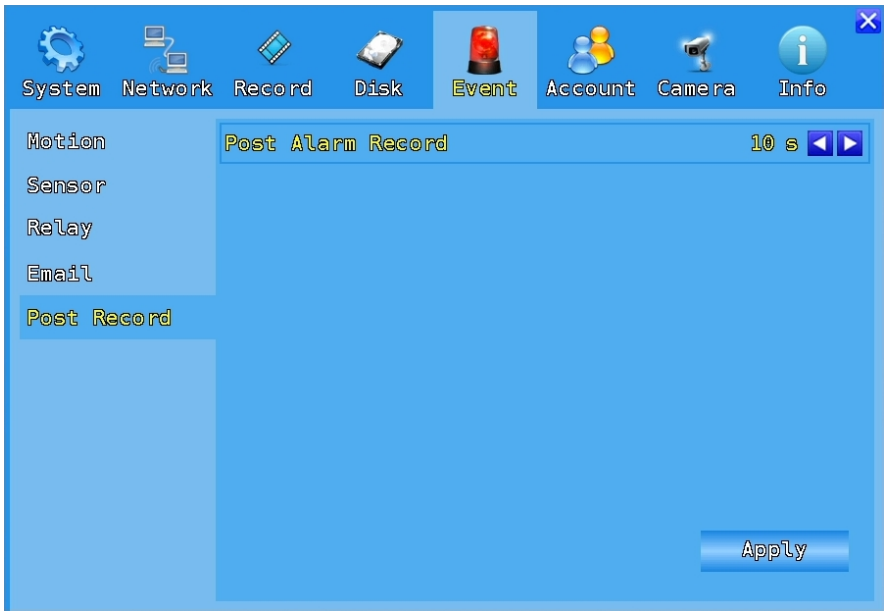

Figure 3.47. Post Record

Set the duration time after the termination of the event. NONE, 10s, 20s, 30s, 40s, 50s, 60s can be selected.

3.6. Account

Motion detection setting. User can set the sensitivity, detection area, whether to pop up, the duration of the channel by channel.

3.6.1. Admin

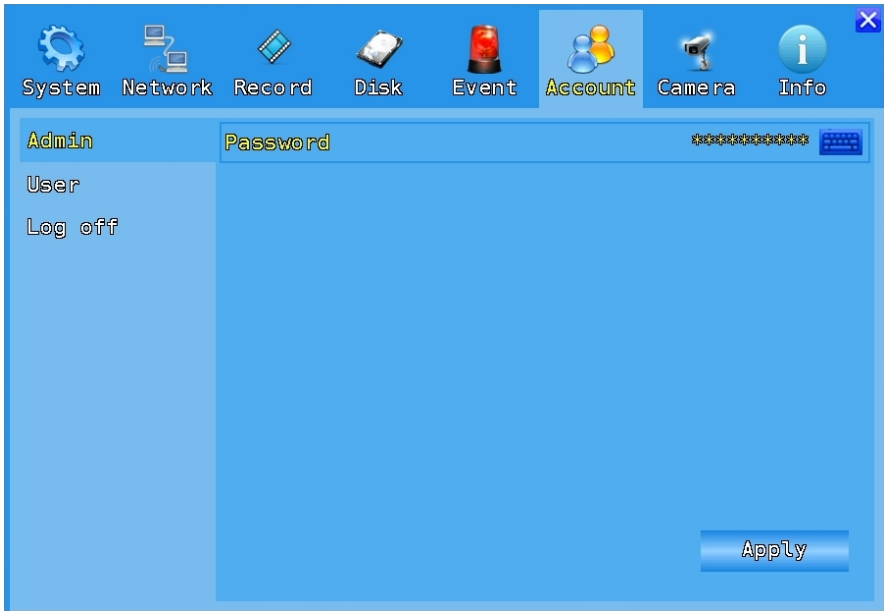

Figure 3.48. Admin

Set the admin password. Default value is '1234'.

3.6.2. User

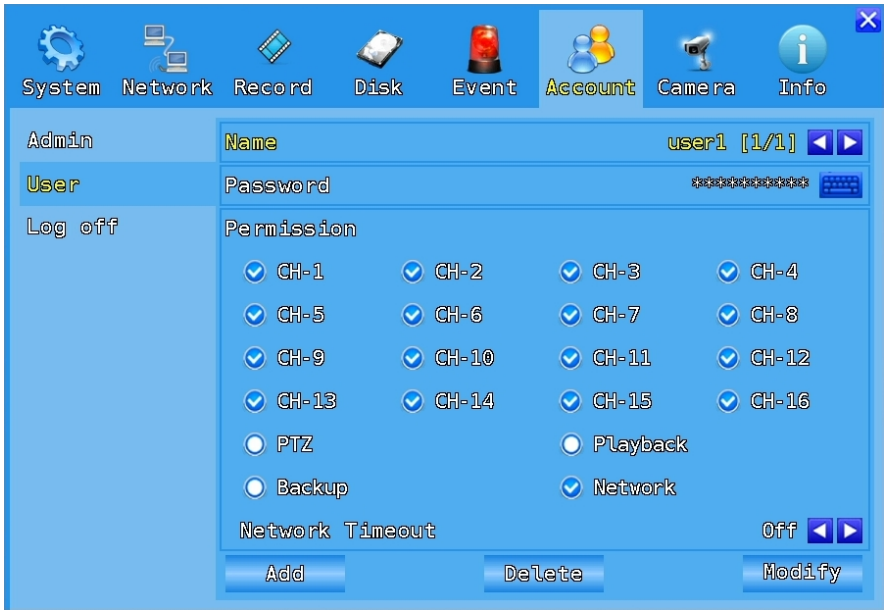

Figure 3.49. User

Manage the acoounts of users and feature set for each account. User's account can be up to 100. Using the buttons at the bottom of the menu, users can add, delete, and modify.

3.6.2.1. Name

Set the name of the user account.

3.6.2.2. Password

Set a password for a user account.

3.6.2.3. Permission

Set account-specific feature. The channel, PTZ control, playback, backup, network monitoring, network connections, network access time limit functions can be selected.

3.6.3. Log off

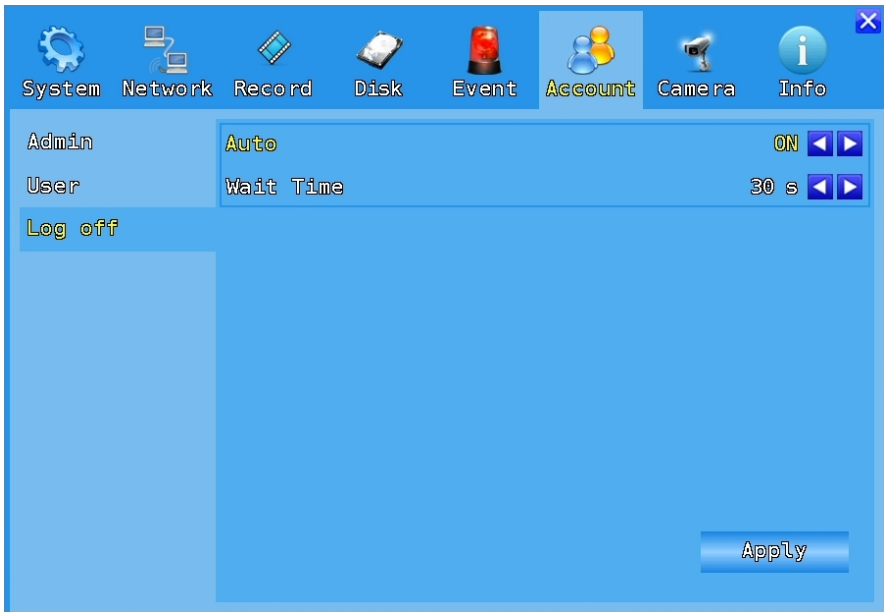

Figure 3.50. Log off

3.6.3.1. Auto

Set whether to use an automatic log off.

3.6.3.2. Wait Time

Set the wait time of an automatic log off. 30s, 1min, 3min, 5min, 10min can be selected.

3.7. Camera

3.7.1. Name

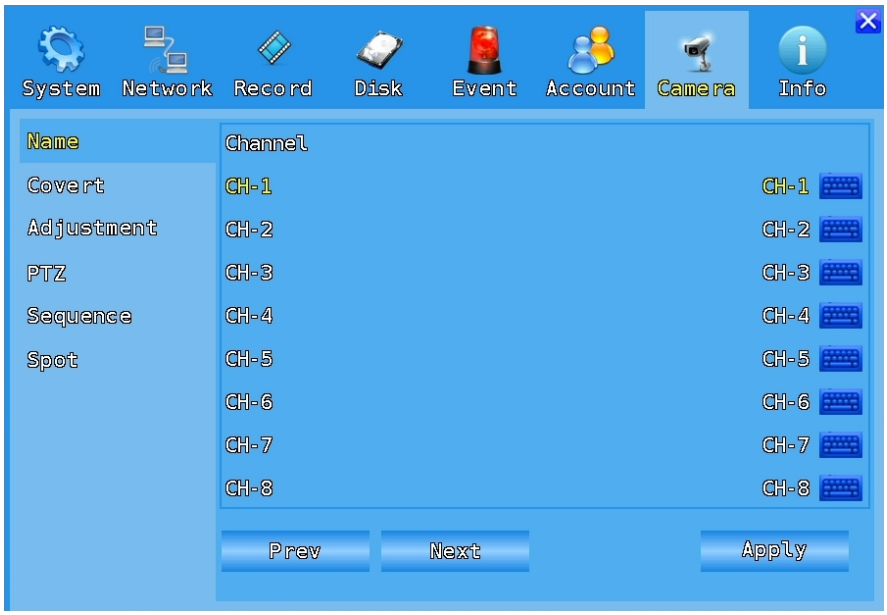

Figure 3.51. Name

Enter the name of the channel.

3.7.2. Covert



Figure 3.52. Covert

Covert a channel. The selected channel will not be displayed on the screen.

