Network Video Recorder

User's Manual

NVST IP6800-32
NVST IP6816E-32
NVST IP6832E-32

Thank you for using our product.

1. This is user's manual for NVR(Network Video Recorder).

2. This manual contains product specification and introduction, installation guide, operating guide and other necessary matters for easy understanding. Users should read this user's manual carefully for proper use.

3. Contents in this manual may be changed according to the specification change and feature improvement without any notification.

4. This user's manual shall never be copied without prior agreement and violating this may be a reason for legal punishment on piracy.

5. If there is any incorrect or insufficient content in this user's manual, notify it to Customer Support Center.

Contents

CH 1. Product Introduction

CH 2. Installation Guide and Cautions

CH 3. How to Use

Contents

CH1. Product Introduction

1-1. Product Contents

After removing packing materials of this product, check whether all following contents are included.

Main Body (NVR):
This converts the analog video and audio signal to the digital signal and saves on HDD.

Power cable:
This is a power cable to the product.

MOUSE:
This is an controller for convenience.

Remote Controller:
This is an IR remote controller for convenience.

Battery:
These are 2(two) battery for the remote controller.

1-2. Product Characteristics

1) High quality picture
This enables recording and playing high quality digital image.

2) High reliability
With Embedded hardware and software design, this maintains higher product reliability.

3) Simple usage
This allows users to use it conveniently by placing control buttons similar to existing
 ones on VCR, and users can easily learn the usage.

4) Pentaplex System
Pentaplex System allows live, recording, backup, networking and playback simultaneously.

5) Selectable recording setup
For recording methods, users can select the frame rate, resolution and video quality individually in order to be appropriate for user's environment.

6) Remote monitoring
With using exclusive line or Internet network, you can search or monitor recorded images remotely by installing exclusive client program on Windows PC or Mac.

7) Backup
You can backup with a versitile external USB devices.

8) Audio recording
You can record all sound inputs simultaneously. Moreover, you can listen to the sound in search and live monitoring and play mode.

9) Various recording methods
This provides convenient use with manual recording, recording by dates and days, hourly schedule recording, sensor and motion detection event recording and others to enable unmanned monitoring.

10) Various total monitoring features
You can cover any security scenario through various sensor inputs and contact output control.

11) Display information in easy-to-understand information method
This enhanced convenience of user by displaying information (date, time, recording method, recording frame number, HDD capacity and others) in monitoring, recording and playing mode in easy-to-understand way.

12) P/T/Z control
By built in RS485, various P/T/Z cameras can be used.

13) Dual CODEC for video transmission
NVR can send 120 fps (based on CIF) regardless of the local recording and viewing setup regardless with recording setup.

14) Web browser support
You can monitor and playback the video and control the PTZ camera by internet explorer.

15) Built in S.M.A.R.T.
You can automatically check the health of the hard disk drives.

16) Language pack
Basically NVR has multiple language set, furthermore you can choose the language set if you want.

17) Touch LED Switch
You can operate with touch LED switch in front panel.

18) HD Spot out
You can use one of HDMJI to the HD spot.

1-3. Name of Each Part

[Front Panel]
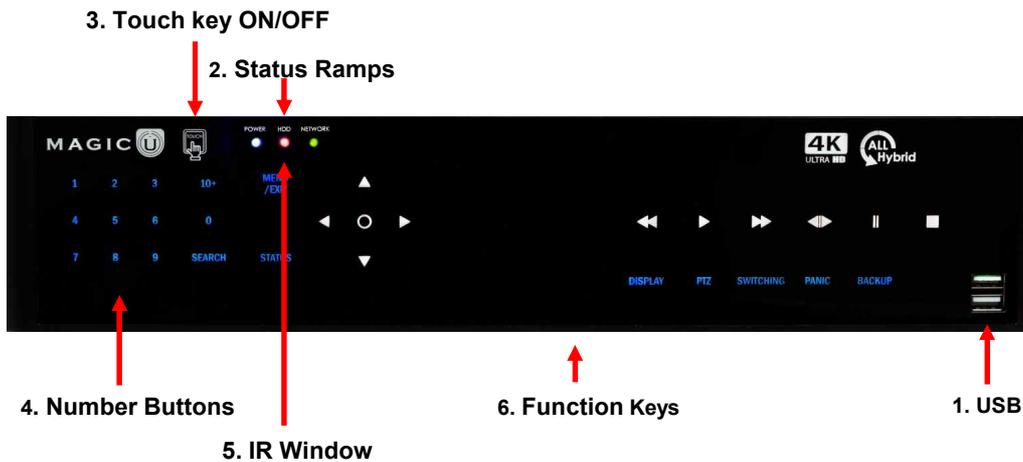
1. **USB ports** : These USB ports are for mouse and USB devices.

2. **Status lamps**
   POWER : Blue color back light. Power indicator.
   HDD : Red. Indicate the recording.
   NETWORK : Green. Lit on connecting the network

3. **Touch Key ON/OFF**

4. **Number buttons** : If you press this button, it will be changed to full screen in live viewing or playback If you want to go to 20ch, push the 10+ button twice.

5. **IR Window** : the window for remote controller

6. **Function keys**
   1) MENU/EXIT : It will move to the setup screen from the live mode or exit without saving, press this button.
   2) SEARCH : It will change to the playback mode from the live mode.
   3) DISPLAY : It will change the screen splitting sequentially. It can be adapted both live and play mode.
   4) SWITCHING : It will change to switching mode except 20 splitting.
   5) PTZ : It will change to the pan, tilt and zoom control mode from the live mode.
   6) PANIC : This button is used in emergency status. If you push this button,
        the DVR starts to record with maximum speed regardless of setting value.
   7) BACKUP : It will move to the backup screen from the live or play mode.

[Rear Panel]

<32R NP>

9. ALARM OUT

7. HDMI

10. SENSOR IN / RS485

8. AUDIO OUT

1. AUDIO IN

4. e-SATA

2. LAN

5. USB

3. IPC LAN

6. POWER INPUT

<32R 16P>

9. ALARM OUT

7. HDMI

10. SENSOR IN / RS485

8. AUDIO OUT

11. POE PORTS

1. AUDIO IN

4. e-SATA

2. LAN

5. USB

3. IPC LAN

6. POWER INPUT

<32R 32P>

10. SENSOR IN / RS485

7. HDMI

9. ALARM OUT

11. POE PORTS

1. AUDIO IN

8. AUDIO OUT

4. e-SATA

2. LAN

5. USB

3. IPC LAN

6. POWER INPUT
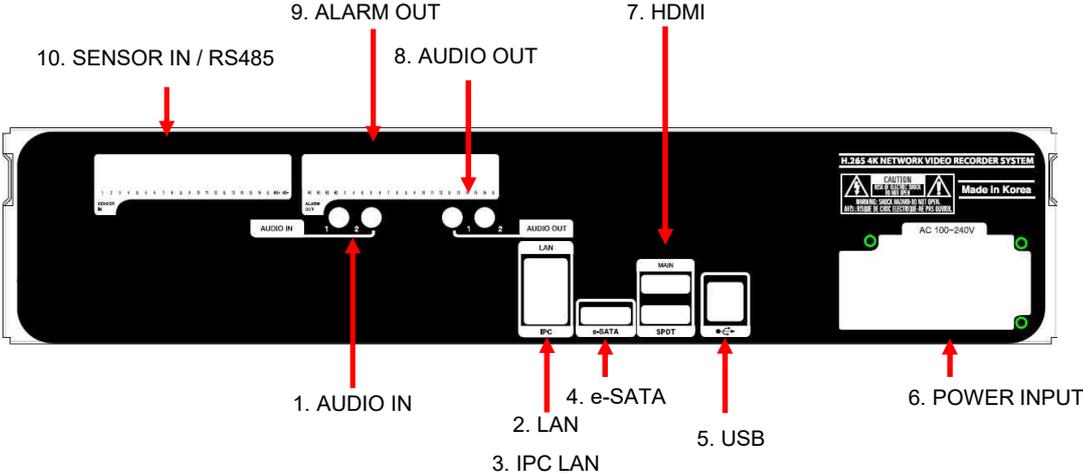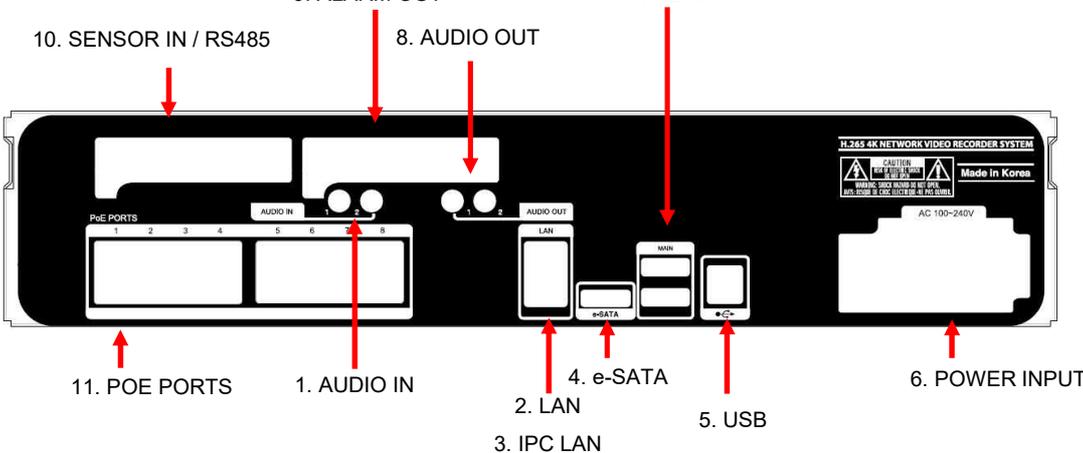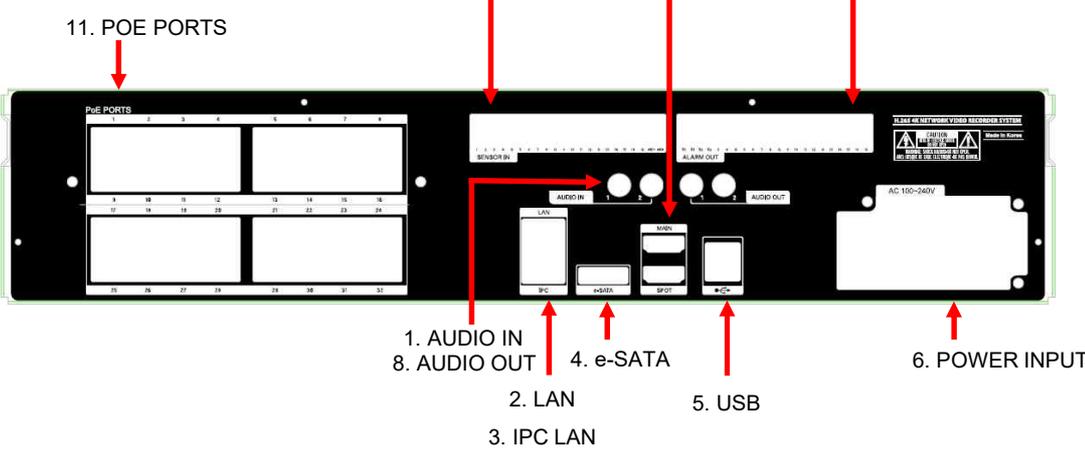
1. **AUDIO IN** : RCA audio in terminals.
2. **LAN** : This is the Gigabit Ethernet LAN cable connection terminal for NVR.
3. **IP LAN :** This is the Gigabit Ethernet LAN cable connection terminal for IP Camera.
4. **eSATA :** e-SATA port for external HDD storage.
5. **USB** : USB port for mouse and USB devices. You should connect correctly the USB devices and mouse as picture directed.
6. **POWER INPUT**
7. **HDMI** : Real HD and 4k output for high resolution monitor.
8. **AUDIO OUT** : RCA audio out terminal.
9. **ALARM OUT** : This terminal blocks connect external electric devices to the product (Warning Lamp and others).
10. **SENSOR IN** : This terminals can be connected to external sensors.
    RS485 : For control the pan and tile cameras.

<32R 16P/32R 32P>
11. **POE PORTS** : POE connection terminal for IP Cameras.

❖ *For more details, refer to [CH 2. Installation Method and Cautions].*

CH2. Installation Method and Cautions

2-1. Cautions

WARNING
Risk of electric shock.
Do not open the cover of the product.
Servicing of this product by unauthorized personnel is prohibited
and will result in a void of warranty.

⚠️

In order to ensure the most stable conditions for power, the use
of a UPS (Uninterrupted Power Supply) is recommended.

- Avoid installing the product where there are direct rays or it is hot by locating near from heat generator. (May cause fire)

- Do not put vase, flowerpot, cup, cosmetics, drug, and anything the contain water on product. (May cause fire or electric shock, and it may injure people by falling)

- Do not insert or drop any metal object (coin, hair pin) or flammable object (match, paper) into air hole. (May cause fire or electric shock)

- Do not put any heavy object on it. (May injure people by being fell or destroyed.)

- Put power plug surely not to be moved. (If not, this may cause fire.)

- Unplug power plug and antenna when there are thunders and lightening. (May cause fire.)

- For cleaning the product, wipe surface with dry towel. Using chemical agent or cleaner may change the color and unpeel paint. Do not put several plugs at same time. (May cause electric shock.) If there is smoke or strange smell, stop operation. In this case, turn the power off and unplug it, and then contact our service center. (If you keep using it, this may cause fire or electric shock.)

- Do not unplug by pulling cord. (If cord is damaged, it may cause fire or electric shock.)

- Do not plug or unplug with wet hands. (May cause electric shock.)

- Keep the power cord untwisted. (May cause fire or electric shock.)

- Use proper adapter. (Using too much electric power may cause fire or electric shock.)

- Do not install it at where exposed to rain and wind and water drop. (May cause   fire, electric shock and transformation.)

- Keep away from fire. (May cause fire.)

-Do not disassemble or remodel on your own. (May cause malfunction or electric shock.)

- Do not put next to flammable materials like flammable spray. (May cause fire.)

- Do not install it at a place with too much dirt. (May cause fire.)

- Do not install it on unstable places like shaking table and inclined place or shaking place. (May injure users by falling down or being upside down.)

- Do not put an heavy object on power cord or avoid it from being pressed by the device. (May cause fire or electric shock.)

- In case of using extension cord, do not use several devices at same time. (May   cause fire with abnormal heating of extension.)

- When there are dirt on power plug pin or power outlet, clean it nicely. (May cause fire.)

-Do not damage on power cord or plug, and bend or twist or pull too much, and   put it between other objects or heat. If power outlet insertion part is not tight, do not use it. (May cause fire or electric shock.)

-Do not drop or give a shock to the product. (May injure people or cause   malfunction.)

- Do not touch power adaptor or signal controller. (May cause electric shock.)

- Do not put any object too close to block cooling fan. (May cause fire.)

- In case of exchanging batteries with improper type, there might be danger of explosion.

- For used batteries, throw away separately from other garbage.

- When you take out batteries, avoid children from eating them by mistake. Keep them away from children. (If a child ate them, contact a doctor right away.)

Note :
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

This device complies with the part 15 of the FCC Rules. Operation is subject to the following two conditions : (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operations.

FCC Warning :
This equipment may generate or use radio frequency energy. Changes or modifications to this equipment may cause harmful interference unless the modifications are expressly approved in the instruction manual. The user could lose the authority to operate this equipment if an unauthorized change or modification is made.

CE Warning : This is a Class A product. In a domestic environment this may cause radio interference in which case the user may be required to take adequate measures.

This product has obtained EMI registration.

2-2 Product Installation

This product may be composed of camera and monitor in default, and additionally the sensor, microphone, speaker and PC for network can be connected if necessary.

2-2-1. Power Connection
1) Connect adapter or power cable to power input terminal at rear side.
(free voltage from 100V to 240V, 50/60Hz)

※ You must operate it at the rated voltage instructed on the user's manual. In case power higher than the rated voltage is supplied, it may cause damages on product.

2-2-2. Connecting External Device

※ Connect it when power of the product is off.
※ Read through user's manual for the device you are connecting carefully.

1) How to Connect External Video/Audio Device
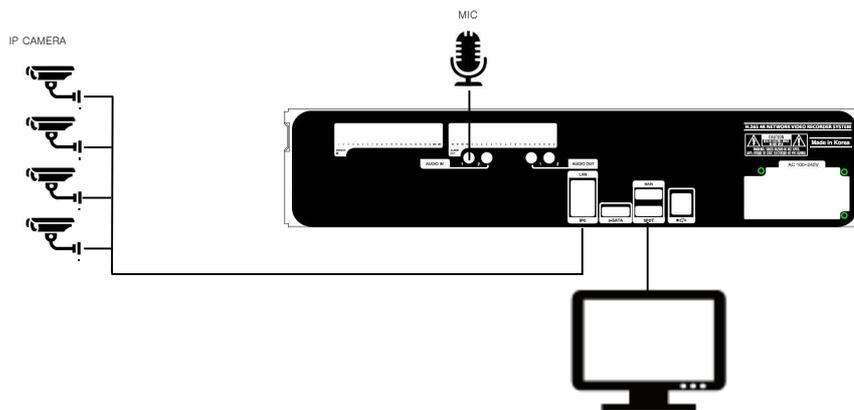
Connect cameras to POE PORTS by channels.
Connect microphone (AMP) to AUDIO IN by channels.
Connect VGA OUT to VIDEO IN of monitor.
Connect HD output to HD Monitor.
Connect AUDIO OUT to AUDIO IN of monitor (or speaker).

2) How to connect external sensor

Sensor terminal is composed of 1 input channel and 1 output channel. Sensor out terminal is relay output with 1A, 24V or 0.5A,125V.
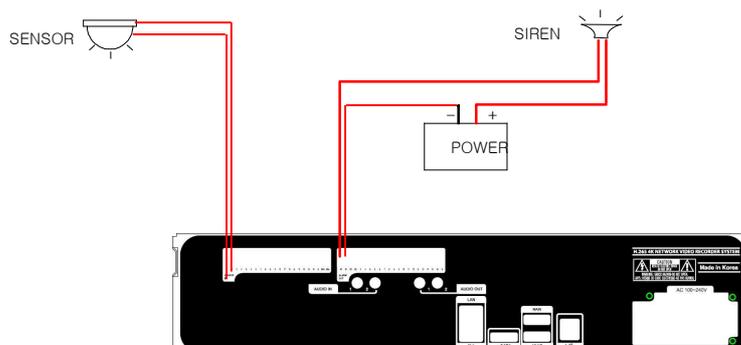
Sensor In : Connect the sensors. The sensor are composed of both signal and ground terminals, with a voltage difference of 5V. In the case that the sensor used for input is of the N/O (Normal Open) type, when the voltage difference between the signal and ground falls to 0V (short), the NVR can use this as a trigger to start alarm/sensor based recording.

Sensor Out : Connecting external electrical devices

The relay output terminal does not provide power, and functions only on an ON/OFF basis via a relay. Normally, the signal and ground should be on an OPEN basis, and the NVR will complete the relay connection.

3) Connecting with PC using LAN cable

If you want to connect NVR to PC directly, use LAN cable, and if you want to use HUB, connect cable via hub.

*Hub : This is a device connecting one office to devices located near with using
            cable when you organize LAN
*Cable : This is standard UTP cable used for communication among
             devices through Hub and others when you organize LAN
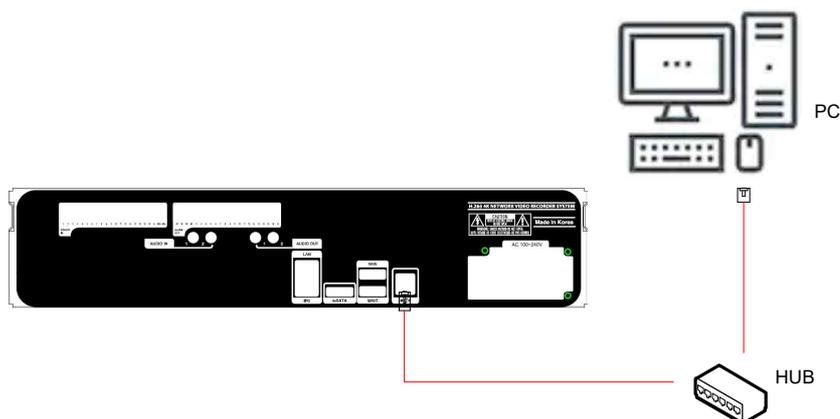
4) Connection Using PTZ camera
In case of using pan and tilt cameras, connect PAN/TILT DRIVE to product as shown at following figure.

POE

RS 485 CABLE

SPEED
DOME
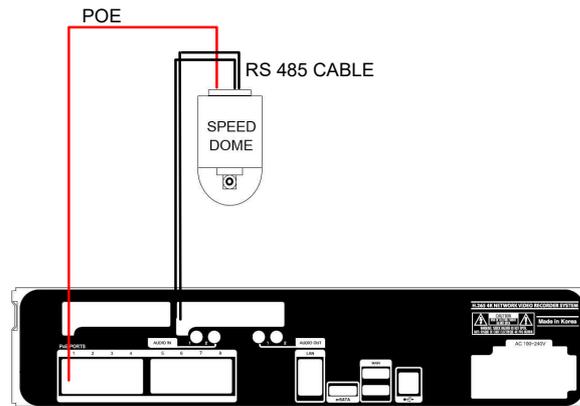
5) Installing Hard disk drive
In case of installing the hard disk drive, open the upper case and install the hard disk drive on the hard bracket. Remember that the main power should be off to install the hard disk drive. If you have any trouble, please contact the technical support.

CH3. How to Use

3-1. General Usage Information

This NVR can be operated with a mouse or remote controller under the four main modes listed below:

Live Mode – This is the "main or default" mode. From this mode you can view in real time all currently operating cameras, information regarding camera status, and have access to Pan/Tilt camera controls. In addition, system status information will be shown during live mode, and other modes can be entered from Live mode.

Setup Mode – The user will be able to customize settings for Live viewing, Recording, Backup, and Camera related devices under the Setup Mode.

Search Mode – In Search Mode, the user will be able to review all recorded footage in the case that an event must be reviewed using a calendar or event based search.

Backup Mode – In Backup Mode, the user will be able to archive the desired data to the preferred supported media of their choice (ex. External CD&DVD RW, USB Backup, Remote Client Software, etc.)

Password Protection – The NVR system will utilize a user ID and password system to prevent unauthorized usage of this product. Control of the system will only be possible after entering a proper ID and password as illustrated below. (Factory Default settings are blank for these fields).

IDs and passwords should be managed by a system administrator, as different users may be given different levels of access to the NVR.
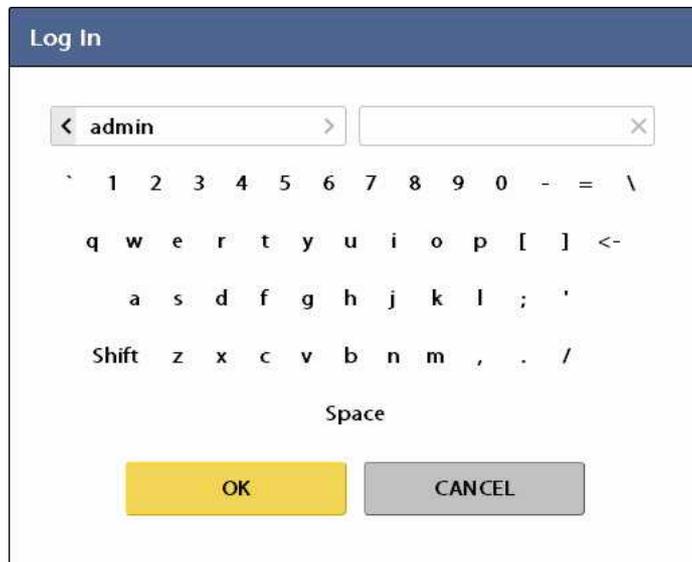
3-2. LIVE Mode

In this section you will know how to split the video mode into 1, 4, 6, 8, 9, 12, 16, as well as auto sequencing, PTZ Control, Mouse control, Setup configurations, Backup.
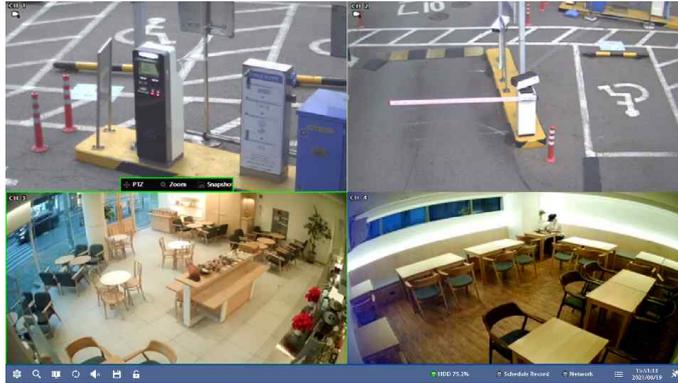
3-2-1. LIVE Mode Control

1) Live View Status

You may use the Live Menu Bar located at the bottom for quick shortcuts and view status of certain items.

	ⓒ	Recording indicator
	⭐E	Event recording indicator
	🏃	Motion detection indicator
	🚨	Sensor activation indicator

2) Live Menu Bar

You may use the Live Menu Bar located at the bottom for quick shortcuts and view status of certain items.

	⚙	Go to setup
	🔍	Go to playback
	▦	Screen Split mode change
	🔄	Sequence activation
	🔇×	Audio out channel & Audio Mute indicator
	💾	Backup
	🔒	Lock/ Unlock indicator
	⬤ HDD 75.3%	Hard drive usage & lamp
	⬤ Schedule Record	Scheduler activation indicator
	⬤ Network	Network connection indicator
	☰	Search Event List indicator
	15:51:33 2021/08/19	Date & Time
	✕	Live Menu Bar (Fix or auto hide)
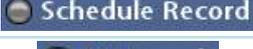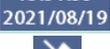
3) Live Popup Menu
By Right-Clicking anywhere on Live mode, you may view the Live Popup Menu.
By using the Live Popup Menu, you can quickly jump to the necessary configuration and settings.
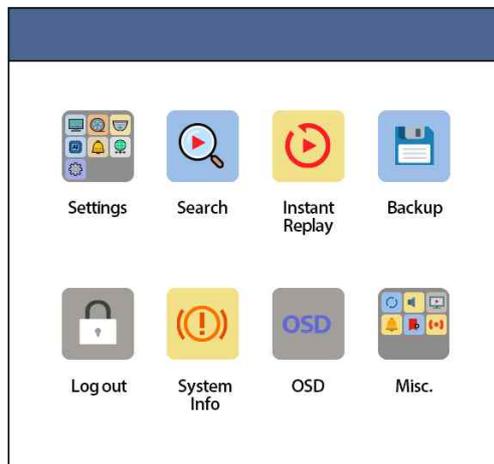
4) Live Toolbar

When a channel is selected on live mode, the live toolbar is displayed as follows.
You can enter PTZ or Zoom mode or use Snapshot function.

3-2-2. LIVE Mode Feature

1) Setup : refer to 3-4

2) Split.
You can change video split mode for Live View. Click the channel number at the top to switch to the channel on the page.
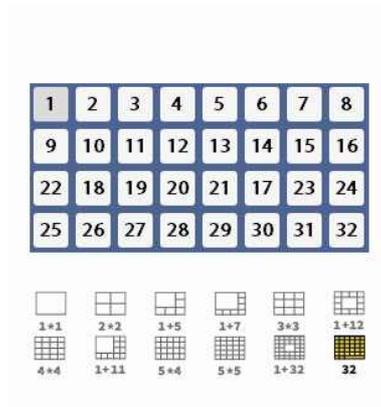
3) Audio Out
You can choose the audio out from this menu.

4) Instant Replay

This is very convenient function to catch the abrupt accident. During live viewing, you can go directly to the playback screen.

If you choose the 'Instant Replay' it immediately switches to search mode and playback the video.

5) Search : refer to 3-3

6) Backup

There are two ways to enter the backup. The first one is that right click on the live screen, and the second one is that enter directly from 'Search' upon playback. If you choose the 'backup' from the live menu, below backup screen appears.

• You can set the backup device, time and channel from the backup screen.

• After that, if you click the 'Estimation' button, it will show the estimated backup file size.

| Estimation | Start | Stop |

[0 MB/4219 MB]

• Then click the 'Start' button.

7) Snapshot

You can save the live snapshot by this menu. All channel will be saved individually to the USB memory by JPG format . You should put in USB memory before saving.

8) Freeze

You can freeze the current live video channels.

9) PTZ (Pan, Tilt and Zoom)

It is possible to control the pan and tilt camera by itself. Press the 'PTZ' button to enter the PTZ mode. For Menu setting, you can set it by pressing button as displayed at bottom of window.

• You can set the direction of camera by using the arrow buttons.
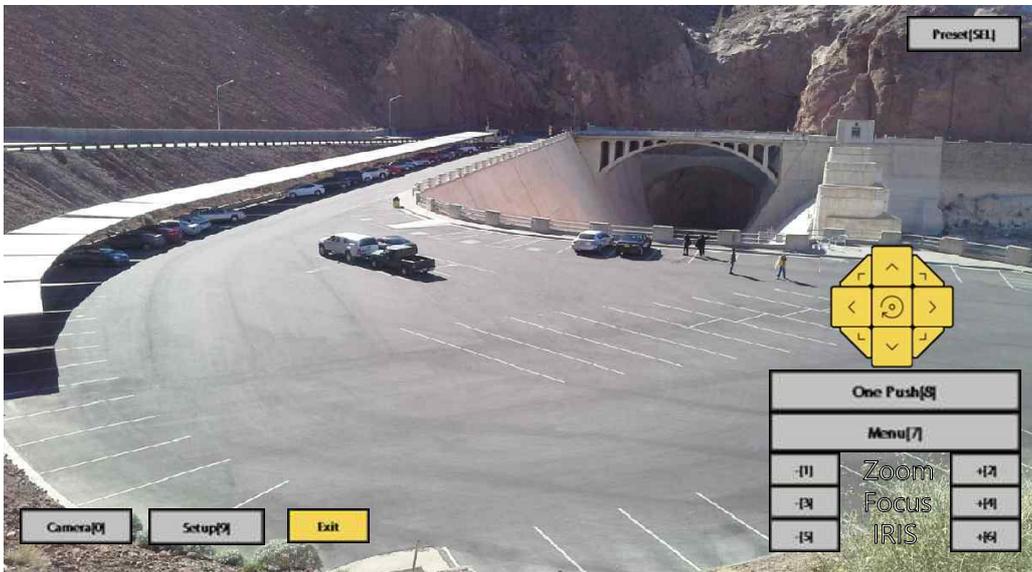
Preset[SEL]	Preset setup
One Push[8]	Auto Focus
Menu[7]	Camera OSD menu
Zoom -/+	Zoom out/in with mouse or [1]/[2] buttons on the remote controller.
Focus -/+	Adjust the focus with mouse or [3]/[4] buttons on the remote controller.
IRIS -/+	Adjust the iris with mouse or [5]/[6] buttons on the remote controller.

❖ *For more details, refer to [CH 2-2. Connection Using PTZ camera] and [CH 3-4-3. Device]*

- **Preset[SEL]** : You can enter the preset number using the keypad appearing the preset button or 'Enter' button on the remote controller.
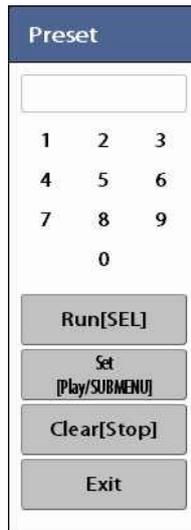
Run[SEL]	Move to preset number
Set[Play]	Set a position and name of a preset number
Clear[Stop]	Clear a preset set
Exit	Exit preset mode

❖ How to use Preset
1. Click the right mouse button and choose PTZ from a live pop-up menu.

2. After you move the screen, click the set button and set the position and name.

※ If you choose not a specified preset, UNDEFINED is displayed on the screen.
※ You can set up to 32. If you choose out of valid range, there is no action.