3.7.3. Adjustment

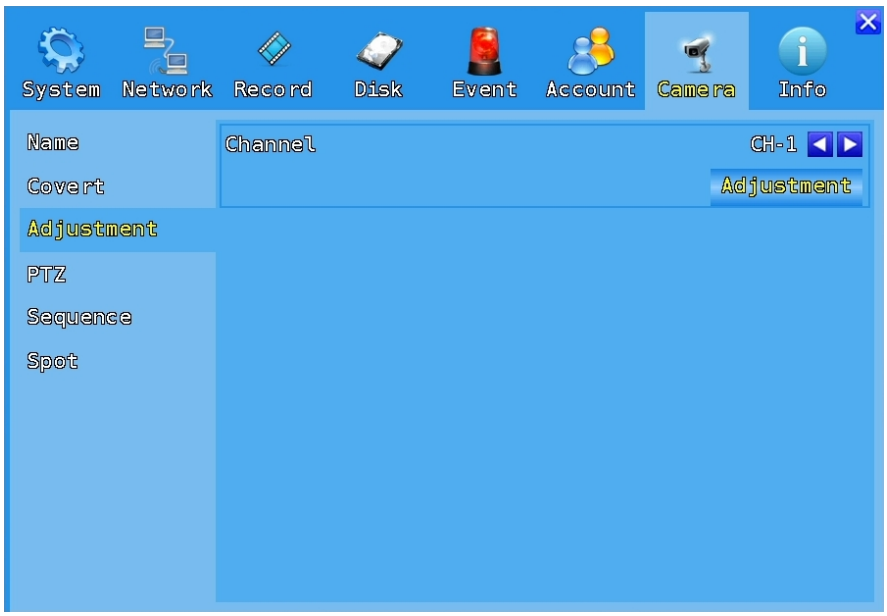

Figure 3.53. Adjustment

Adjust display parameters per channel. Contrast, Brightness, Hue, Vertical sharpness, Horizental sharpness can be adjusted.

3.7.4. PTZ



Figure 3.54. PTZ

Per channel Model, ID, Reverse Control, Baudrate will be set and can be tested. After setting the details user can test whether it works or not before saveing the setting.

3.7.4.1. Channel

Select the channel for PTZ setting.

3.7.4.2. Model

Select the PTZ model.

3.7.4.3. Reverse Control

After installing the equipment, the PTZ equipment moves in the opposite direction. In that situation user can change the operating direction without reinstalling. User just turns on the reverse control function.

3.7.4.4. Baudrate

Set the baud rate. 1200, 2400, 4800 , 9600, 19200, 38400, 57600, 115200 is possible.

3.7.5. Sequence

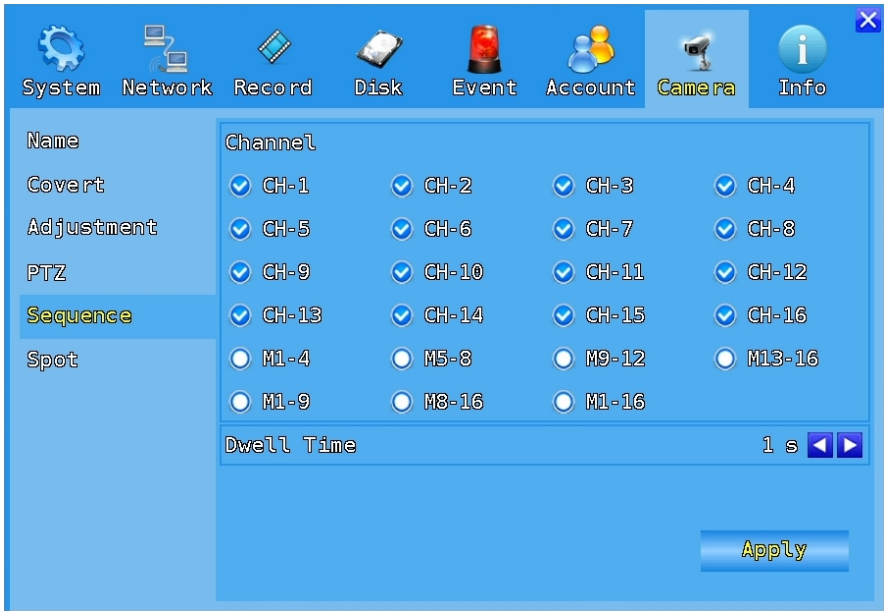

Figure 3.55. Sequence

Automatic screen switch setting.

3.7.5.1. Channel

Single channel (CH-1 ~ CH-16), 4-split screen (M1-4, M5-8, M9-12, M13-16), 9-split screen (M1-9, M8-16), 16 split screen (M1- 16) can be selected for sequential switching.

3.7.5.2. Dwell Time

Set the time interval of the sequence. 1s, 2s, 4s, 5s, 8s, 10s, 15s, 30s can be selected.

3.7.6. Spot



Figure 3.56. Spot

Set the screen output mode. Single, Quad, 9Split, 16Split, Sequence is possible.

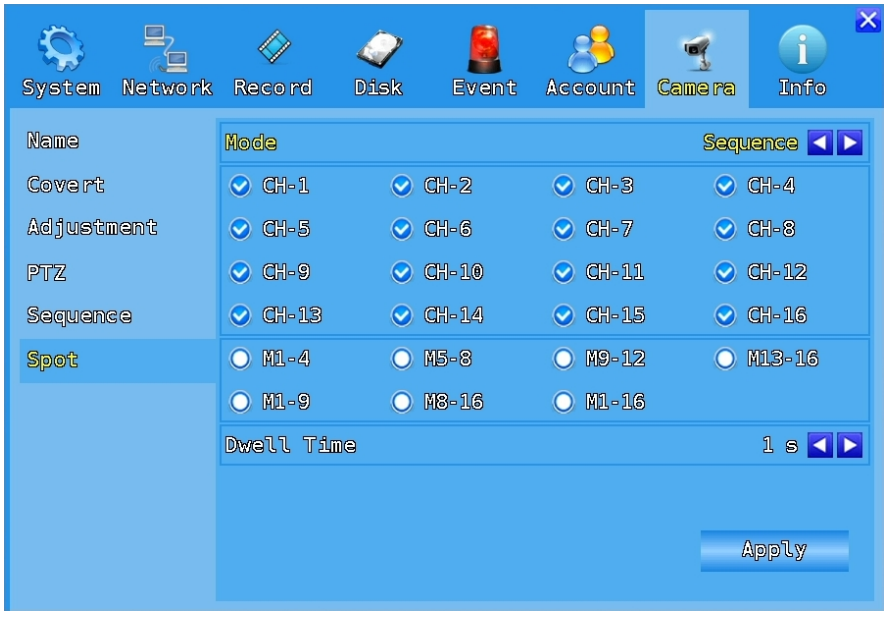

Figure 3.57. Spot Mode Sequence

On sequence mode, the display screen mode and screen switching time can be set.

3.8. Information

3.8.1. Event Log

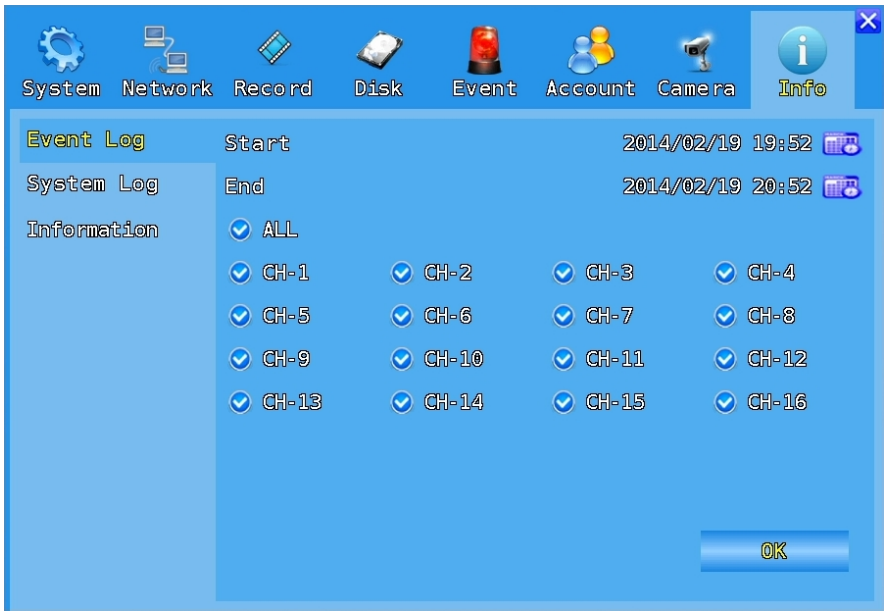

Figure 3.58. Event Log

Related event log shows. Setting the event log search time, the channel can be selected.

3.8.2. System Log

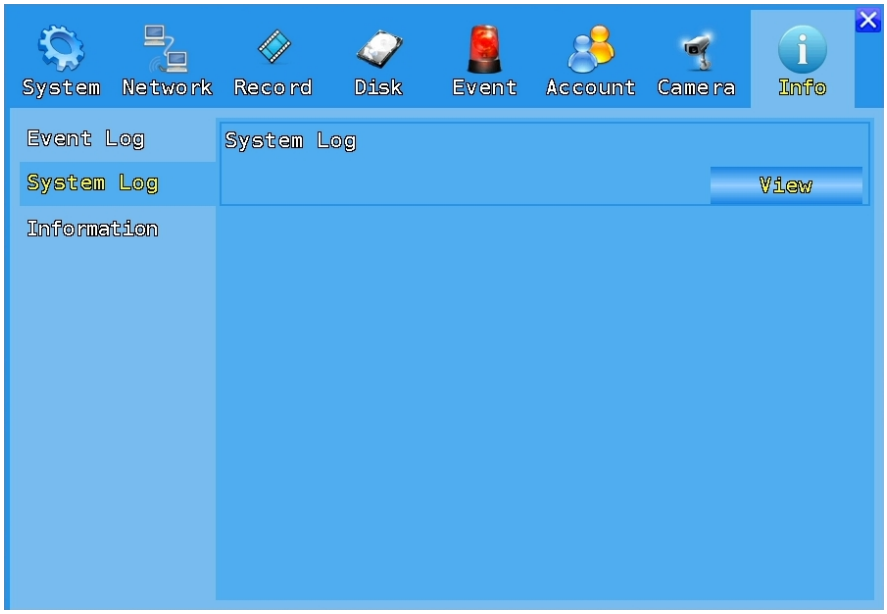

Figure 3.59. System Log

Bring the system log is stored in the DVR.

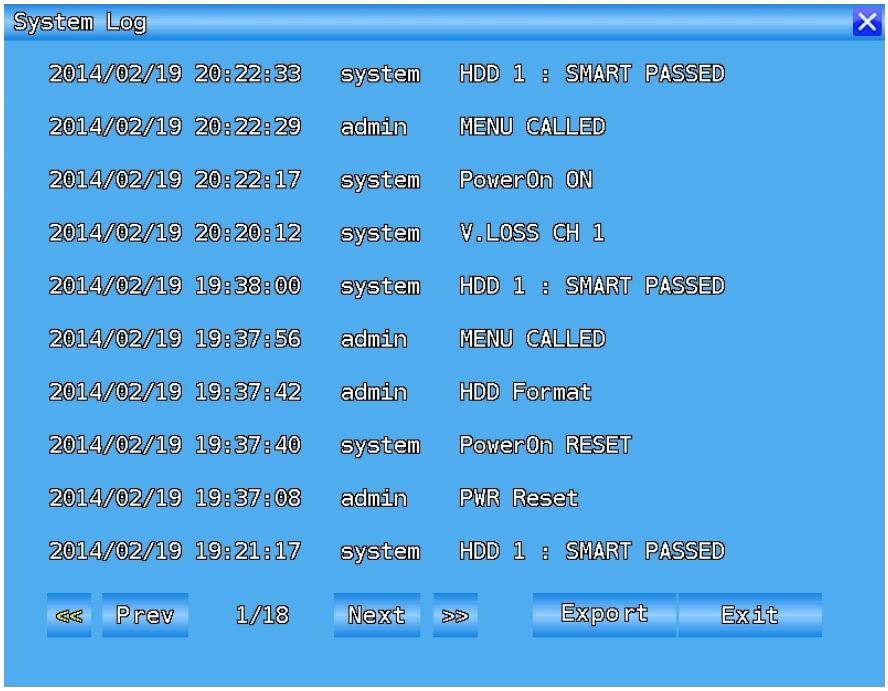

Figure 3.60. System Log List

The system log information is displayed the latest one sequentially. Press the Export button to export the system log information to a USB memory device. The file format is txt file.

3.8.3. Information

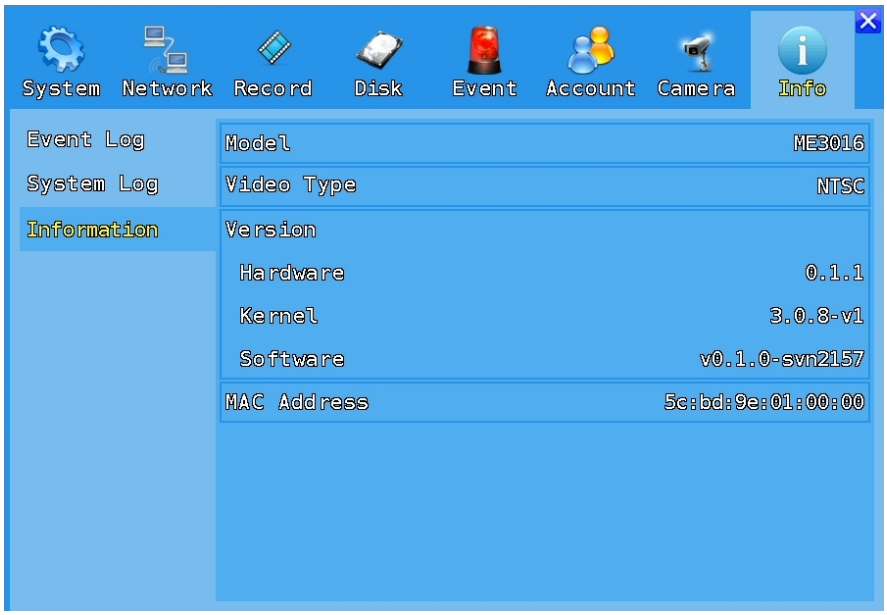

Figure 3.61. Information

Model name, Video type, Version (Hardware, Kernel, Software) information, MAC Address is displayed.

Chapter 4. CMS

4.1. Summary

CMS(Central Management Software) is the program that manages efficiently Multiple DVR through the network. Real-time video monitoring, retrieval and backup of recorded data, configuration functions are provided. Up to 256 channels of video can be monitored simultaneously.

4.2. System requirements

Item	Windows PC	Mac Book
CPU	Intel Pentium 4 / 3.0GHz	Intel Core 2 Duo / 2.2GHz
Main Memory	1GB	2GB
Video Memory	128MB	256MB
Display Resolution	1280 x 1024 (with 32bit color) or higher	1280 x 800 (with 32bit color) or higher
Hard disk	120GB or higher	120GB or higher
OS	Windows XP SP3 or higher	Mac OS X 10.6 or higher
DirectX Version	9.0 or higher	9.0 or higher

Table 4.1. System requirements

4.3. Installing the program

Double click the CMS_VerX.X.X_Setup.exe file in the provided CD or downloaded. CMS icon will be created on your desktop.

4.4. Program

4.4.1. Screen configuration

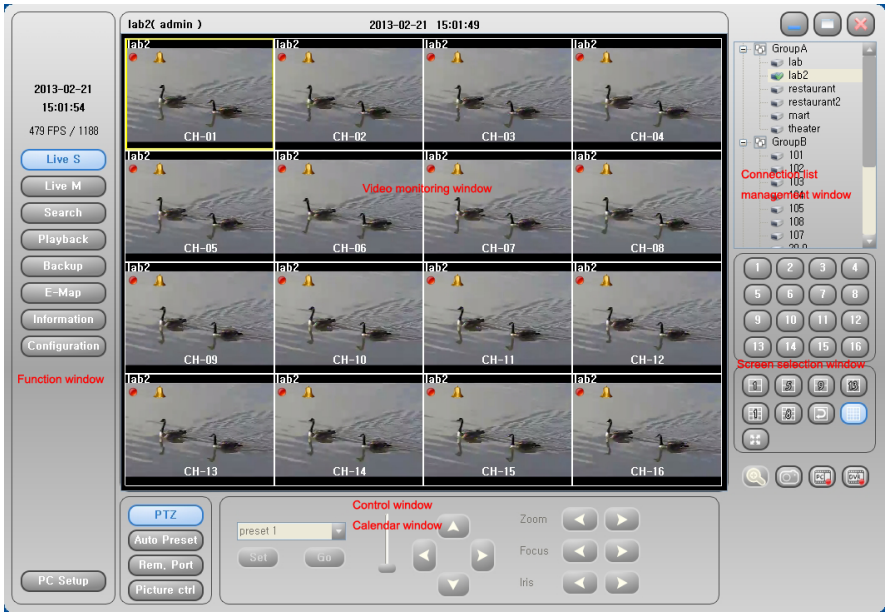

Figure 4.1. Screen configuration

- Function window : LiveS, LiveM, Search, Playback, Backup, E-Map, Information, DVR Configuration, PC Configuration can be selected.
- Video monitoring window : DVR's video shows.
- Connection list management window : Manage the group and DVR using add, modify, and delete function.
- Screen selection window : Select a channel to show on the monitoring window or screen.
- Contol window or calendar window : In LiveS and LiveM mode, PTZ, Preset, remote port control, Video adjustments can be managed. In Playback and Backup mode display a calendar.

4.4.2. LiveS

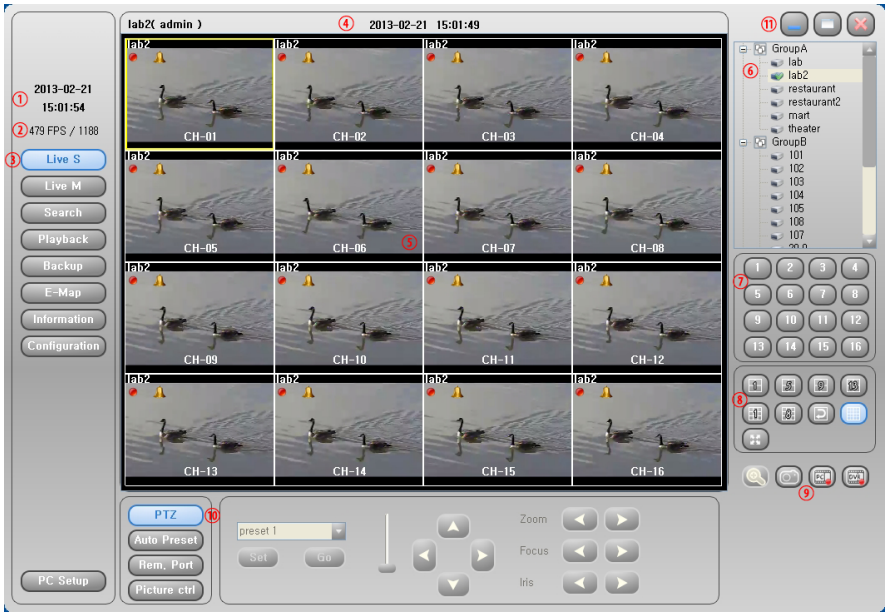

Figure 4.2. LiveS screen description

This mode is for controlling one DVR.

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	No. of frames	Display the number of total frames per second over the network.
3	Function selection	LiveS Icon is displayed in blue when LivsS mode is working.
4	DVR name, account, time	The currently connected client's name, account and the current time of the DVR are displayed.
5	Video monitoring window	Display Currently connected DVR's video.
6	List management window	Add, modify, delete DVR list. When you click the right mouse button, pop up a window displaying Disconnect, Add group, Modify group, Delete group, Add DVR, Modify DVR, Delete DVR.
7	Channel selection button	If you select a channel, the selected channel is displayed on full screen.
8	Screen configuration	Displaying mode that is 4-split(1-4, 5-8, 9-12, 13-16), 9-split(1 ~ 9, 8 ~ 16), Sequence, 16-split , FULL Screen(video only) can be selected.
9	Function	Zoom, Capture, Record PC ON/OFF, record DVR control button.
10	Control button	PTZ Control, Auto Preset, remote port, video control buttons. On PTZ control mode, Preset set and run, Pan/Tilt control(4step speed

No.	Name	Function
		control), Zoom, Focus, Iris can be controlled. On Auto Preset mode, After selecting the start preset, stop preset and the time intervals, it moves between presets during designated interval. The relay of the DVR can be controlled automatically(time selectable) or manually. The video adjustment function can adjust contrast, brightness and sharpness.
11	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.2. LiveS screen description

4.4.3. LiveM



Figure 4.3. LiveM screen description

Multiple DVR control mode. Up to 256 channels that is divided into 4 pages cofigured by 64 channels can be managed.