- ![Camera[0]] : You can choose the PTZ camera with mouse or [0] buttons on the remote controller

- ![Setup[9]] : If you press Setup using mouse (or [9] button on the remote controller) in PTZ Menu, PTZ setup window will appear. You can set the pan and tilt speed, 32 preset name and tour sequence as well as dwelling time.

Pan Speed	Set pan speed 1~7
Tilt Speed	Set tilt speed 1~7
Preset dwell time	Set preset dwell time 2~60 sec
Tour	When you check the tour box, the preset tour starts in the order specified by the user.

❖ How to use Tour
Choose a preset from upper left to right.

※ If you use not specified presets, it automatically skip the tour.

10) Zoom

Digital zoom of live screen for selected channel. It can be 8x zoom and also control the position by mouse dragging.

- **Camera[0]**   : You can choose the camera for zoom with mouse or [0] buttons on the remote controller.

- **Zoom[9]**   : You can zoom with mouse or [9] buttons on the remote controller.

Zoom x2
Zoom x3
Zoom x4
Zoom x5
Zoom x6
Zoom x7
Zoom x8

11) Sequence

Sequence Mode On /Off: Switches screens as set on Dwell time under Screen Setup

12) OSD

This feature shows current settings of product through GUI (Graphic User Interface) and INFO button at front side is used for this feature. When you turn on power, this will show current date and time, System Lock Setting, HDD usage, Video Loss Check, Sensor ON/OFF, Motion Detection Check, Recording Status and Schedule Feature Usage. As you press INFO button once more, GUI disappear->OSD disappear->GUI appear->OSD appear will happen sequentially.

❖ GUI (Graphic User Interface): displaying current status on monitor as images
❖ OSD (On Screen Display): displaying current status on monitor as character

13) System Information

It shows the system information.

System Info	
Firmware version	3.0.0.0
HDD	0/160 GB
MAC Address	00:09:1B:00:01:02
IP	
Connected IP	192.168.0.2
Watch User	0
Search User	0
Setup User	0
Oldest Date	2012/07/27 00:00:00

OK

14) Lock/Log In
Logs off current user and locks NVR from any further configuration and screen setup until next Administrator logs in.

15) Alarm Control
You can control all alarms connected and the NVR system buzzer.
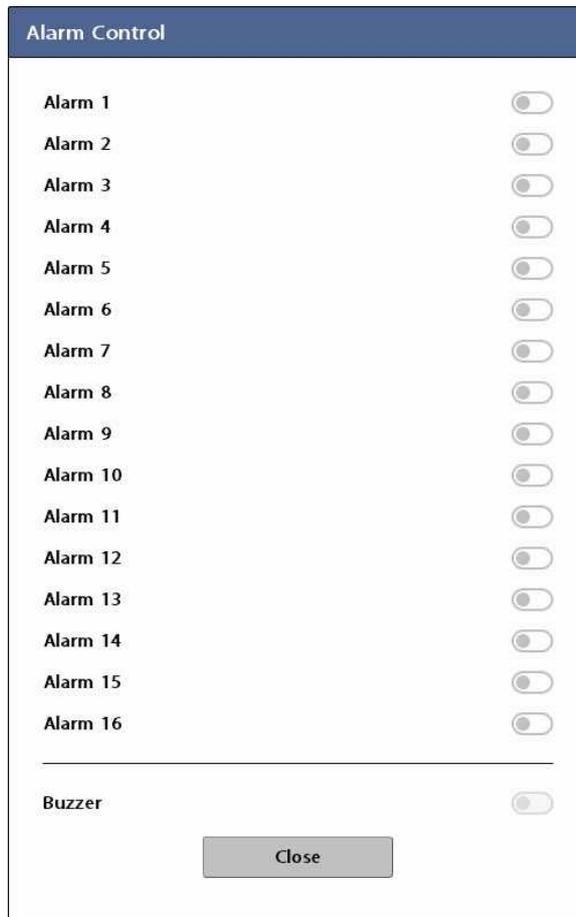
3-3. Search Mode

Search mode consists of two different modes of searching. The video data can be selected by 3 modes.

Time	Search by Month / Day / Time selection.
Panorama	Play the specific channel continuously.
Thumbnail	Play the specific channel by user defined interval.

In each mode, you can check the Event / Bookmark / POS as follows, and it moves to the corresponding log time by double-click
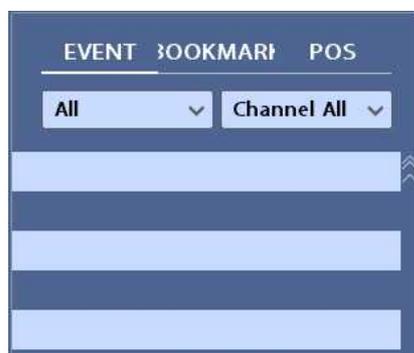
The event types and channels that can be changed differ depending on the mode and combination of EVENT, BOOKMARK and POS.

Search Mode	Event	Bookmark	POS
Time	Both event type and channel can be changed.	Both event type and channel cannot be changed.	Channel can be changed.
Panorama / Thumbnail	Only event type can be changed.	Both event type and channel cannot be changed.	Both event type and channel cannot be changed.

Change pages in time mode:
The page can be changed in two ways as follows.

(Page Mode)   (Channel mode)

In the Page mode, it operates in the same way as the split of a live view.
The Channel mode is changed to 1 division of the corresponding channel when
clicked. To switch between the two modes, click this ⇄ icon.

Change channels in panorama/thumbnail mode:
The function changes by changing the target channel, not by changing the page.
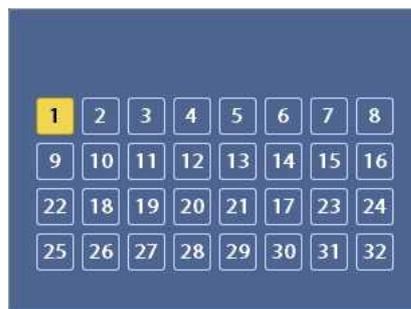
3-3-1. Search Selection Type

1) Time Based search selection

- Select the Date you wish to view by selecting a Date from Calendar.
- Select time you wish to view by selecting a time from Time Line.
- You may click on Refresh, Backup, Import, Exit , Full Screen, Hide for additional features and options.

2) Panorama Search

- Select search date from calendar
- Choose the channel and interval, then select the time from bar or typing
- The selected channel will be played individually by interval time difference

3) Thumbnail Search
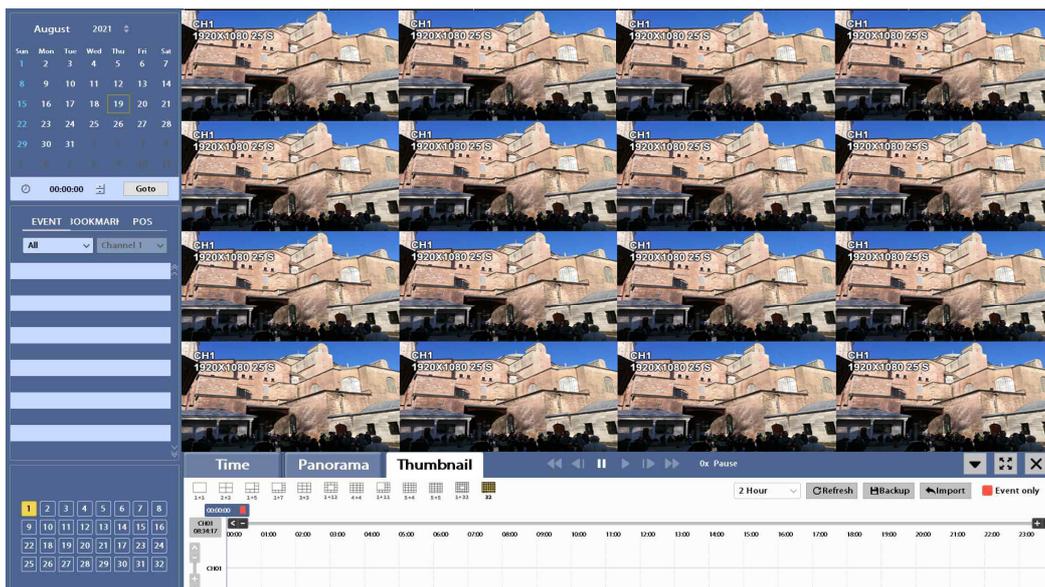
- Select search date from calendar
- Choose the channel and time from bar or typing
- The selected channel will be played continuously. If you want to play faster, use the FF button.

4) Search Related buttons

• You may click on Refresh, Option, Backup, Import, Exit , Full Screen, Hide for additional features and options.

C Refresh	Reload all data list.
⊟ Backup	Backup recorded data to external USB device.
← Import	Playback recorded data from external USB device.
▼	Hide bottom of Playback Toolbar
⤢	Load playback data to full screen mode.
✕	Move to Live video mode.
■ Event only	Event only

3-3-2. Play Mode

If you choose 'Full Screen', the full screen appear. You can control the play speed in here.
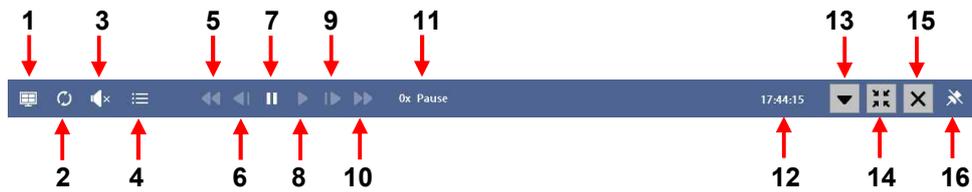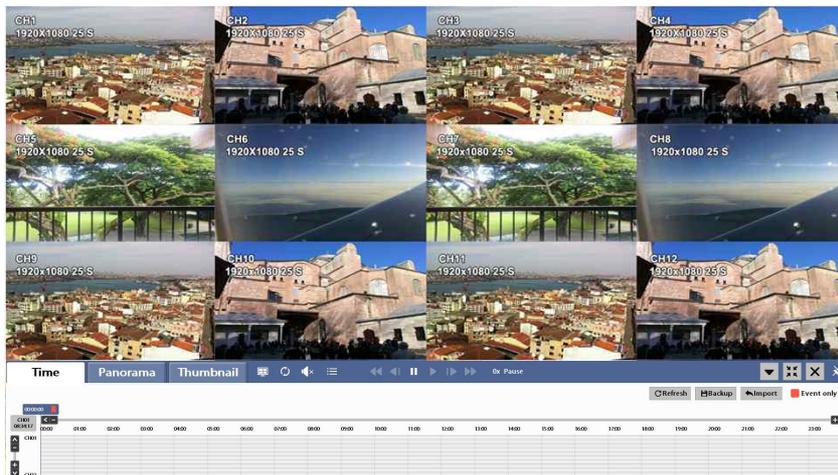
▶ **Play Screen GUI**

1. Split Screen
2. Sequence
3. Audio
4. Event list
5. FB (Fast Backward): FB×1, 2, 4, 8, 16, 32, 64 times faster
6. SB (Slow Backward):SBx1/2, SBx1/4
7. STILL (Pause) / Frame advance
8. Play : Forward normal speed(×1)
9. SF (Slow Forward):SFx1/2, SFx1/4
10. FF (Fast Forward): FF×2, 4, 8, 16, 32, 64 times faster
11. Playback Status information
12. date and time during playback : click to change date and time
13. Show: Timeline, Refresh, Backup, Import and Event Only
14. Cancel full screen
15. Exit playback
16. Toggle auto hide

3-4. SETUP Mode

Access Setup menu from Right Clicking mouse button to Popup Menu.
Configure Display, Record, Device, Alarm, Network, System which is navigated by clicking on corresponding tab menu at the top of the screen.

Apply	Apply changes
Default	Return to factory default settings.
Close	Close the menu. If there is a something that has not been applied after the change, a pop-up will be asked.

3-4-1. Display

Configure OSD and Main Display setting.

1) OSD
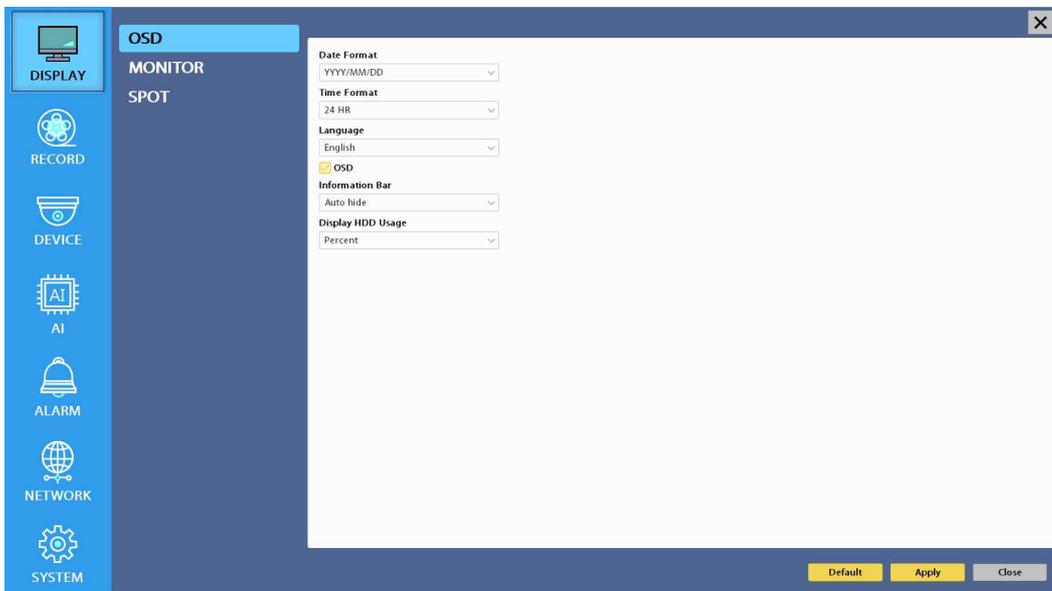
Date Format	YYYY/MM/DD, MM/DD/YYYY, DD/MM/YYYY
Time Format	24HR, 12H(AM/PM)
Language	Select system language.
OSD	OSD On/Off
Information Bar	Information Menu Bar Hide always/Auto hide/ Show always
Display HDD Usage	Percent/Oldest Date

2) Monitor

2-1) Main

• Configure and view Resolution, Sequence Dwell Time and color settings.

Resolution	1280x720, 1920x1080, 2560x1440, 3840x2160
Device	HDMI
Overscan	Cut off a bit of each edge of the screen
Sequence dwell time	1 sec ~ 60 sec
Skip Video Loss	Skip a video loss channel when you set the sequence of the live screen.
Switching	Set a display for the live screen.

Brightness	Adjust a brightness.
Contrast	Adjust a contrast.
Saturation	Adjust a saturation.
Hue	Adjust a hue.

2-2) HD Spot

• Configure and view Resolution, Sequence Dwell Time settings.
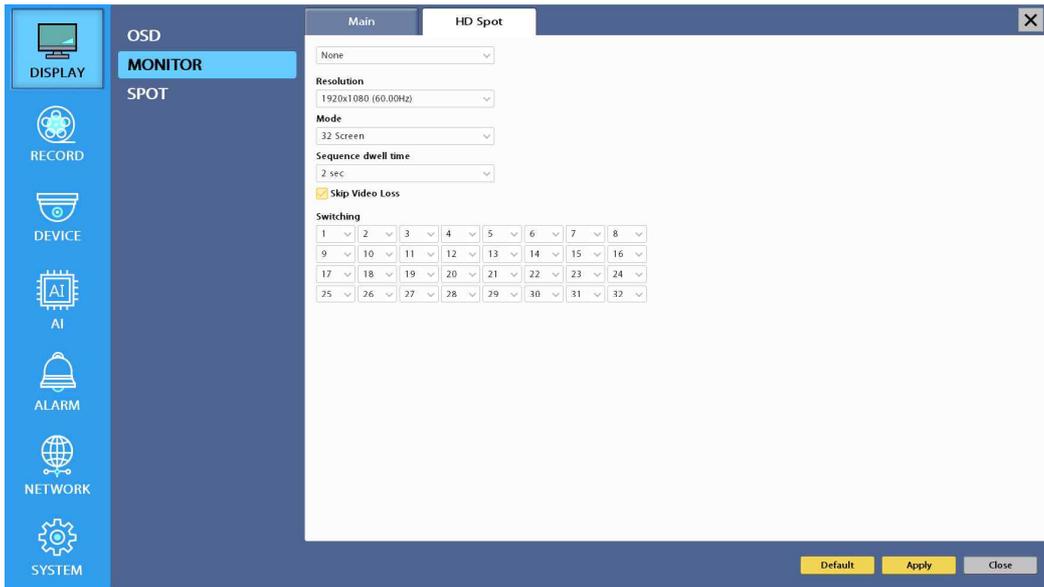
Device	None or HDMI
Resolution	1280x720, 1920x1080, 2560x1440, 3840x2160
Mode	1, 4, 9, 16, 20, 25, 32 Screen
Sequence dwell time	1 sec ~ 60 sec
Skip Video Loss	Skip a video loss channel when you set the sequence of the live screen.
Switching	Set a display for the live screen.