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	No. of frames	Display the number of total frames per second transmitted over the network.
3	Function selection	LiveM Icon is displayed in blue when it is selected.
4	DVR name, account	Display the currently connected client's name and account.
5	Video monitoring window	Display Currently connected DVR's video.
6	List management window	Add, modify, delete DVR list. When you click the right mouse button, pop up a window displaying Disconnect, Add group, Modify group, Delete group, Add DVR, Modify DVR, Delete DVR.
7	Screen configuration	2x2, 3x3, 4x4, 5x5, 6x6, 7x7, 8x8, FULL Screen(video only), move previous page, move next page button can be selected.

No.	Name	Function
8	Function	Zoom, Capture, Record PC ON/OFF, record DVR control button.
9	Control button	PTZ Control, Auto Preset, remote port, video control buttons. PTZ control mode, Preset set and run, Pan/Tilt control(4step speed control), Zoom, Focus, Iris can be controlled. On the Auto Preset mode, After selecting the start preset, stop preset and the time intervals, it moves between presets during designated interval. The relay of the DVR can be controlled automatically(time selectable) or manually. The video adjustment function can adjust contrast, brightness and sharpness.
10	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.3. LiveM screen description

4.4.4. Search

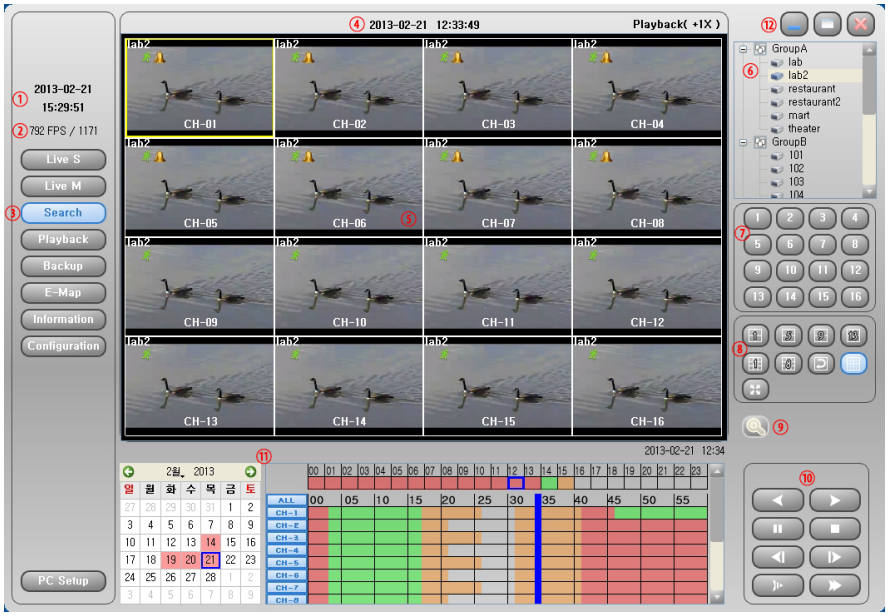

Figure 4.4. Search screen description

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	No. of frames	Display the number of total frames per second transmitted over the network.
3	Function selection	Search Icon is displayed in blue when it is selected.
4	DVR name, accout, time, speed of playback	Display the currently connected DVR's name, account, time and playback speed.
5	Video monitoring window	Display the currently connected DVR's playback pictures.
6	List management window	Add, modify, delete DVR list. When you click the right mouse button, pop up a window displaying Disconnect, Add group, Modify group, Delete group, Add DVR, Modify DVR, Delete DVR.

No.	Name	Function
7	Channel selection button	If you select a channel, the selected channel is displayed on full screen.
8	Screen configuration	Displaying mode that is 4-split(1-4, 5-8, 9-12, 13-16), 9-split(1 ~ 9, 8 ~ 16), Sequence, 16-split , FULL Screen(video only) can be selected.
9	Zoom button	Digital zoom function is available at one channel mode
10	Playback related button	Reverse, Playback, Pause, Stop, Move backward one frame, Move forward one frame, Slow playback, Fast playback button.
11	Calendar	Recorded data is displayed on the calendar. Use the scroll bar up to 16 channels of recording data can be found at once. Recorded data is displayed in a different color. Red(Manual or Continuous record), Green(Motion record), Orange(Sensor record). All channels or specific channels can be selected using ALL button, CH-1 ~ CH-16 button. The selected channel will be playbacked.
12	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.4. Search screen description

4.4.5. Playback

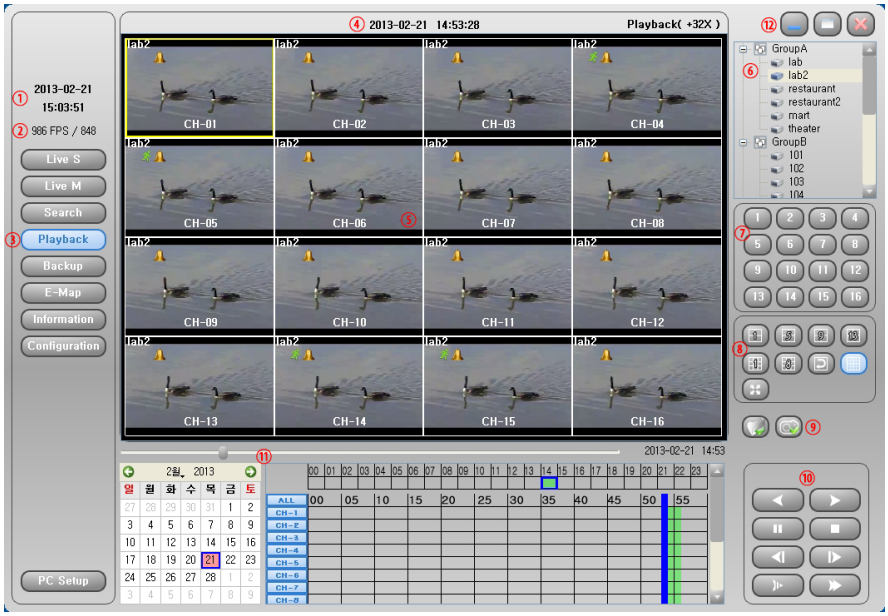

Figure 4.5. Playback screen description

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	No. of frames	Display the number of total frames per second transmitted over the network.
3	Function selection	Playback Icon is displayed in blue when it is selected.
4	DVR name, accout, time, speed of playback	Display the currently connected DVR's name, account, time and playback speed.

No.	Name	Function
5	Video monitoring window	Display the currently connected DVR's playback pictures.
6	List management window	Add, modify, delete DVR list. When you click the right mouse button, pop up a window displaying Disconnect, Add group, Modify group, Delete group, Add DVR, Modify DVR, Delete DVR.
7	Channel selection button	If you select a channel, the selected channel is displayed on full screen.
8	Screen configuration	Displaying mode that is 4-split(1-4, 5-8, 9-12, 13-16), 9-split(1 ~ 9, 8 ~ 16), Sequence, 16-split , FULL Screen(video only) can be selected.
9	Folder open and capture button	It is folder open button to playback the stored video on the PC. Image can be captured in the middle of playback using the capture botton.
10	Playback related button	Reverse, Playback, Pause, Stop, Move backward one frame, Move forward one frame, Slow playback, Fast playback button.
11	Calendar	Recorded data is displayed on the calendar. Use the scroll bar up to 16 channels of recording data can be found at once. Recorded data is displayed in a different color. Red(Manual or Continuous record), Green(Motion record), Orange(Sensor record). All channels or specific channels can be selected using ALL button, CH-1 ~ CH-16 button. The selected channel will be playbacked.
12	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.5. Playback screen description

4.4.6. Backup

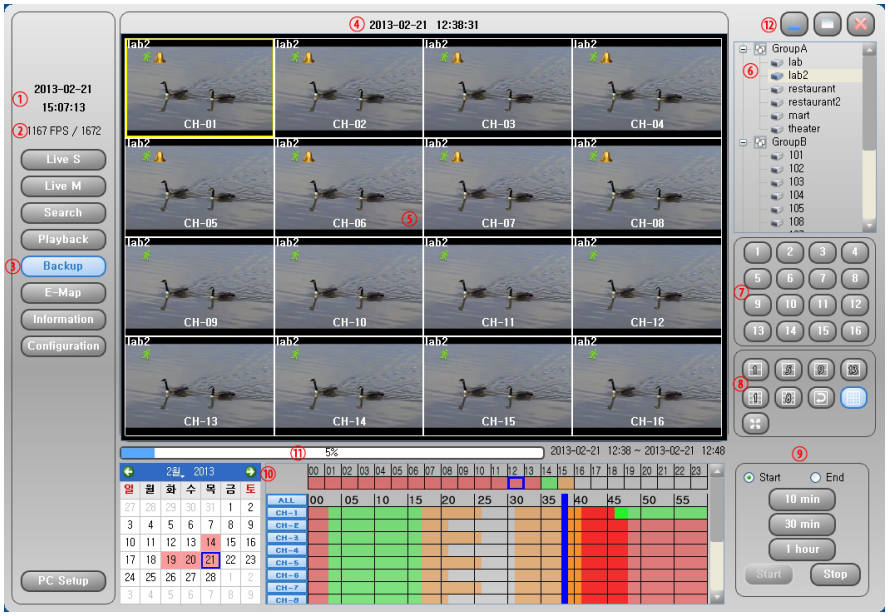

Figure 4.6. Back screen description

No.	Name	Function
1	Computer's time	Computer time is displayed.

No.	Name	Function
2	No. of frames	Display the number of total frames per second transmitted over the network.
3	Function selection	Backup Icon is displayed in blue when it is selected.
4	DVR name, account	Display the currently connected client's name and account.
5	Video monitoring window	Display the currently connected DVR's playback pictures.
6	List management window	Add, modify, delete DVR list. When you click the right mouse button, pop up a window displaying Disconnect, Add group, Modify group, Delete group, Add DVR, Modify DVR, Delete DVR.
7	Channel selection button	If you select a channel, the selected channel is displayed on full screen.
8	Screen configuration	Displaying mode that is 4-split(1-4, 5-8, 9-12, 13-16), 9-split(1 ~ 9, 8 ~ 16), Sequence, 16-split , FULL Screen(video only) can be selected.
9	Backup related button	When you click the mouse left or right button on the calendar, a blue bar will be displayed. In the state, select start or end radio button and select a time button(10 minutes, 30minutes, 1 hour). Then amount of time selected data is displayed in dark red. If start radio button is checked, the blue bar is a starting point. If end radio button is checked, the blue bar is a ending point. Press the start button to backup. If you press the stop button, backup operation will be stoped.
10	Calendar	Recorded data is displayed on the calendar. Use the scroll bar up to 16 channels of recording data can be found at once. Recorded data is displayed in a different color. Recorded in the data is displayed as a red zone. All channels or specific channels can be selected using ALL button, CH-1 ~ CH-16 button. The selected channel will be backed up.
11	Backup progress bar	Display backup progress status.
12	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.6. Back screen description

4.4.7. E-Map



Figure 4.7. E-Map screen description

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	Function selection	View, Modify, Setup, Exit function button. Button is displayed in blue when it is selected. In the view Mode, User's monitoring E-Map. User can modify Map and Camera in the Modify Mode. In the Setup mode, User can select whether to pop-up, the duration time of Pop-down, image size.
3	E-Map display window	Display map and images.
4	Camera icon	Display the location of camera on the map.
5	Video monitoring window	Camera images are displayed.
6	List of map management window	Add, modify and delete the list of Map.
7	Camera log display window	Display information of camera on the map.
8	Log save button	Save the log information about the camera on the map.
9	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.7. E-Map screen description

4.4.8. Information

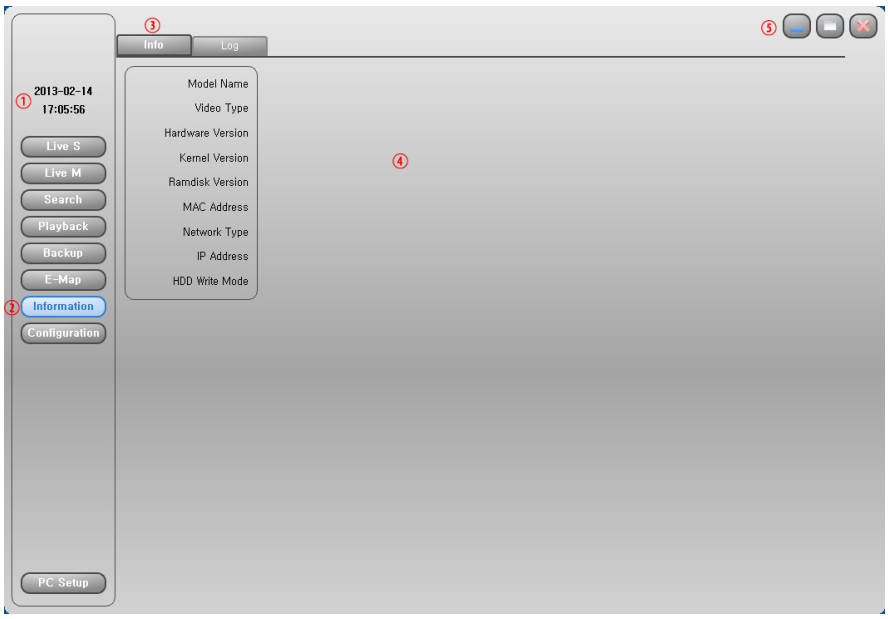

Figure 4.8. Information

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	Function selection	Information Icon is displayed in blue when it is selected.
3	Group selection window	Group selection window for confimation of DVR. Info, Log group selection is possible.
4	Information display window	Displayy the information and system log of DVR.
5	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.8. Information screen description

4.4.9. DVR Configuration

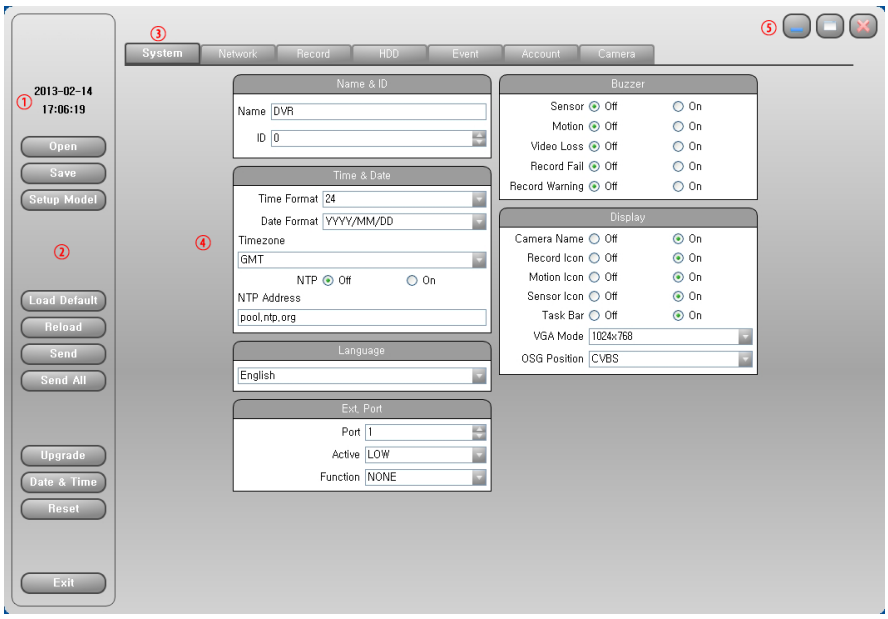

Figure 4.9. DVR Configuration screen description

No.	Name	Function
1	Computer's time	Computer time is displayed.
2	Function selection	Open(Open setup parameters), Save(Save setup parameters), Setup Model(Select NTSC/PAL), Load Default(Load default parameters), Reload(Reload DVR parameters), Send(Send to DVR current selected tap parameters), Send All(Send to DVR whole parameters), Upgrade(Upgrade Kernel or Application program), Date&Time(Change Date&Time), Reset, Exit(Exit Configuration)
3	Group selection window	Group selection window for configuraton. System, network, recording, hard disk, events, accounts, cameras can be selectable.
4	Configuration display window	Display the configuration values of selected group.
5	Program window control button	Program window minimize, maximize and close buttons. In particular, the Maximize button maximize not only the video, but also including all function buttons, so user can control all functions at the maximized window.

Table 4.9. DVR Configuration screen description

4.4.10. PC configuration

Set the CMS program-related setting.

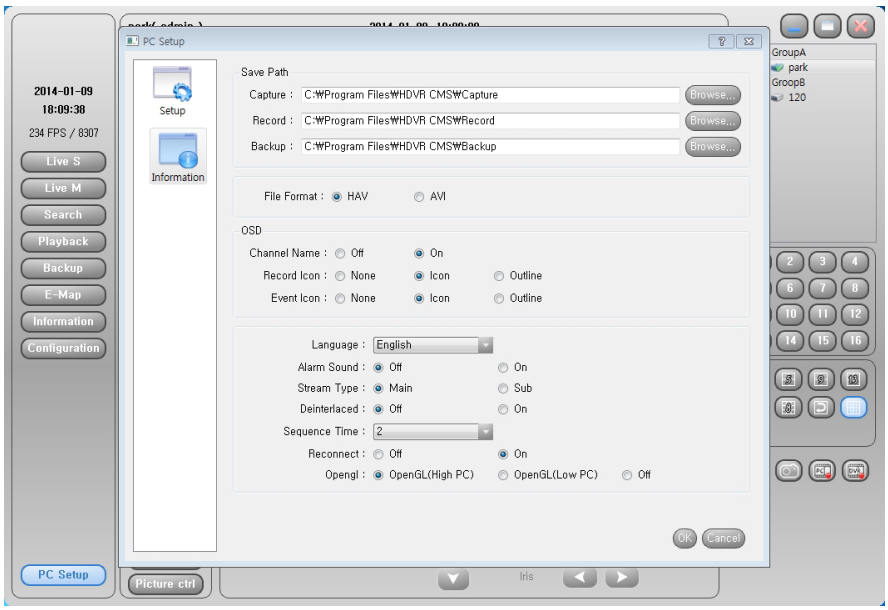

Figure 4.10. PC configuration screen description

- Save path : Set the saving location of Captured Still images, Recording, Backup for CMS.
- File format : Select the file format for recording and backup. HAV, AVI can be selected.
- OSD : Whether to display the channel name, recording the visibility and appearance of the icon, event visibility and appearance of the icon sets.
- Language: Select the language to use.
- Alarm sound : Select whether to turn on / off the sound of the alarm.
- Stream Type: Select the type of network transmission stream. Main, Sub can be selected.
- Deinterlaced : Video output Deinterlaced choose whether to apply.
- Sequence time : Select the time interval for sequence. 2, 4, 5, 8, 10, 15, 30secs can be selected.
- Reconnection : If network connection is failed, select whether to automatically reconnect.
- Opengl : Select whether using Opengl function of graphic card of the PC or not. Select the appropriate setting because setting option affects the quality of image and performance of the CMS program.

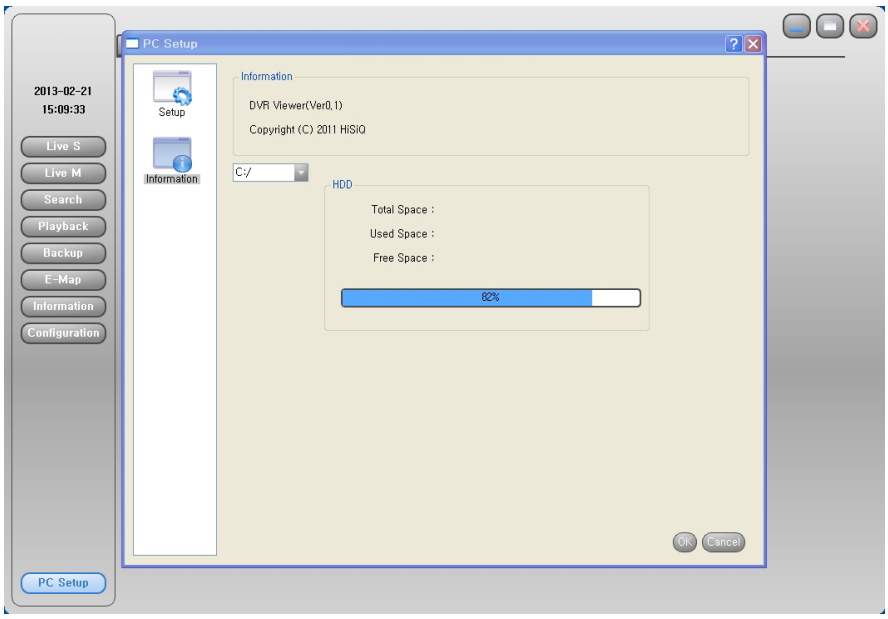

Figure 4.11. PC configuration information screen description

Display the program version information and the computer's storage device information.