3) Spot

• Configure and view Resolution, Sequence Dwell Time settings.

Resolution	1280x720, 1920x1080, 2560x1440, 3840x2160
Device	HDMI
Overscan	Cut off a bit of each edge of the screen
Sequence dwell time	1 sec ~ 60 sec
Skip Video Loss	Skip a video loss channel when you set the sequence of the live screen.
Switching	Set a display for the live screen.

3-4-2. Record
Configure and view Event In, Record, Group, Holiday settings

1) Codec
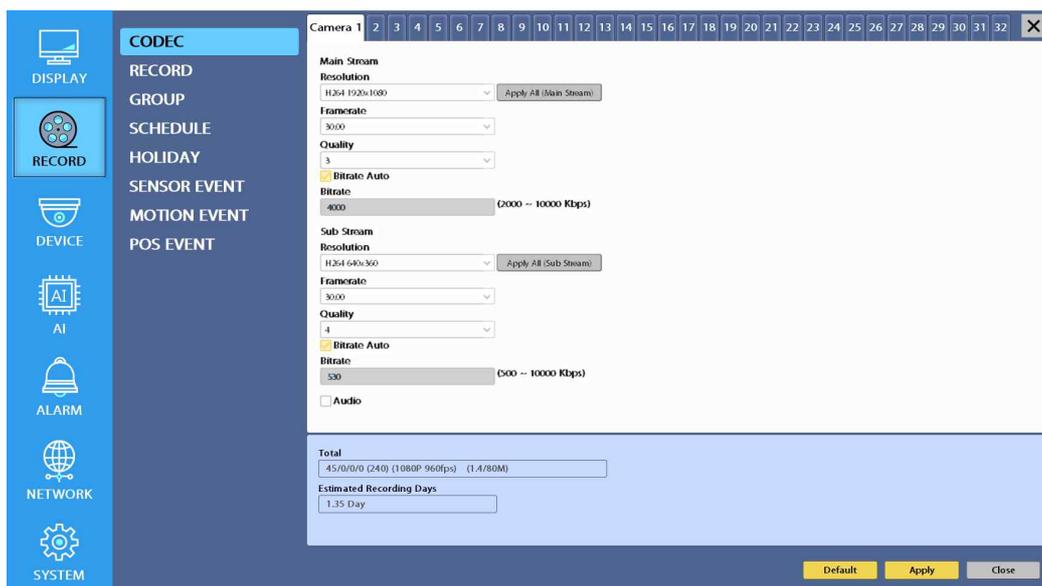
Codec and Resolution	Set a codec and resolution.
Framerate	Set a frame per seconds.
Quality	Set a quality.
❖ ALL Apply	Apply the setting to all channels.

Bitrate Auto	Automatically sets the best bitrate according to the camera resolution and fps.
Bitrate	Set the bitrate manually.

Audio	On / Off

❖ Total	It shows the total fps.
❖ Estimated Recording Days	This is an automatic calculator of the recoding days.

2) Record
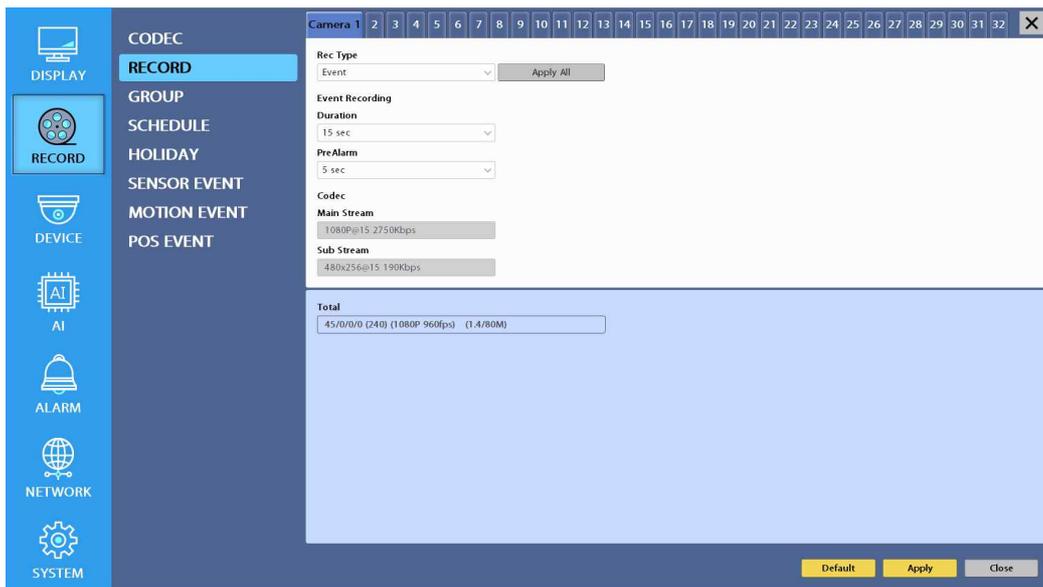
Rec type		None, Conti, Event, C/E
❖ Event	❖ Duration	5 ~ 60 sec
	❖ PreAlarm	0 ~ 10 sec
❖ ALL Apply		Apply the setting to all channels.

Main Stream	The resolution of the main stream.
Sub Stream	The resolution of the sub stream.
Bitrate	It shows Bitrate of the camera.

❖ Total	It shows the total fps.
❖ Estimated Recording Days	This is an automatic calculator of the recoding days.

❖ Event recording has priority in recording. In C/E recording, the recording will follow continuous recording setup in normal condition while it would follow event recording setup in event generation.

❖ For convenience, you can use the 'Apply All' menu to change with the same preference. You don't have to setup each channel if you using the 'Apply All' function.

❖ Duration is to set post event recording time.

❖ Pre alarm is to set pre event recording time.

❖ Total shows total fps of all channels. If total fps is more than supported, it turns red. If it turns red, you need to set a lower resolution or FPS.

3) Group

• With this menu, you can set the group using the scheduler. If you choose 'Group' tab, you can see the similar screen with 'Record'. The setting is similar
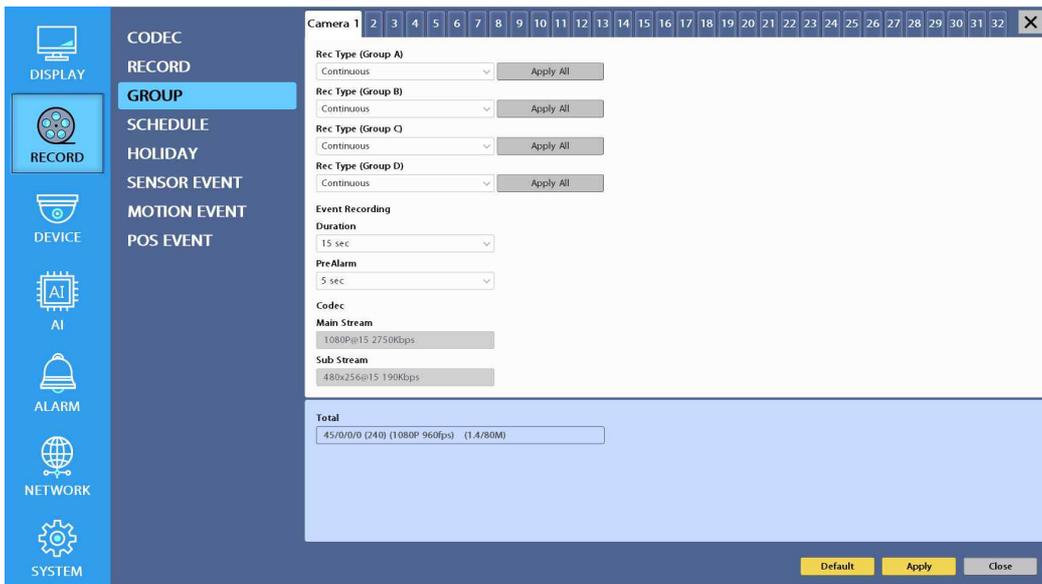
4) Schedule

- In recording, Schedule recording setting is most preferred. So if you activate the weekly scheduler, you cannot record manually.

- Schedule On : The weekly scheduler is activated.
- Holiday On : The holiday that set by user is activated.

- Since you can set recording weekly, you can reduce recording of unnecessary time period. In Scheduler window, days and channels are displayed, and recording information for each channel is displayed at bottom of window.

❖ How to set the weekly scheduler
1. Choose 'Scheduler' to 'On'.
   2. Choose group and drag to wanted time.
   3. Press the time bar   [+]   [-]   , if you want to set the detailed time.
   4. Press 'Enter' button to change the group of the selected area.
   5. If you activate 'Holiday' scheduler, choose 'holiday'.
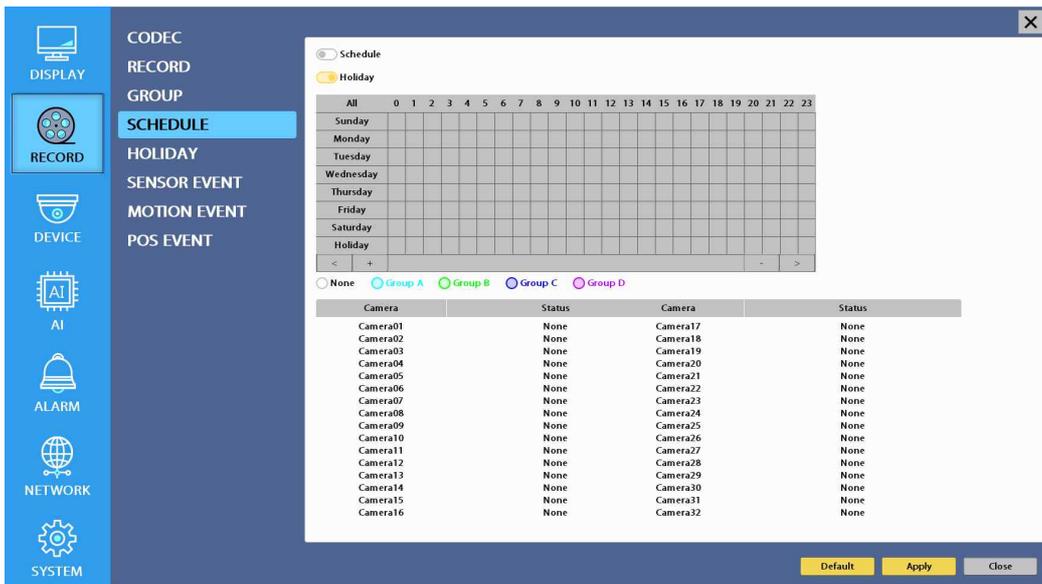
5) Holiday

With this menu, you can add the holidays. Use the 'Add' button for adding the holiday and use the 'Delete' or 'Delete All' buttons for removing the existing holidays.
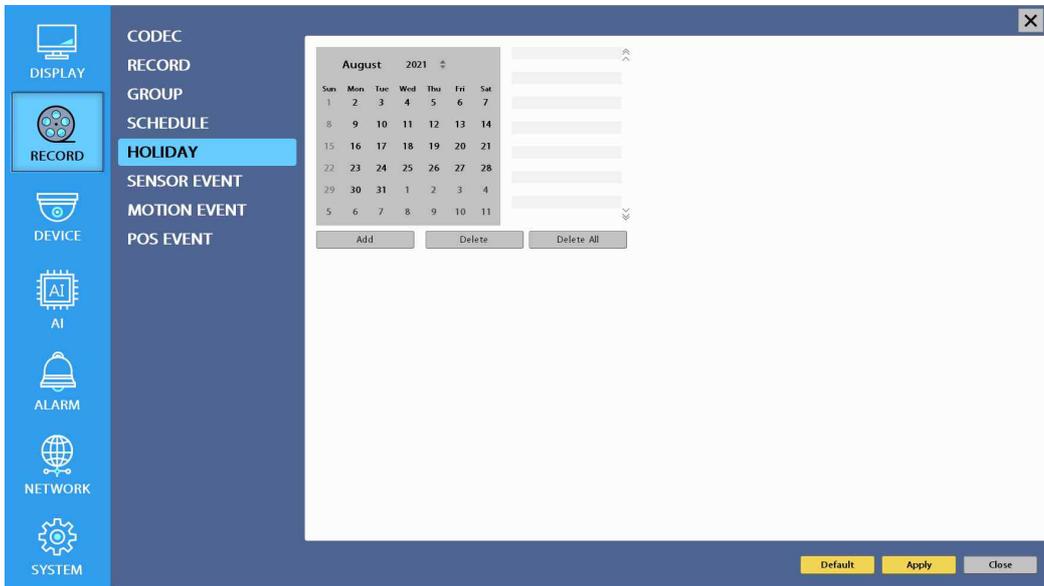
6) Sensor Event

- With this menu, you can set sensor input-setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.
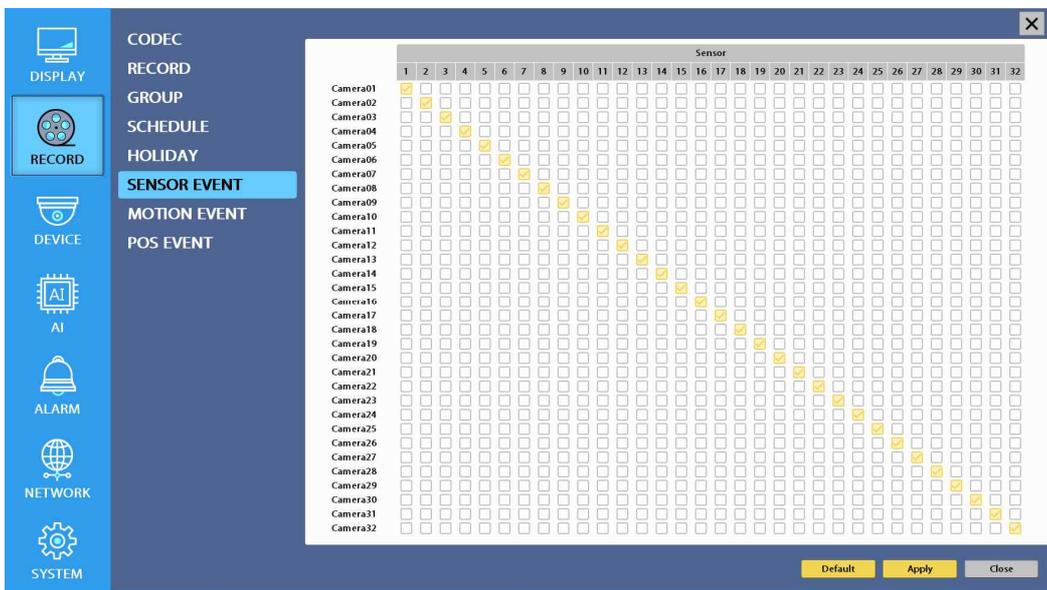
7) Motion Event