Chapter 5. Mobile

5.1. Summary

Provide Real-time video monitoring, recorded video search function using a smart phone.

5.2. Installing the program

5.2.1. Adroid phone

Install the app using android market or download AVMS.apk file and copy it to the smart phone. after that install AVMS app to your smart phone.

5.2.2. iPhone

After connecting App Store, enter IVMS on the search menu. If you press FREE button, It turns INSTALL button. Press INSTALL button to install.

5.3. Program

5.3.1. Execution

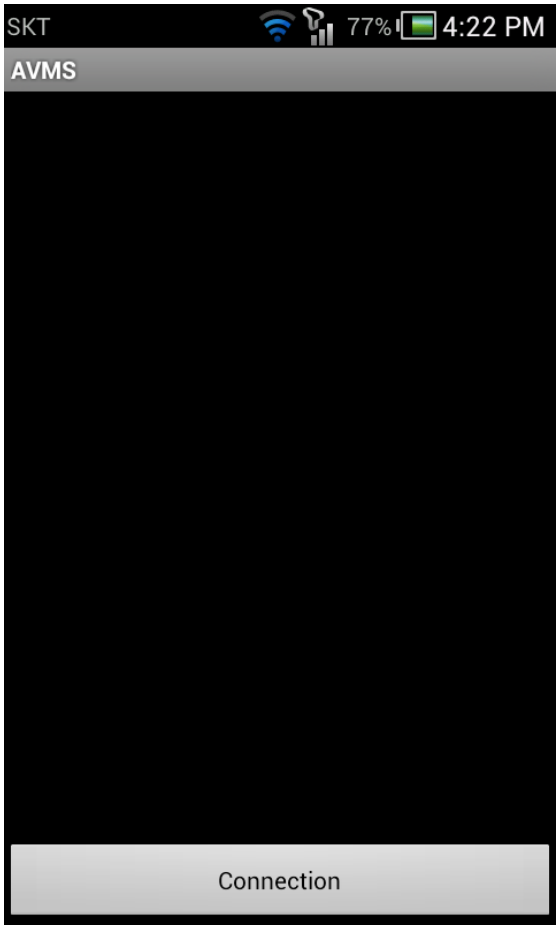

Figure 5.1. Execution screen

When you run the application AVMS, above screen will be displayed.

5.3.2. DVR List Management menu

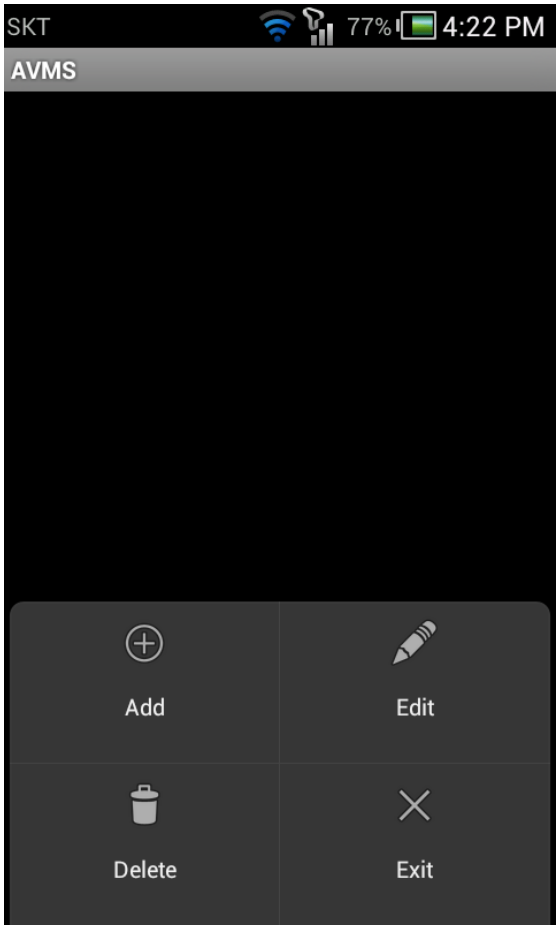

Figure 5.2. DVR List Management menu

If you press the menu button, DVR's list management menu will pop up at the bottom of the screen. There are buttons for Add, Edit, Delete, Exit.

5.3.2.1. Add

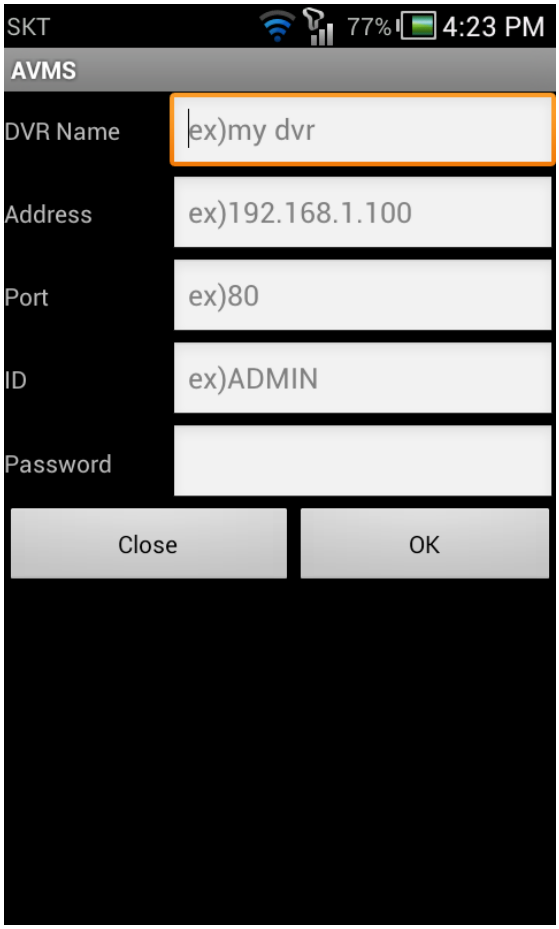

Figure 5.3. DVR list Add

After clicking the Add button, enter the information of DVR which you want to Add. Press OK button, the DVR will be added on the list.

5.3.2.2. Modify

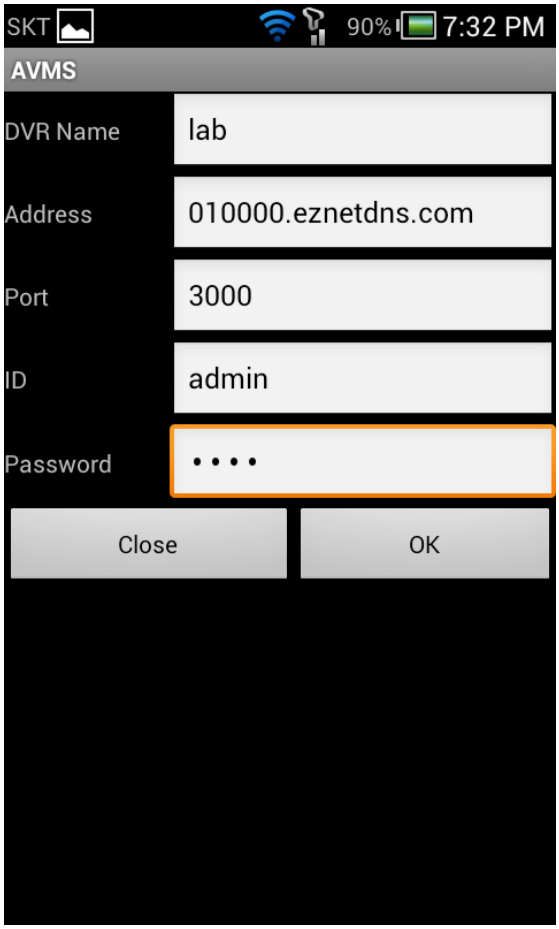

Figure 5.4. DVR list Modify

Press the Edit button to edit the information of the selected DVR.

5.3.2.3. Delete

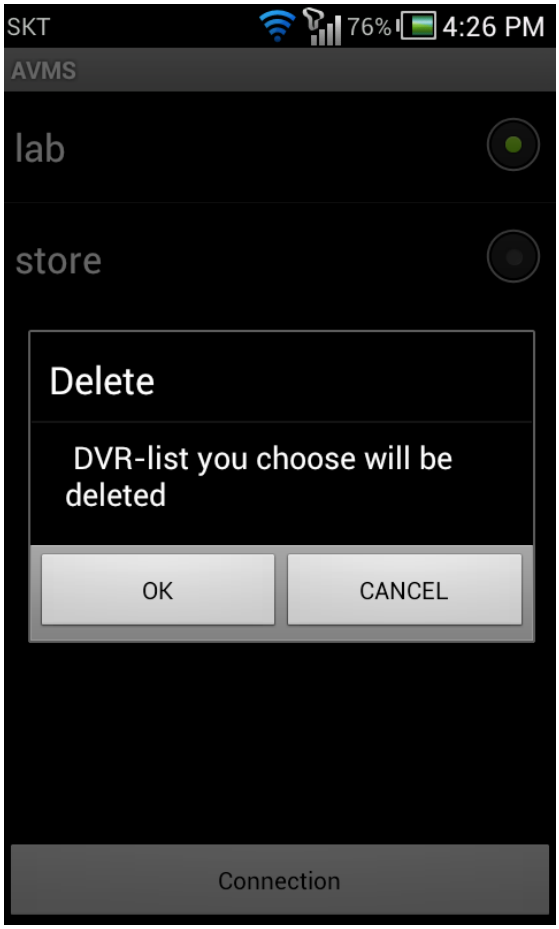

Figure 5.5. DVR list Deletion

Press the Delete button to delete the selected DVR on the list. Clicking OK on the confirmation message completes the deletion.