- With this menu, you can set motion detection setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.
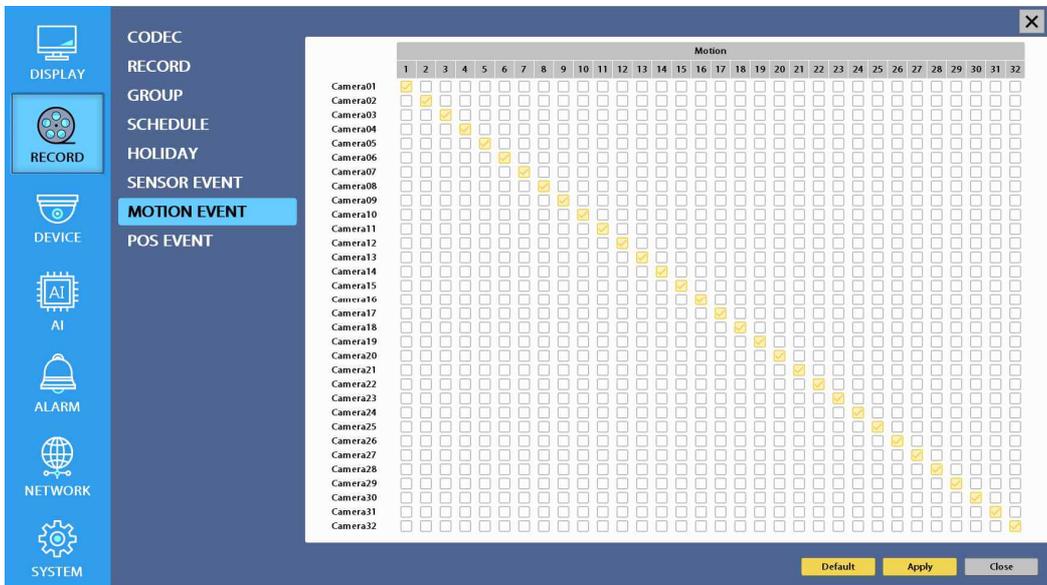
8) POS Event

- With this menu, you can set POS setup. You can also set each channel individually.
- Although you set Motion Detection and Sensor Setting to On in Event menu, if Event Input in Rec Menu is set to None, it only detects and does not record.
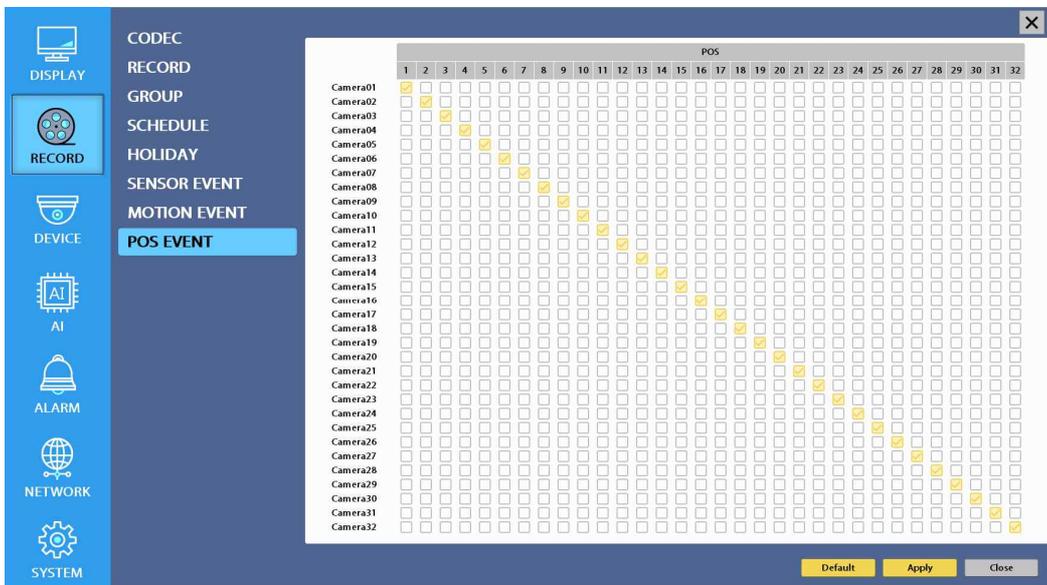
3-4-3. Device

• Configure and view Camera, Audio, Motion Detection, Alarm Out, PTZ, Controller.

1)   Camera
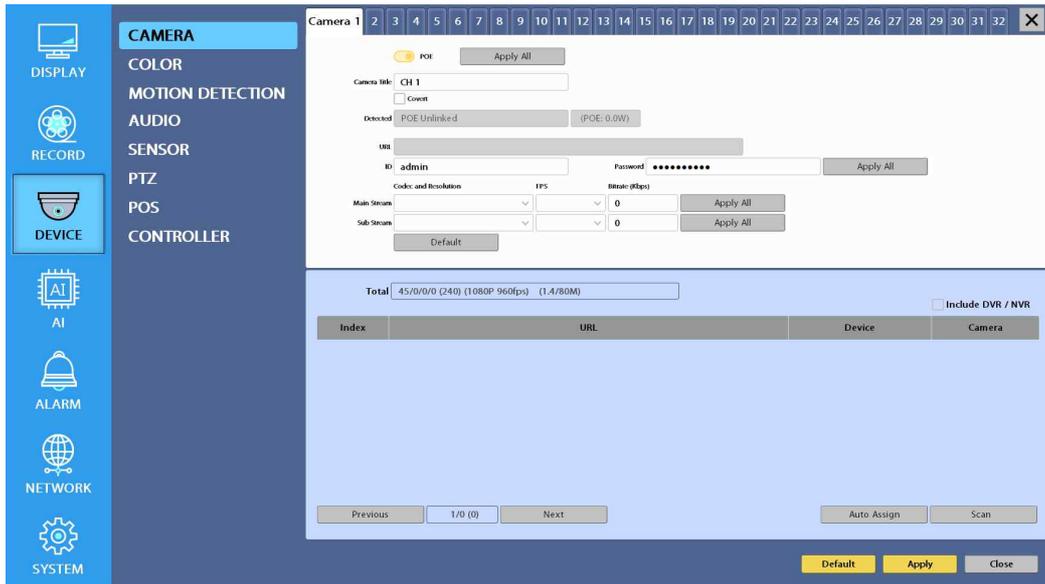
POE	On / Off POE
Camera Title	You can set a camera name.
Convert	Hide a camera from Live view but Record for future searching option.
Detected	Detected a camera video type
URL	Type IP Camera address or use Scan function

ID/Password	Type ID and password of the camera
❖ ALL Apply	Apply the setting to all channels.

Main Stream/Sub Stream	It shows the main and sub stream of the camera.
❖ ALL Apply	Apply the setting to all channels.

Default	Clear assigned camera settings.

❖ For convenience, you can use the 'Scan' function to connect all your IP cameras on your network or NVR.

Total	45/0/0/0 (240) (1080P 960fps) (1.4/80M)		☐ Include DVR / NVR
Index	**URL**	**Device**	**Camera**

| Previous | 1/0 (0) | Next | | Auto Assign | Scan |
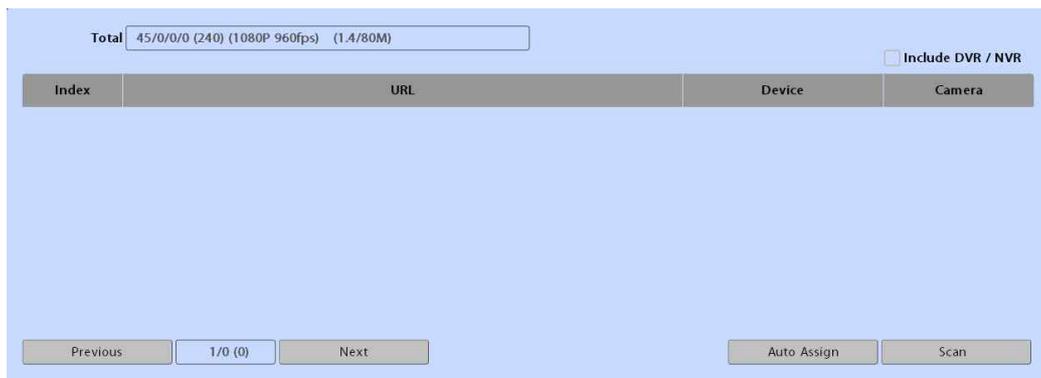
Include DVR / NVR	Display local cameras of DVR / NVR
Previous	Go to previous page
Next	Go to next page
Auto Assign	Auto assign IP cameras on the list to each channel.
Scan	Scan IP cameras

2) Color
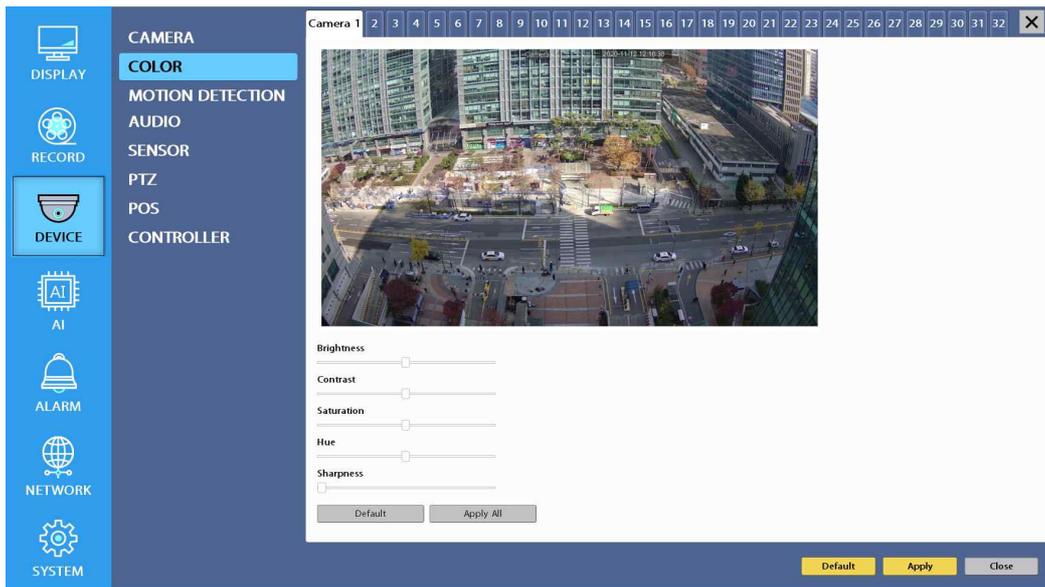
Brightness	Adjust Brightness
Contrast	Adjust Contrast
Saturation	Adjust Saturation
Sharpness	Adjust Sharpness
Default	Change to default settings
❖ ALL Apply	Apply the setting to all channels.

3) Motion Detection

- Change settings for Motion Grid selection and Sensitivity Level. You can set multiple area.
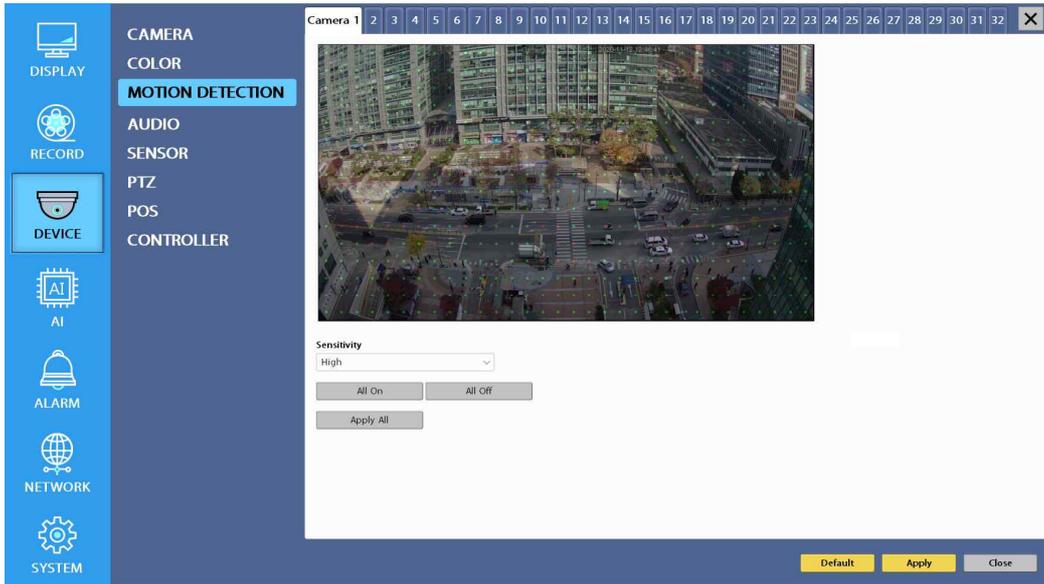
Sensitivity	Low, Mid, High
All On	This will activate the motion detection of the all area.
All Off	This will deactivate the motion detection of the all area.
Apply All	Apply the setting to all channels.

4) Audio
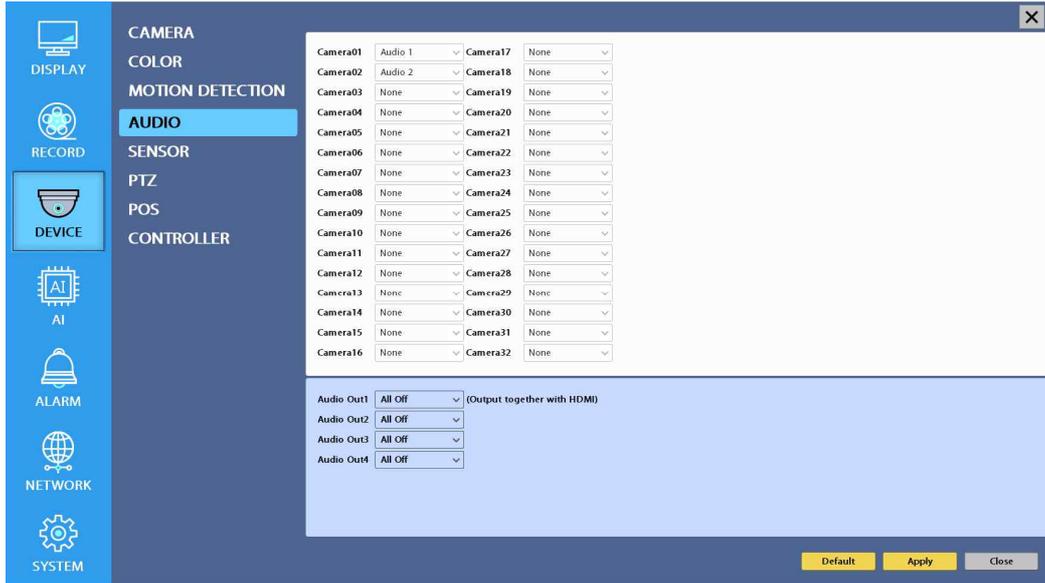
| Camera	Assign audio input to a video channel.
Audio Out 1	Select which channel will be heard during Live View with HDMI.
Audio Out 2	Select which channel will be heard during Live View.

5) Sensor

Selectable option is N.O. (Normally Open) / N.C. (Normally Close)

❖ *For more details, refer to [CH 2. Installation Method and Cautions].*

6) PTZ
Configure Pan/Tilt/Zoom camera for control via NVR System and Remote client.
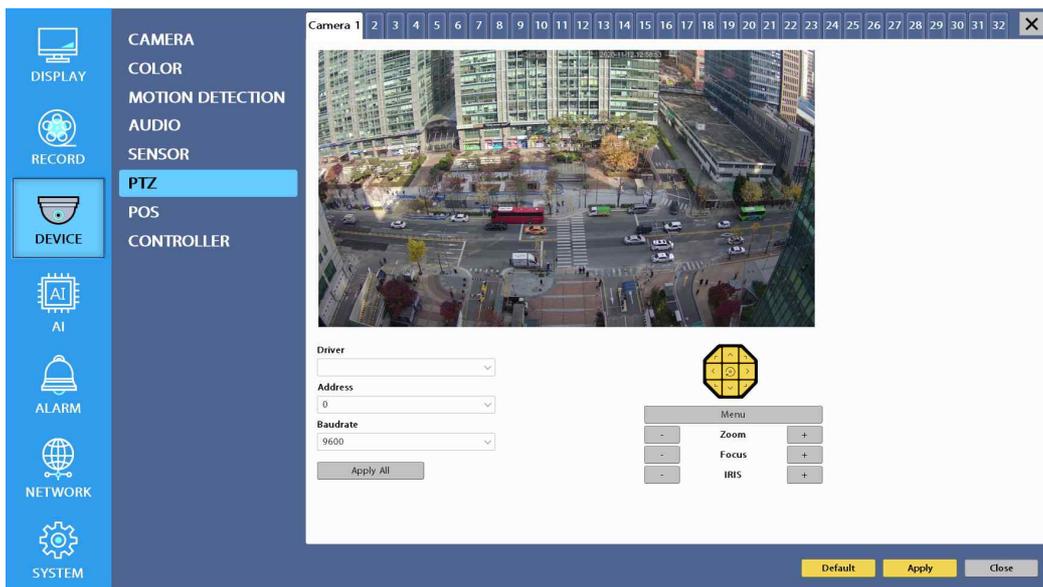
Driver	Choose Driver to be suitable for PAN/TILT Camera manufacturer.
Address	Choose address to be suitable for PAN/TILT Camera manufacturer.
Baudrate	Choose baudrate to be suitable for PAN/TILT Camera manufacturer.

• You have to set Comport value according to the connected camera.

❖ For connection of PAN/TILT Camera Receiver part, refer to user's manual of the related PAN/TILT Camera.

7) POS

This sets the POS interface(text inserter) with the NVR and cash register.

※ If you are using a USB hub, you can use up to 4 USB POS.
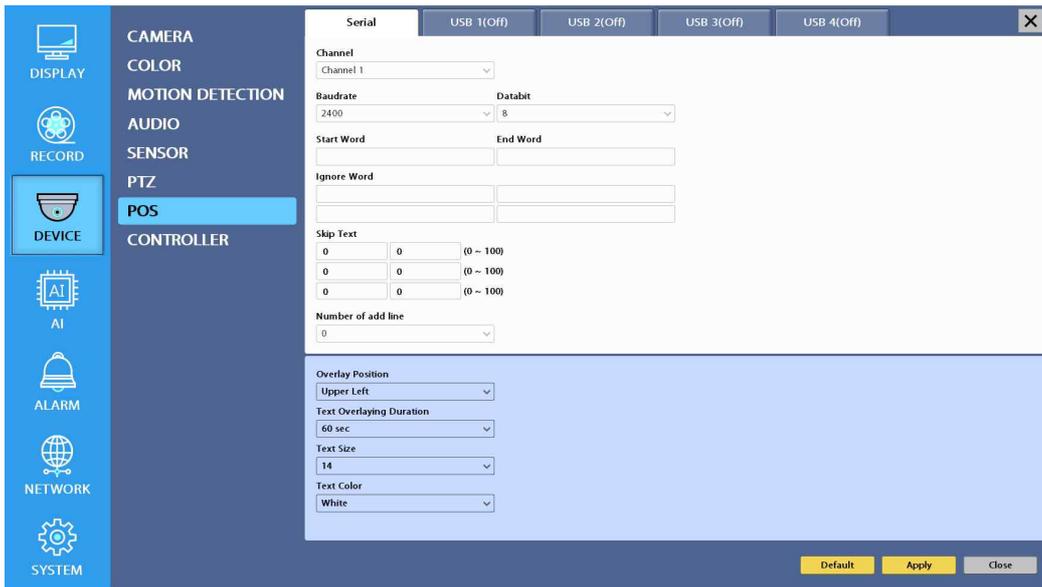
Channel	Select a Channel of POS
Baudrate	Select a baudrate of POS
Batabit	Select a databit of POS
Start Word	Type a start word of transaction
End Word	Type a end word of transaction. Text will be embedded into the picture between start word and end word.
Ignore Word	Type a word which you want ignore during text insertion.
Skip Text	Skip String range.
Number of add line	This will determine the adding line after end word. (0~4)

| Overlay Position	This will determine the text position.
Text Overlaying Duration	This will determine how long display the text up to 120 seconds. (60~120 sec)
Text Size	Change text size.
Text Color	Change text color.

❖ How to Connect POS

1. Connect USB to RS232 serial cable between POS and NVR.
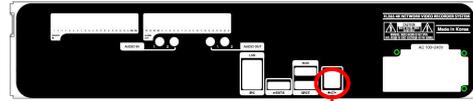
*POS   **USB**   *NVR   **USB**

2. To set manually, at first you should know the setting values of the POS. You can get the information from the POS setting screen.

| Register | Info | Condition | Setting | | | | | | ETC |
| Counter Setting | POS Setting | Place Setting | Receipt Setting | | | | | | |

Device Setup

Device	Use	Part	Port	Protocol
Barcode Scanner	No			
Receipt Printer	Yes	PR4RT	COM1	4800,8,n,1
Cashbox	No			
Information	No			
Printer1	No			
Printer2	No			
Printer3	No			
Printer4	No			
Barcode Printer	No			
Terminal1	No			
Terminal2	No			
Terminal3	No			
Terminal4	No			
Telephone	No			
Save	Close			

3. If your setting is correct, you can see the below NVR screen on transaction. (This is the popup screen. You can set popup in the 'Event In' setup.)


CH1
1920x1080 30 S

FIRST GROCERY

MILK   2.50
BANANA   1.50
APPLE   3.50

TOTAL   7.50
CASH   10.00
CHANGE   2.50

THANK YOU
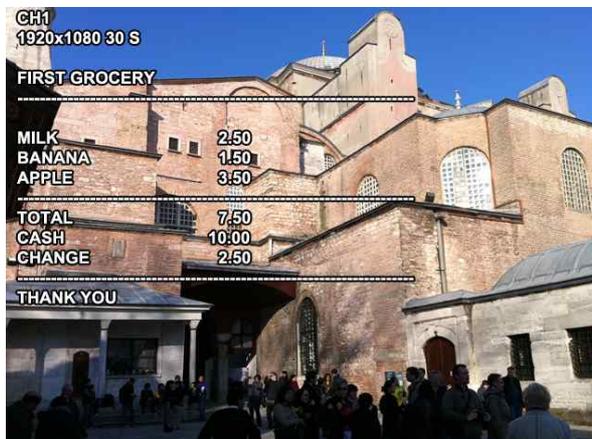
8) Controller
This sets the ID of remote control. If you have many NVRs in the same place, you can control separately the NVR by different remote control ID.

❖ Remote controller ID setup
Use the ID setup and number key to set the ID of remote control on the remote controller. You may check the ID by pressing the remote control key. The ID should be the same between the NVR and remote control.
And you can turn it on/off the key sound.
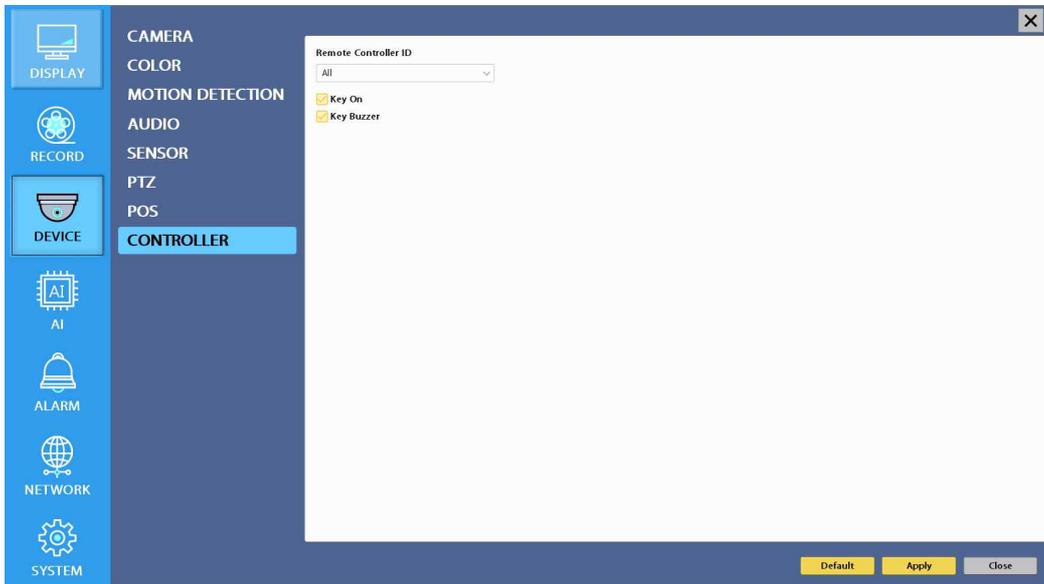
Remote Controller ID	All, 00 ~99
Key Buzzer	ON / OFF

3-4-4. AI(Artificial Intelligence)

• Configure AI functions.

1) Engine
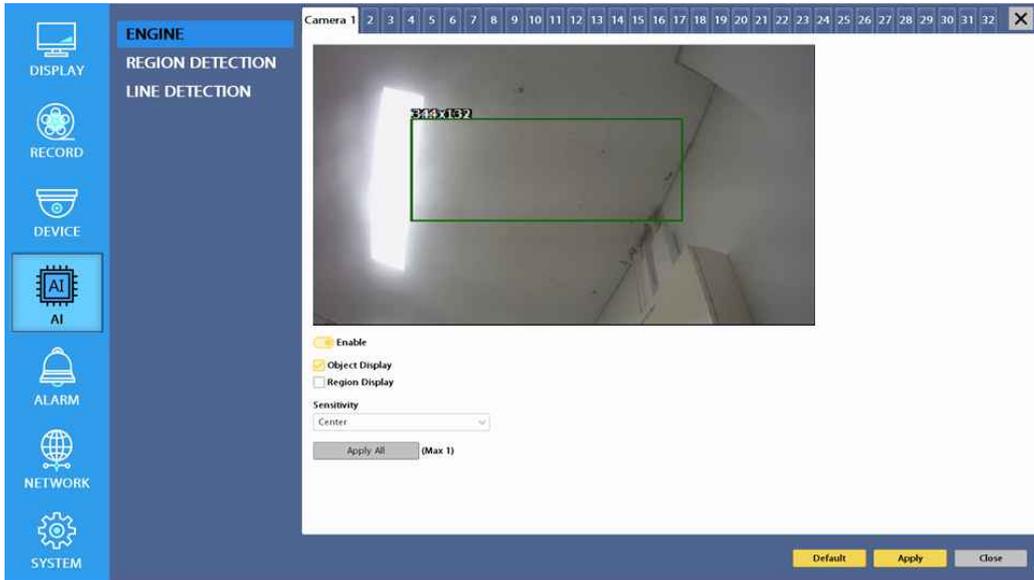
Enable	Enable video analysis function.
Object Display	Display detected objects on live mode
Region Display	Display detected regions on live mode
Sensitivity	Center or Mid Bottom

❖ **How to set Object of AI functions.**
1. Check Enable to activate AI functions.
2. Check Object Display to display object in Live mode.
3. Apply and check the function on live mode of the recorder.

2) Region & Line Detection

❖ How to set Region(Region and Line) of AI functions.
1. Check Enable in order to activate AI functions.
2. Check Region Display in order to display Region in Live mode.
3-a. Apply and go to Region Detection menu.
4-a. Click Add Region and make a region.
5-a. You can move and adjust the region by dragging the edge of region.
6. Apply and check the function on live mode.
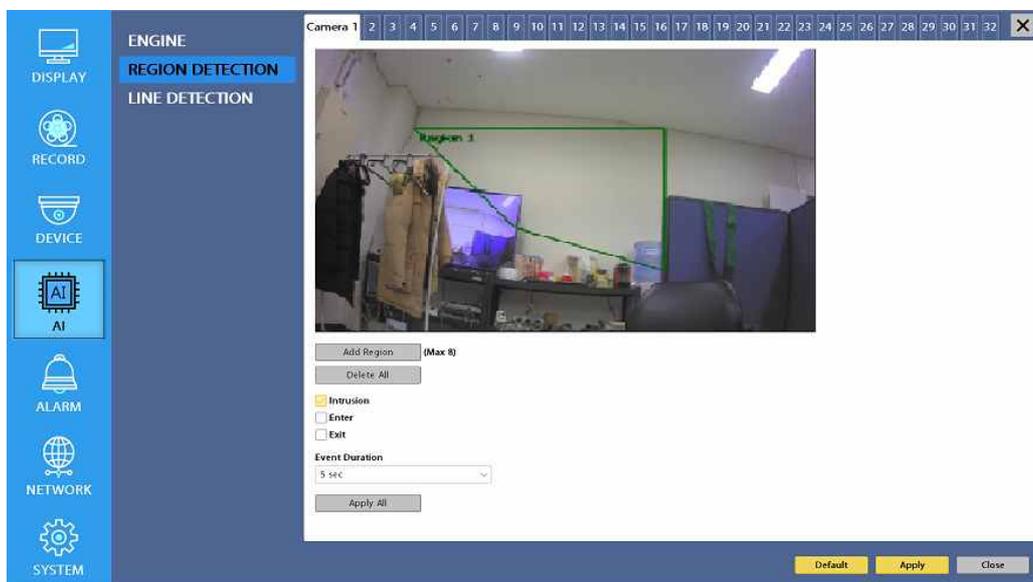
Intrusion	The display will appear when motion is detected in the same direction as the option.
Enter	Detect an event when an object enters the Region.
Exit	Detect an event when an object exits the Region.
Event Duration	1 sec ~ 30 sec

3-b. Apply and go to Line Detection menu.

4-b. Click Add Line and make a line.

5-b. You can move and adjust the line by dragging the edge of line.

6. Apply and check the function on live mode.

3-4-5. Alarm

4-1) Sensor In

- You can choose the action after sensor in between relay, buzzer sound and pop up. Also you can choose more than one action.

- Choose a sensor connected to a channel.
- If a sensor does not work, please check again the sensor type.
- Alarm 1 is relay out.

- Also you can choose more than one action. Furthermore you can set the preset position number by motion detection. If you click the 'setup' ⚙ icon you can see the preset screen.

- You can assign the preset position individually by specific motion.

4-2) Motion Detection

- You can choose the action after motion detection between relay, buzzer sound and pop up.

- Also you can choose more than one action. Furthermore you can set the preset position number by motion detection. If you click the 'setup' [icon] icon you can see the preset screen.

Motion(Camera 1) - Preset

Camera 1	Camera 9	Camera 17	Camera 25
None	None	None	None
Camera 2	Camera 10	Camera 18	Camera 26
None	None	None	None
Camera 3	Camera 11	Camera 19	Camera 27
None	None	None	None
Camera 4	Camera 12	Camera 20	Camera 28
None	None	None	None
Camera 5	Camera 13	Camera 21	Camera 29
None	None	None	None
Camera 6	Camera 14	Camera 22	Camera 30
None	None	None	None
Camera 7	Camera 15	Camera 23	Camera 31
None	None	None	None
Camera 8	Camera 16	Camera 24	Camera 32
None	None	None	None

OK   CANCEL

- You can assign the preset position individually by specific motion.

4-3) Motion Detection + Sensor In

• You can choose the action after motion and sensor detection between relay, buzzer sound and pop up.

	Alarm																Buzzer	Popup			E-mail		Preset
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16		Main	HD Spot	Spot	1	2	
Camera01																							
Camera02																							
Camera03																							
Camera04																							
Camera05																							
Camera06																							
Camera07																							
Camera08																							
Camera09																							
Camera10																							
Camera11																							
Camera12																							
Camera13																							
Camera14																							
Camera15																							
Camera16																							
Camera17																							
Camera18																							
Camera19																							
Camera20																							
Camera21																							
Camera22																							
Camera23																							
Camera24																							
Camera25																							
Camera26																							
Camera27																							
Camera28																							
Camera29																							
Camera30																							
Camera31																							
Camera32																							

SENSOR
MOTION
MOTION+SENSOR
VIDEO LOSS
POS
SNAPSHOT
HDD
ALARM

DISPLAY
RECORD
DEVICE
AI
ALARM
NETWORK
SYSTEM

Default   Apply   Close

- Also you can choose more than one action. Furthermore you can set the preset position number by motion detection. If you click the 'setup' ⚙ icon you can see the preset screen.