5.3.3. Connection

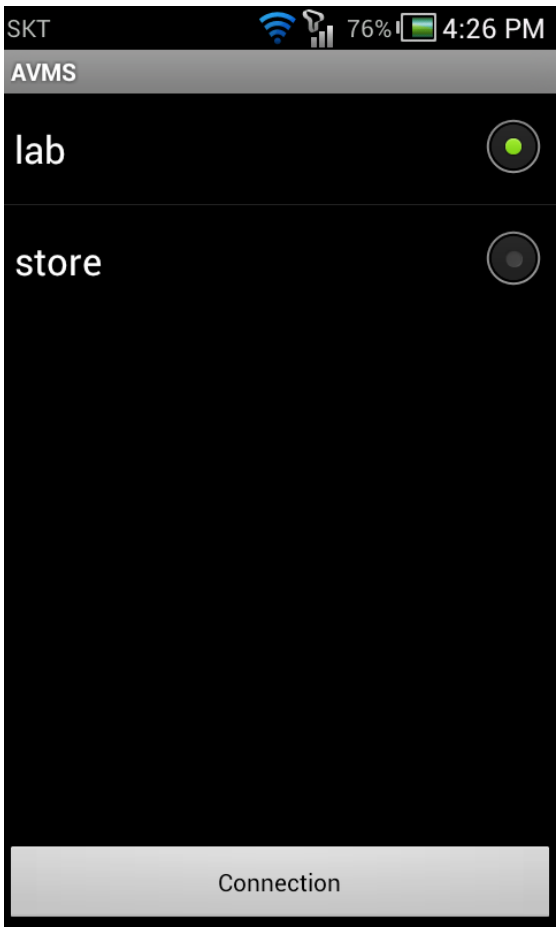

Figure 5.6. Connection

After selecting the DVR from the list, press the Connection button, then DVR will be connected.

5.3.4. Screen configuration

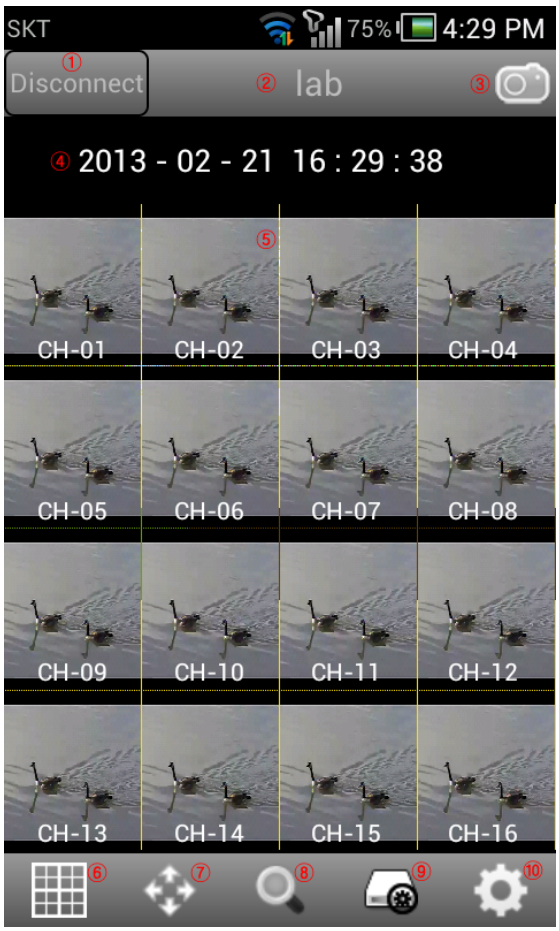

Figure 5.7. Screen configuration

DVR Connection screen.

No.	Name	Function
1	Disconnect	Disconnection button.
2	DVR name	Display the name of the connected DVR.
3	Capture	Image capture button.
4	DVR time	Display the currently connected DVR's time.
5	Video monitoring window	Display Currently connected DVR's video.
6	Screen mode selection menu	Select the Split Screen.
7	PTZ control	PTZ control menu button. It only works at single screen mode.
8	Search button	Recorded video search button.
9	Relay control button	DVR relay control button.
10	Confuguration button	Preferences setting button.

Table 5.1. Screen configuration

5.3.5. Screen mode selection menu

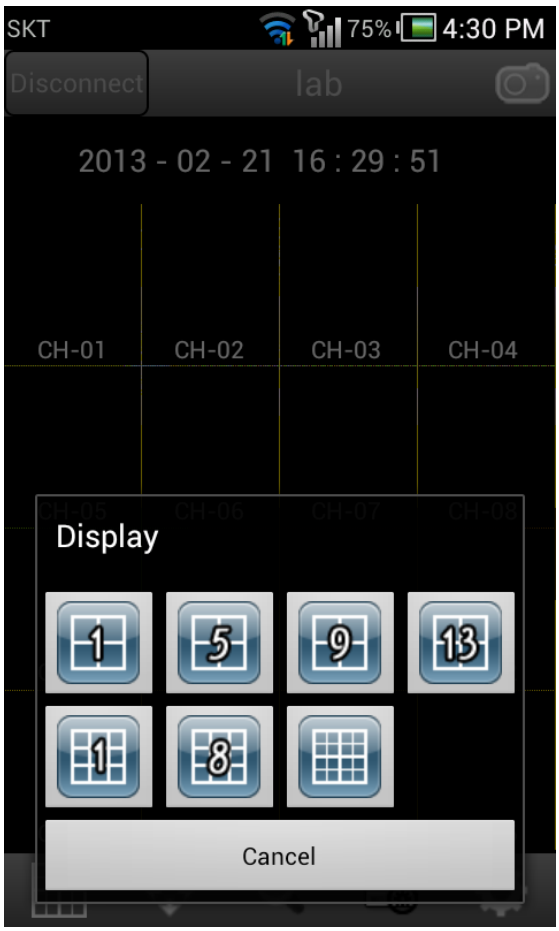

Figure 5.8. Screen mode selection menu

Select screen mode. 4-split, 9-split, 16-split can be selected.

5.3.6. PTZ control

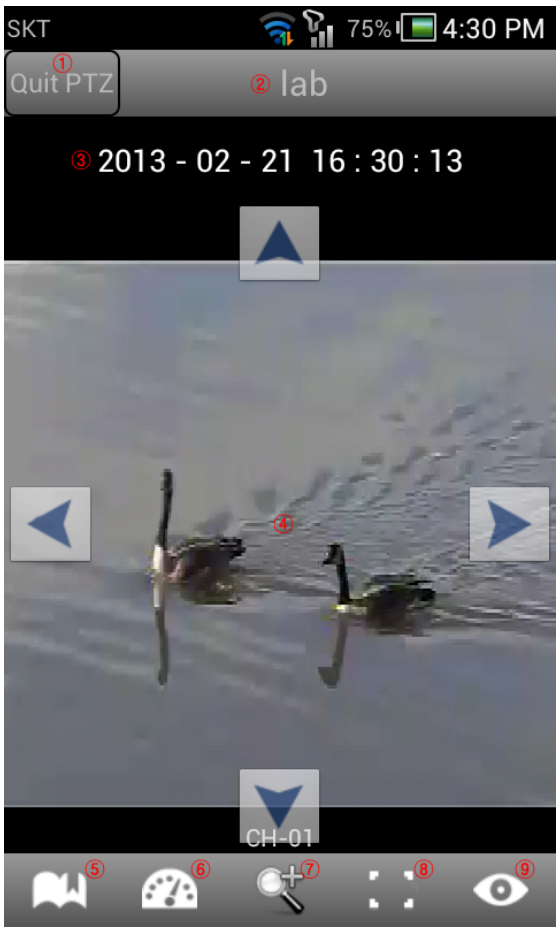

Figure 5.9. PTZ control screen description

No.	Name	Function
1	Quit PTZ	Exit PTZ control mode button.
2	DVR name	Display the name of the connected DVR.
3	DVR time	Display the currently connected DVR's time.
4	Video monitoring window	Display Currently connected DVR's video.
5	Preset	Associated preset button. Set, Run, Delete can be selected .
6	PAN/TILT speed selection	Pan/Tilt speed control button. Slow, Middle, High, Very High 4 -step selection is possible.
7	Zoom	Zoom control button
8	Focus	Focus control button
9	IRIS	Iris control button

Table 5.2. PTZ control screen configuration

5.3.7. Search menu

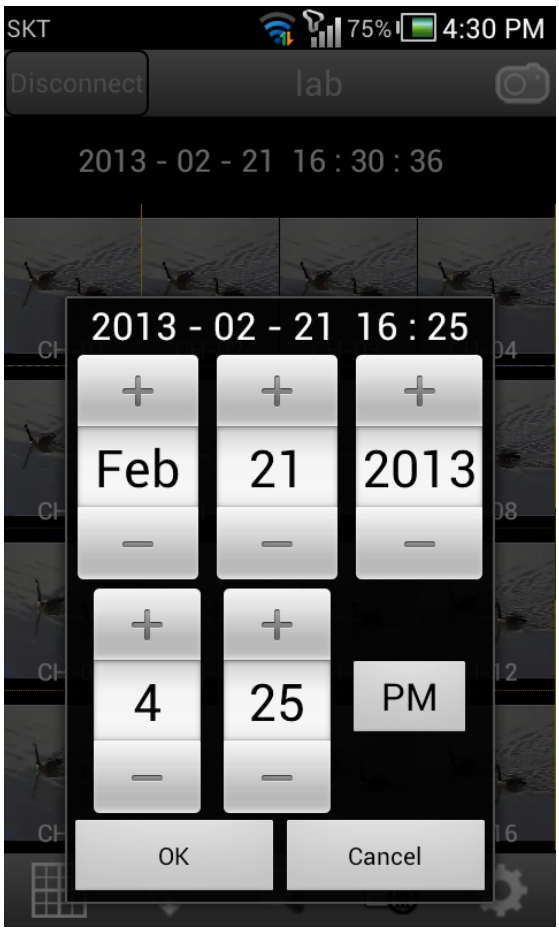

Figure 5.10. Search menu

Press the OK button after selecting the time to search, the playback screen will be displayed.