- You can assign the preset position individually by specific motion.

4-4) Video Loss

- You can choose the action after video loss between relay, buzzer sound, and pop up.
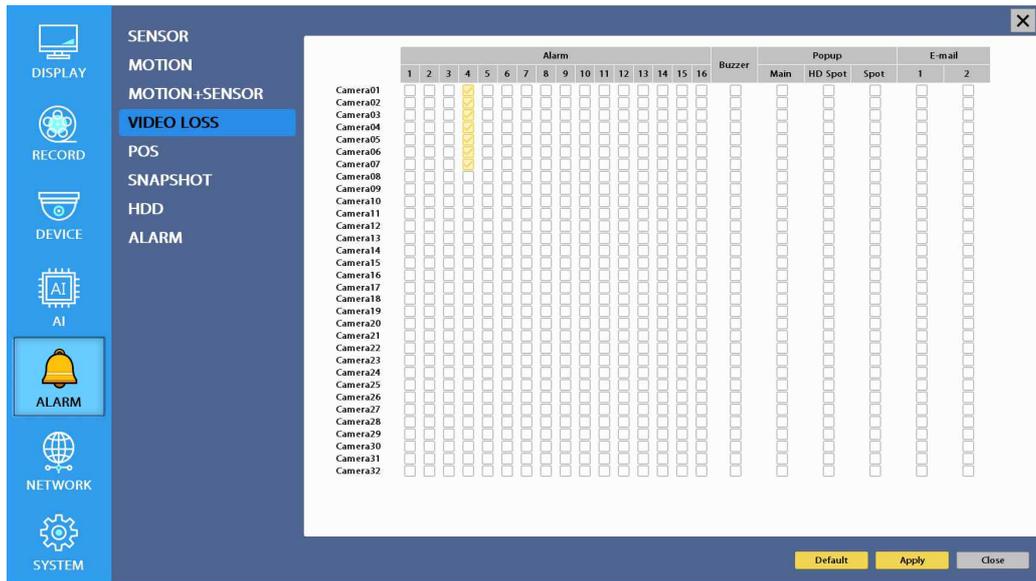
- Also you can choose more than one action.

4-5) POS

- You can choose the action after POS transaction or video loss between relay, buzzer sound and pop up.
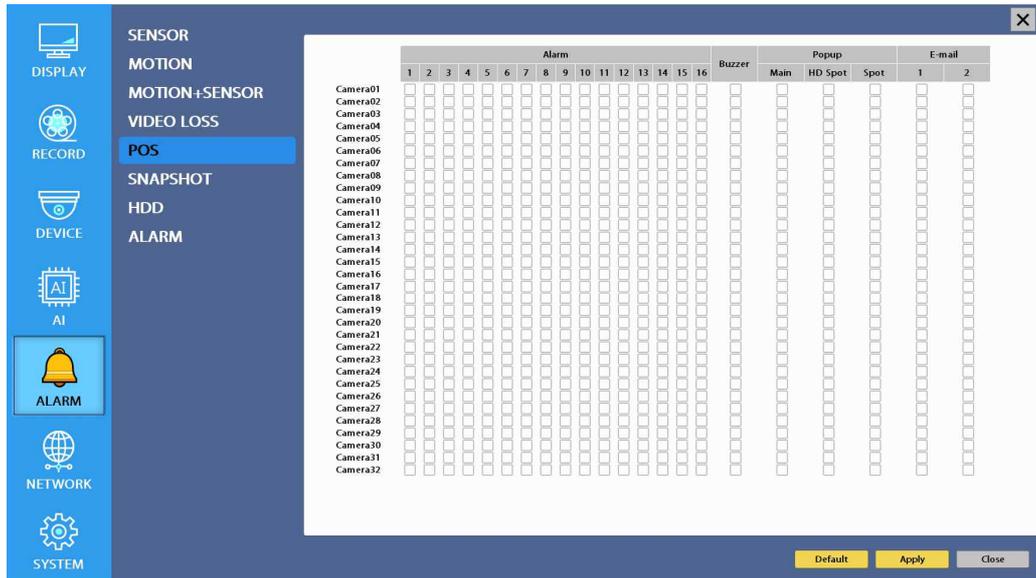
- Also you can choose more than one action.

4-6) Snapshot

• Set up snapshot according to the set email settings
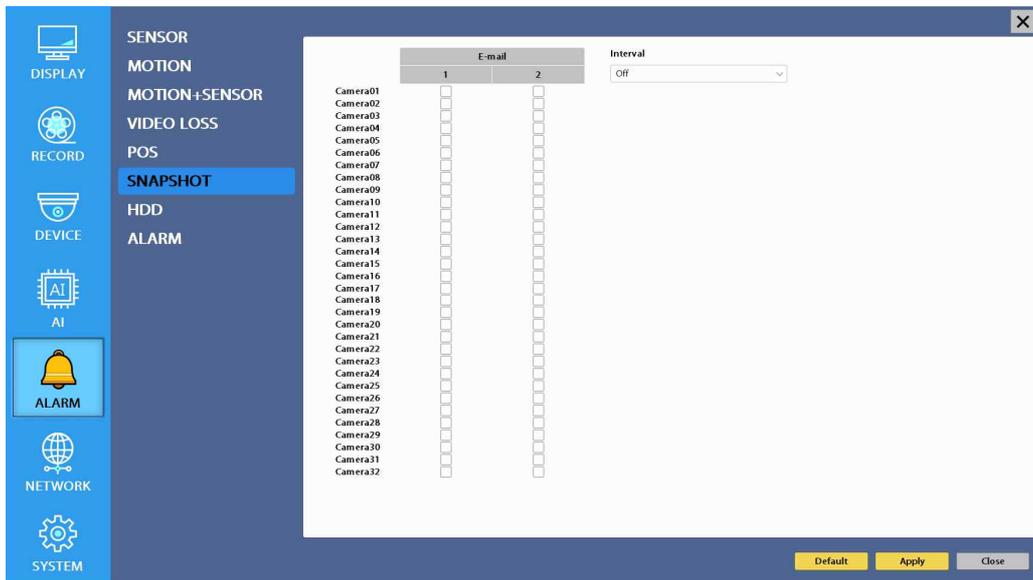
4-7) HDD

• Set an alarm or buzzer when S.M.A.R.T error occurs in the HDD
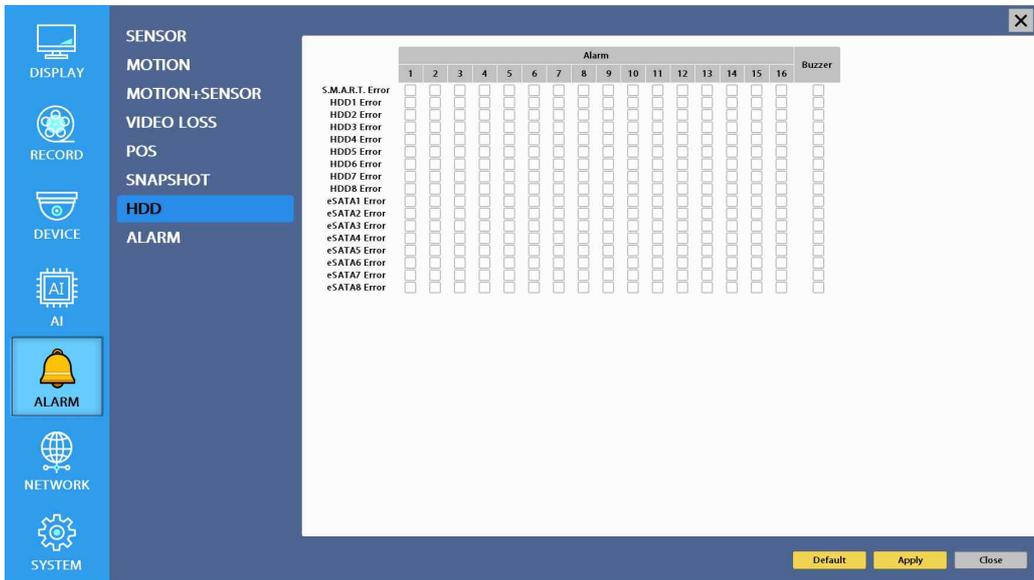
4-8) Alarm

- You can choose the duration time from 5 to 60 seconds after motion detection between relay, buzzer sound, pop up and preset.
- You can set a name of the alarms.

❖ **Email**
Set events to send the email.
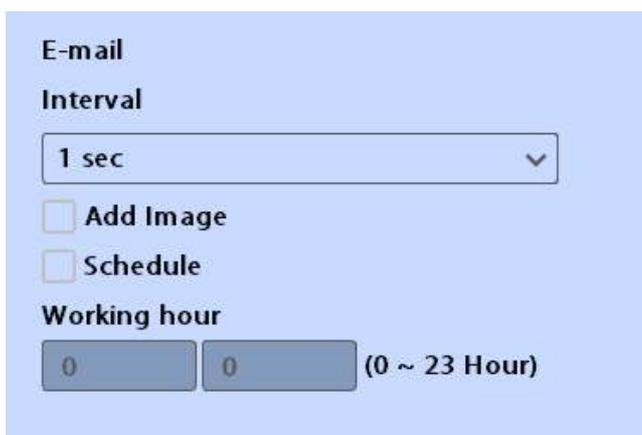
Interval	Set an interval for sending emails.
Add Image	Send a snapshot of events to the email.
Schedule	Set schedule.

3-4-5. NETWORK

Configure and view Address, Port, DDNS, E-mail, Control and Status settings.

1) Address

Configure Network information for Remote client connection.
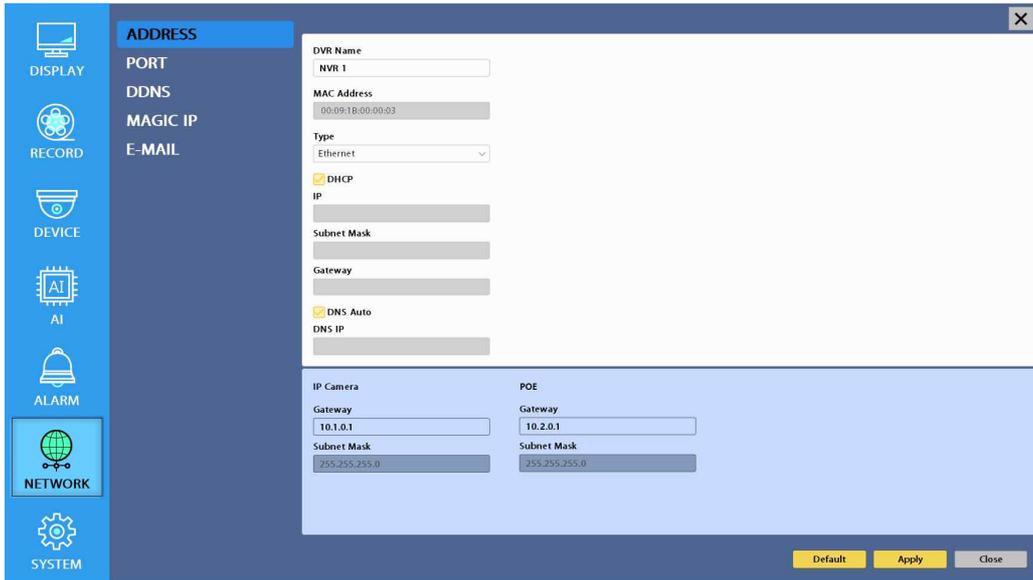
NVR Name	Type the URL of NVR using virtual keyboard.
Type	It can be supported only Ethernet.
DHCP (Dynamic Host Configuration Protocol)	Set whether you want to use DHCP or not (On/Off). If you connect LAN after setting it to On, IP is allocated automatically. If you set it to Off, you have to input IP. DHCP is a protocol that allows managers to manage and allocate IP address centrally.
IP	Type the IP address.
Subnet Mask	Type the subnet mask.
Gateway	Type a gateway.
DNS Auto	If you connect LAN after setting it to On, DNS IP is allocated automatically. If you set it to Off, you have to input DNS IP.
DNS IP	Type the DNS IP.
IP Camera	Set IP Camera gateway.
POE	Set POE gateway.

2) Port

There are 4 kinds of ports for the case such as watch, search, setup and web. You can individually set the port number of the NVR. The default is 8000. You can choose from 8000 to 9999.
If you activate 'uPNP (Universal plug and play)' box, NVR connects the router automatically with these port number. You don't have to setup the router.
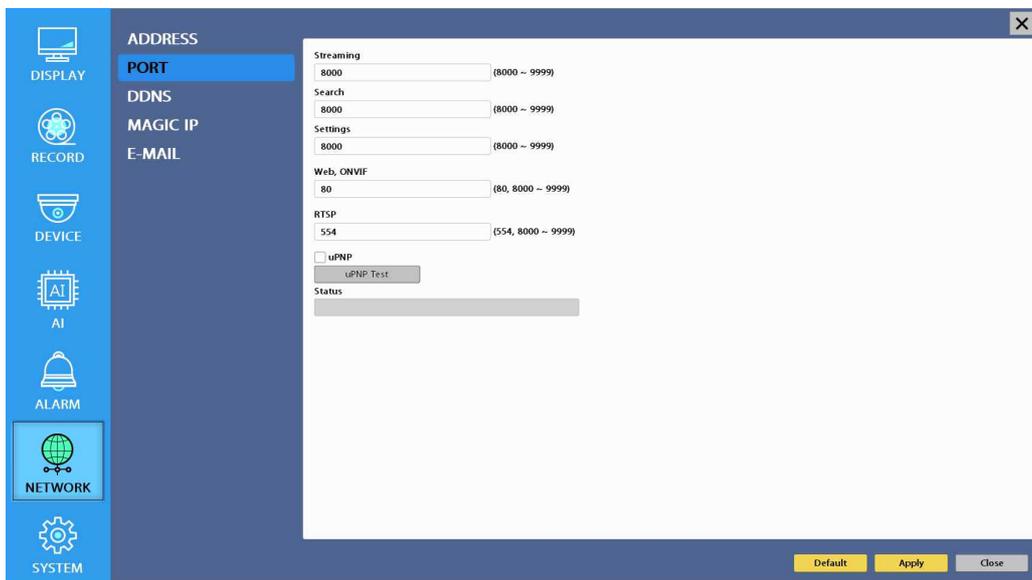
| Watch	Type the port. (1000~40000)
Search	Type the port. (1000~40000)
Setup	Type the port. (1000~40000)
Web(Onvif)	Type the port. (80, 1000~40000)
RTSP	Type the port. (554, 1000~40000)
IPCamWebPage	The Channels are assigned from 8081.
uPNP	ON / OFF
uPNP Test	Test uPNP
Status	It shows the test result of uPNP.

3) DDNS

This is the function to automatically change the IP of NVR to URL. This product supports the automatic DDNS service using manufacture's internal server. Also you can choose Dyndns.2
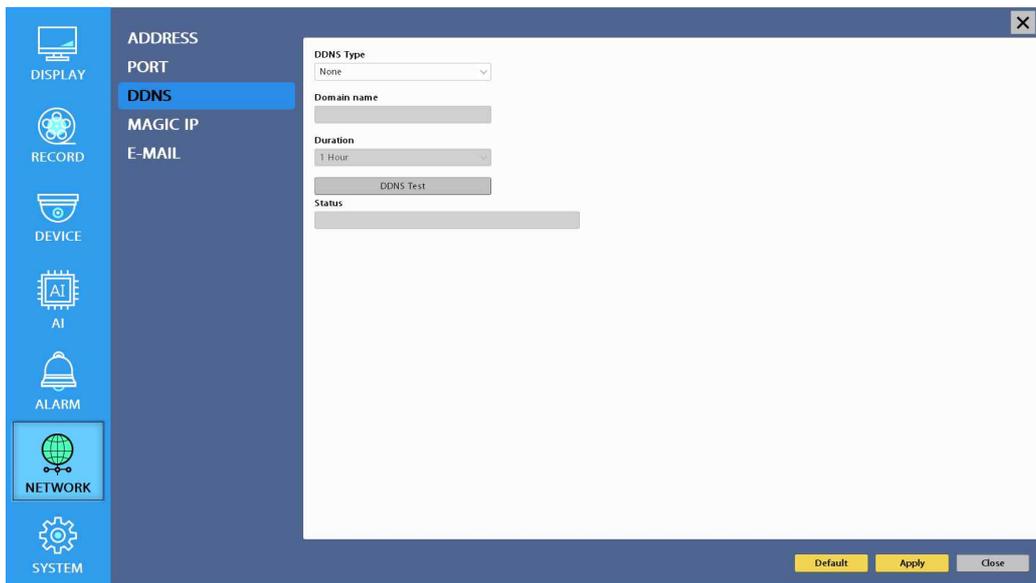
DDNS Type	Choose a DDNS type.
DDNS Server	Defend on the DDNS type, it will be auto-typed or disable.
Port	Defend on the DDNS type, it will be auto-typed or disable
Domain name	Type the port of the email account.
ID	Defend on the DDNS type, it will be auto-typed or type the ID of your DDNS.
DDNS Password	type the DDNS password.
Duration	choose the time sync frequency with DDNS server.
DDNS Test	Test your DDNS.