5.3.8. Playback screen

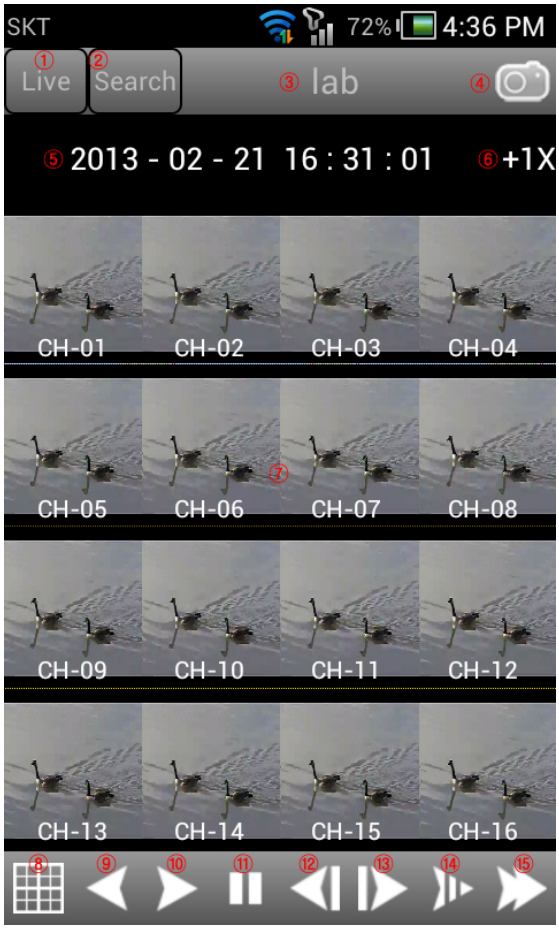

Figure 5.11. Playback screen description

No.	Name	Function
1	Live	Live mode toggle button.
2	Search	Search mode toggle button.
3	DVR name	Display the name of the connected DVR.
4	Capture	Image capture button.
5	DVR time	Display the currently connected DVR's time.
6	Display speed of playback	Display playback speed.
7	Video monitoring window	Display playback video
8	Screen mode selection menu	Select the Split Screen.
9	Reverse Playback	Reverse playback button.
10	Playback	Playback button
11	Pause	Pause button
12	Move backward one frame button	Move backward one frame button
13	Move forward one frame button	Move forward one frame button

No.	Name	Function
14	Slow playback (x1/4 ~ x1/2)	Slow playback button. x1/4, x1/2 can be selected.
15	Fast playback (x2 ~ x256)	Fast playback button. x2 ~ x256 can be selected.

Table 5.3. Playback screen configuration

5.3.9. Remote control

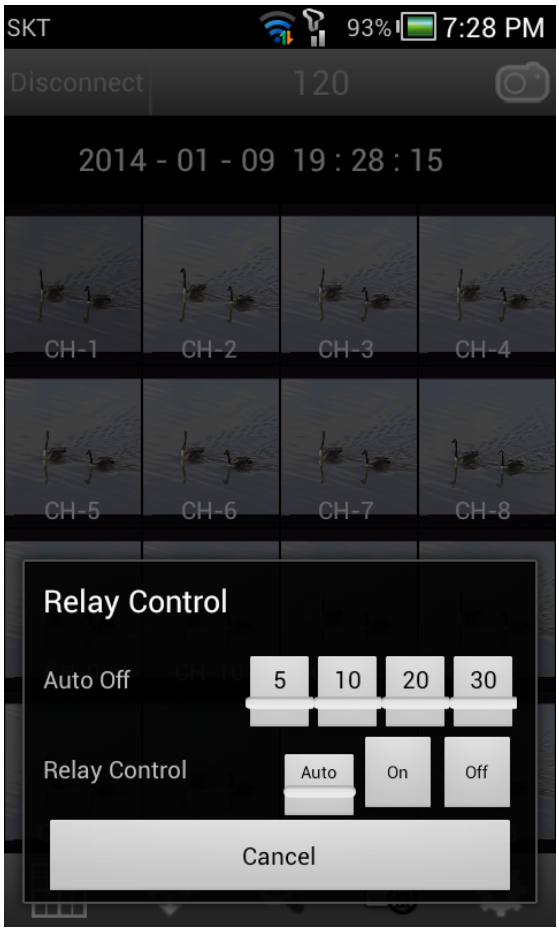

Figure 5.12. Remote control

DVR relay control window. Auto(Port is off automatically after selected seconds pass by) or Manual contol is possible.

5.3.10. Setup

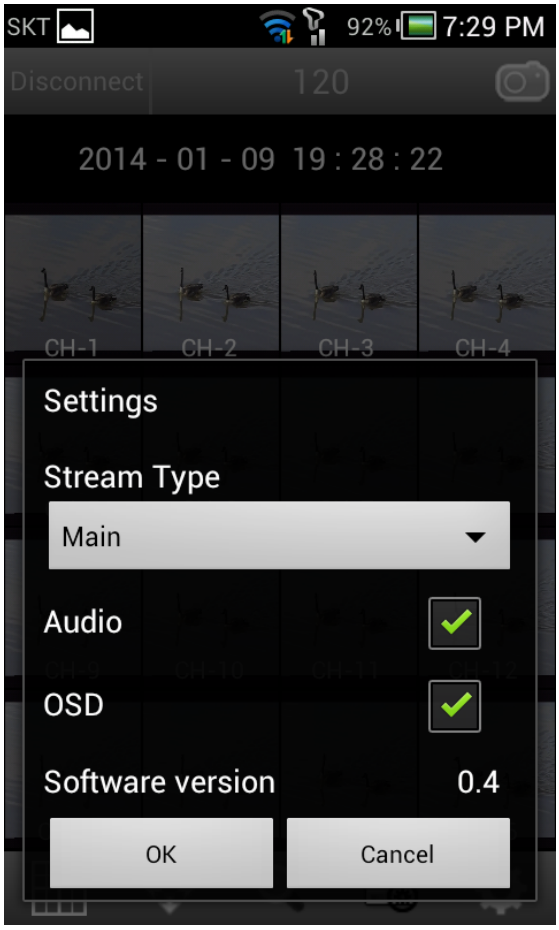

Figure 5.13. Setup

Preferences menu for application. Network stream types(Main, Sub), Audio ON/OFF, OSD visibility can be selected.

5.3.11. Landscape view

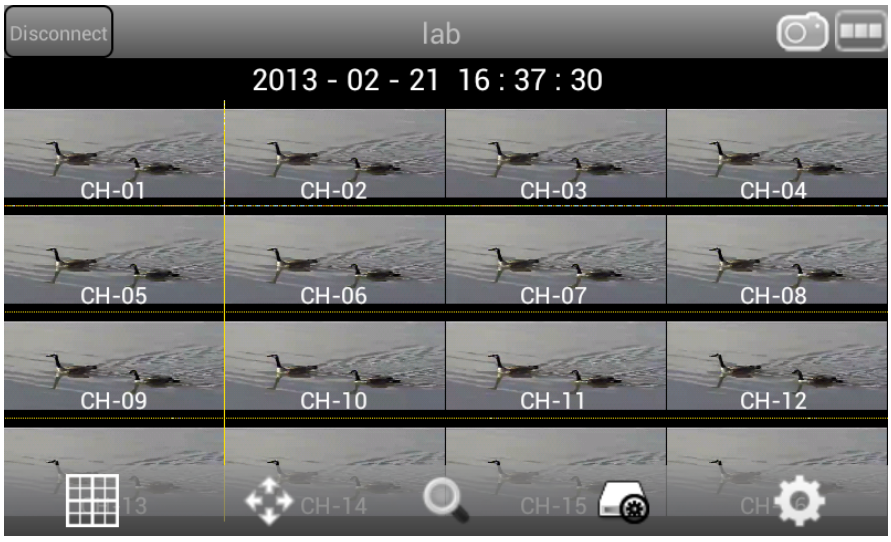

Figure 5.14. Landscape view

Support landscape view. In landscape view cellular phone's status bar is not displayed and the bottom menu is toggled by menu button in order to use the video monitoring screen widely.

Appendix A. Emergency recovery

A.1. Summary

Put specific name of files on a USB memory. Turn on the DVR. While booting, DVR copies the file and replace the corrupted file by new one. Use this procesure when DVR does not work because of power outage during the program upgrade.

A.2. Preparation

- Download three files(bootloader, kernel, application) from the homepage. The name of downloaded files should be changed as shown below.
- Bootloader : me30XXboot_restore.bin (XX : 04(4ch), 08(8ch), 16(16ch))
- Kernel : me30XXkernel_restore.bin (XX : 04(4ch), 08(8ch), 16(16ch))
- Application : me30XXapp_restore.bin (XX : 04(4ch), 08(8ch), 16(16ch))
- Copy the files to a USB memory. Copy the bootloader file to recover bootloader, copy the kernel file to recover kernel or copy the applicaton file to recover application program. If you want to recover all of them, then copy 3 files to the USB memory.

A.3. Execution

USB memory stick plugged in to the DVR power on, If there is an emergency recovery files on the USB memory, DVR proceeds with the emergency recovery process.

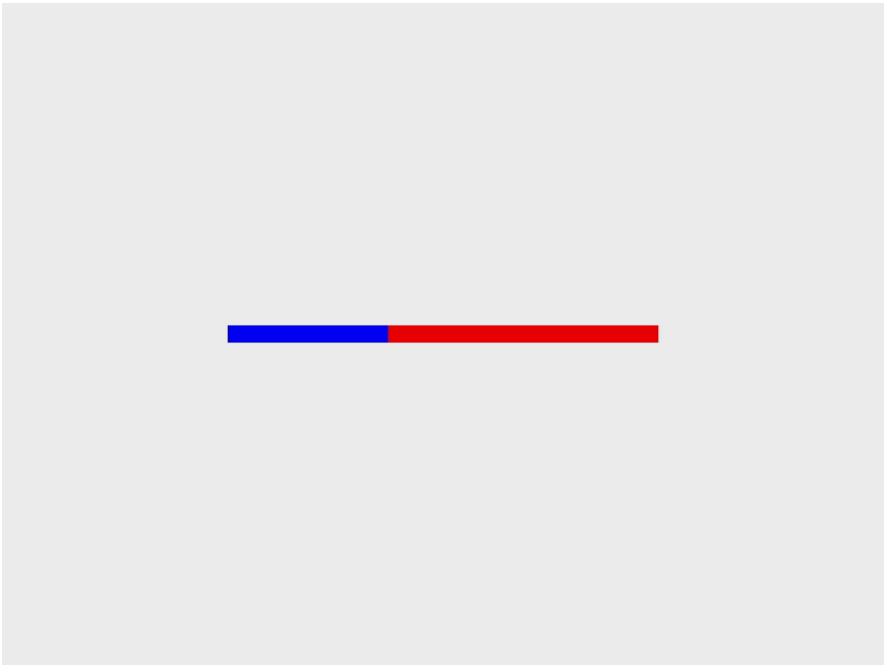

Figure A.1. Emergency recovery progress bar

The bootloader, kernel or application program is recovered while displaying a progress bar. If you recover all of them, the progress bar is displayed three times. The progress bar is displayed to inform the state of recovery bootloader, kernel and application program in series.



Figure A.2. Complete an Emergency recovery

- After the recovering is successfully finished, booting logo is displayed and automatically boots.
- After the completion of the booting process, you can confirm the version of the file in the infomation window whether to be upgraded properly or not.