4) Magic IP

P2P service, which enables network access simply by using a smartphone to scan the supplied product QR code.
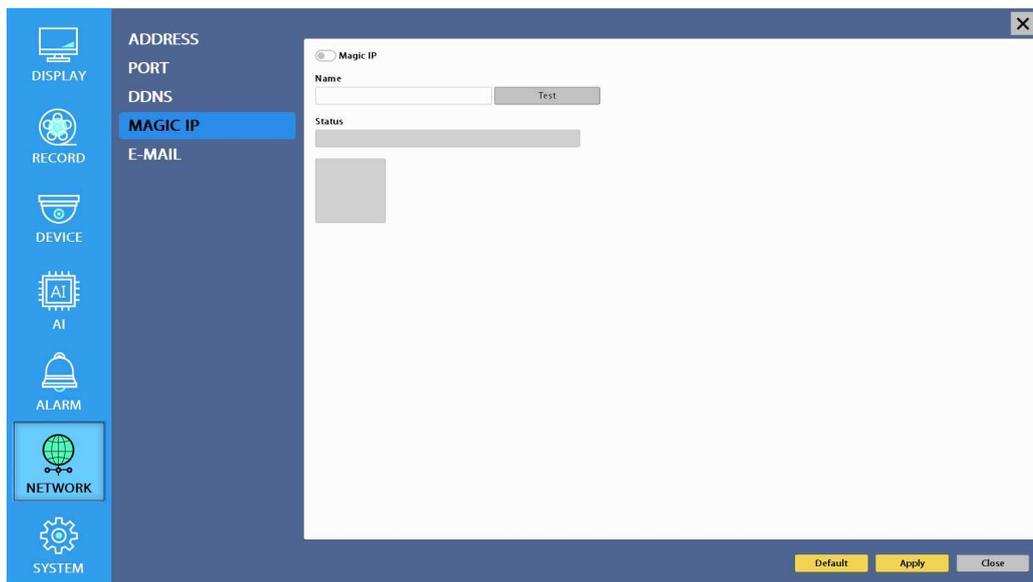
❖ Magic IP setup
1. Check Magic IP.
2. Make your own ID for Magic IP.
3. The ID must start with letter and contain at least 8 characters.
4. When the test is done and succeed, it's QR code is automatically created.

5) E-mail

You can send a notification of events by email. Fill all the information correctly and push the 'Email Test'. Also you can select each event individually by 'Event Set'.

Receiptor	Type the email address of the receiptor.
Sender	Type the name of the sender.
SMTP Server	Type the SMTP server of the email account.
Port	Type the port of the email account.
Authentication	Set whether you want to use authentication or not (On/Off).
SSL	Set whether you want to use SSL or not (On/Off).
Account	Type the email account of the sender.
Password	Type the password of the send's email account.
E-mail Test	Test the email account.

3-4-6. SYSTEM

Configure and view system Date/Time, User Authority, Storage, System Log and Configuration settings

1) Date/Time
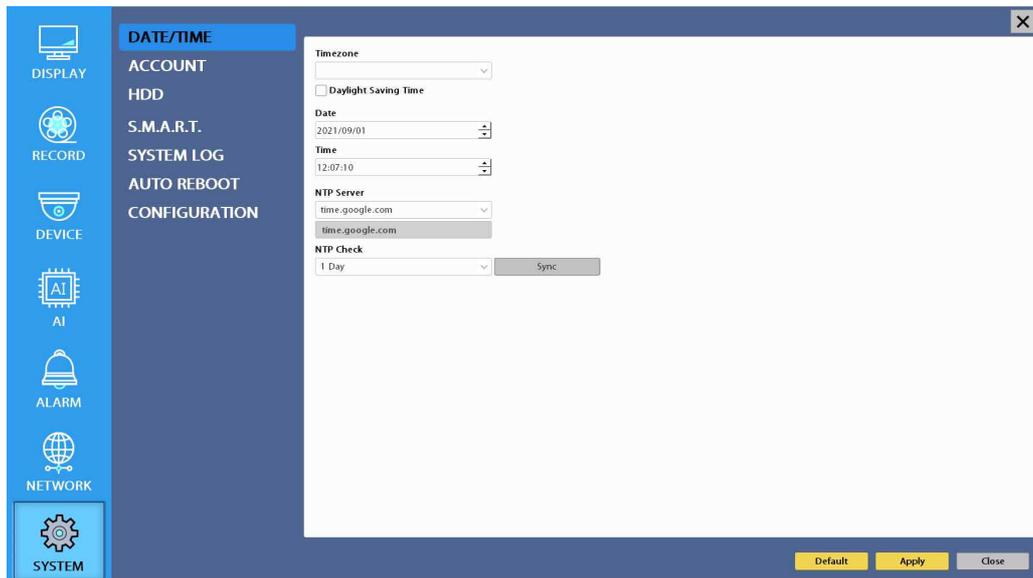
Timezone	Choose the time zone of your site. If you using the NTP function, it must be set correctly to your zone.
Daylight Saving Time	It enables to adapt the day light saving time automatically.
Date / Time	This sets product time. Input time by pressing number buttons after moving cursor with direction buttons. Be careful to move to backward. The overlapped data will be deleted with warning message.
NTP (Network Time Protocol) Server	This function is to change the time of NVR automatically via network. Press the 'Enter' button and using the virtual keyboard, type the address of NTP server.
NTP Check	choose the time sync frequency.
Sync	Sync the time and NTP.

2) Account

This sets User authority individually. You can give to each users the authorities such as setup, search, backup, PTZ, network and camera control.
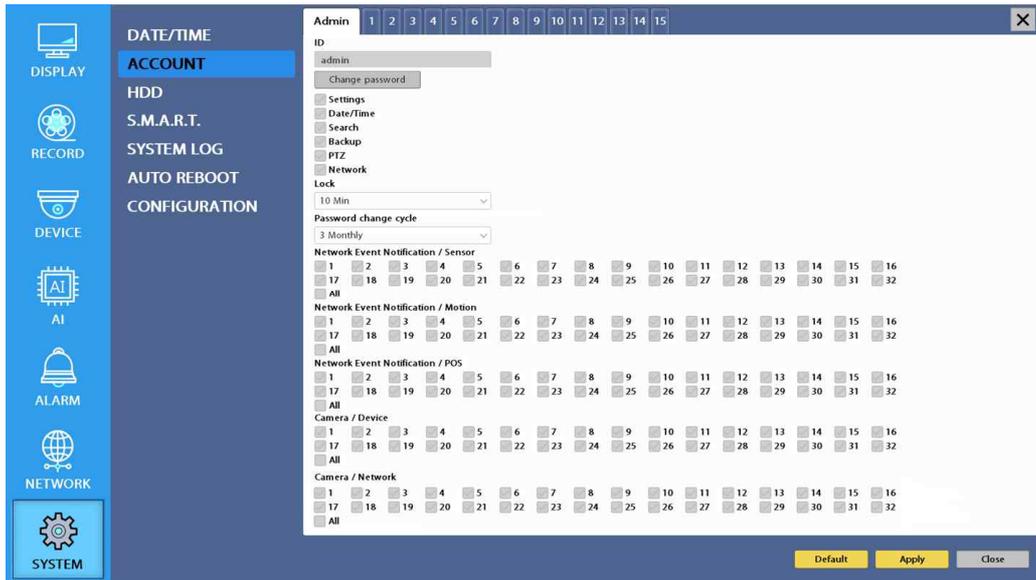
ID	Type an ID.
Change Password	Type a password.
Setup	Authorizes the setting of the system.
Search	Authorizing the search of the system.
Backup	Authorizing backup of the system.
PTZ	Authorizing PTZ of the system.
Network	Authorizing network of the system.
Network Event Notification	Authorizing a network event notification.
Camera	Authorizing a camera.
Lock	select the auto-lock time.(Off, 1~10 min)

3) HDD

Display the information and usage of the hard disk drives.

Total	Display the HDD usage being used for the product. If you press the 'Enter' button on here, all the hard disk drives will be formatted.
HDD Check	Check the HDD.
HDD Overwrite	Determine whether you want to continue recording if there is no spare saving space at hard disk drives.
Auto Deletion	You can select the holding period of the data. If you choose 'OFF', the NVR keep the maximum data regarding the HDD capacity.

4) S.M.A.R.T :Self-Monitoring Analysis and Reporting Technology

This function lets you probe the hard disk drives and investigate the status of the drivers automatically.
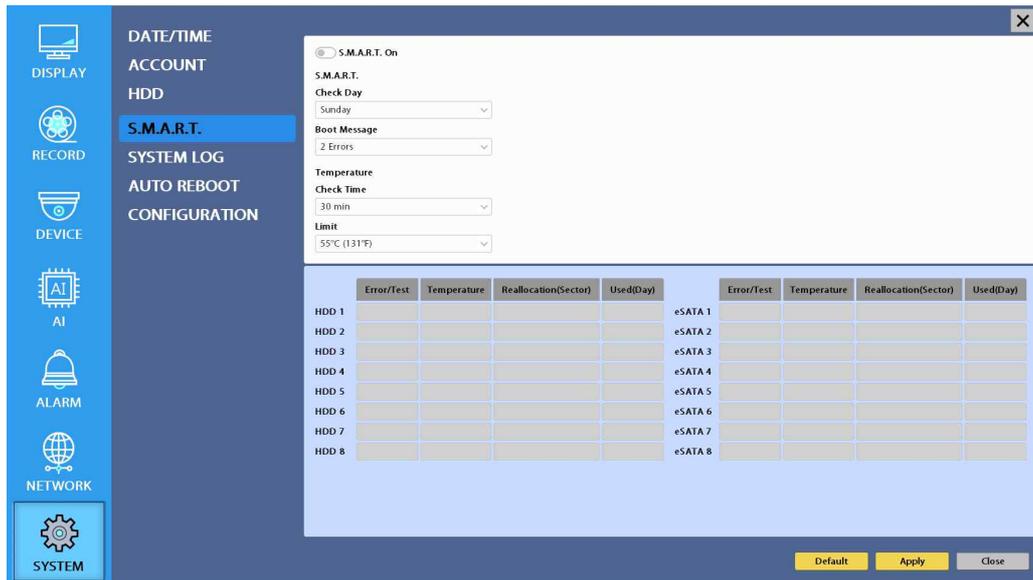
| S.M.A.R.T.	
S.M.A.R.T. On	Set whether you want to use S.M.A.R.T. or not (On/Off).
Check Day	Determine the date to perform the S.M.A.R.T.
Boot Message	The number of message of showing the errors.
Temperature	
Check Time	Temperature check period.
Limit	The upper tolerance of the hard disk drive temperature.
Alarm out	You can choose Buzzer or Relay

5) System Log

You may view all System administration log from Setup → System → System Log. Also you can export the system log and easily send it to technical support for trouble shooting.
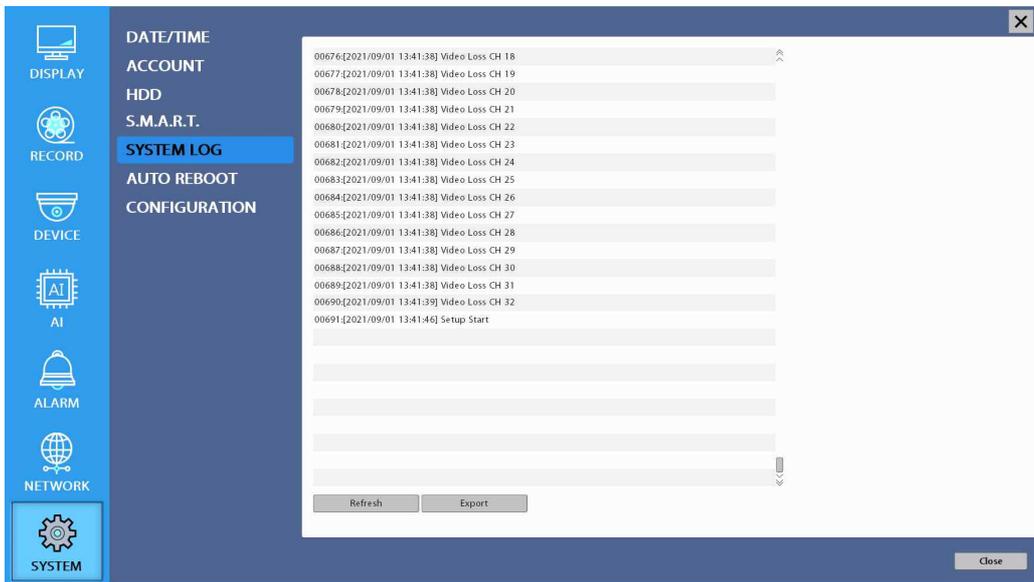
Refresh	Refresh the system log.
Export	Export the system log.

6) Auto Reboot

Set schedule for auto reboot.
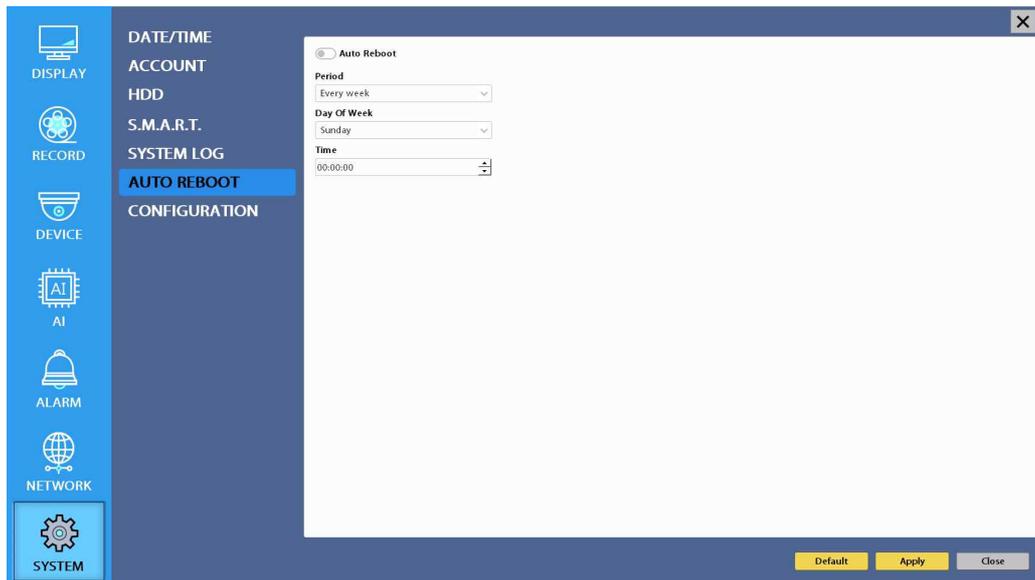
Auto Reboot	On / Off
Period	Set auto reboot period
Day Of Week	Set the day
Time	Set the time

7) Configuration

Shown at the following screen, from Setup → System → Firmware, you may view the current firmware version as well as Upgrade the firmware and additionally, Export, Import, and Default NVR Configuration.
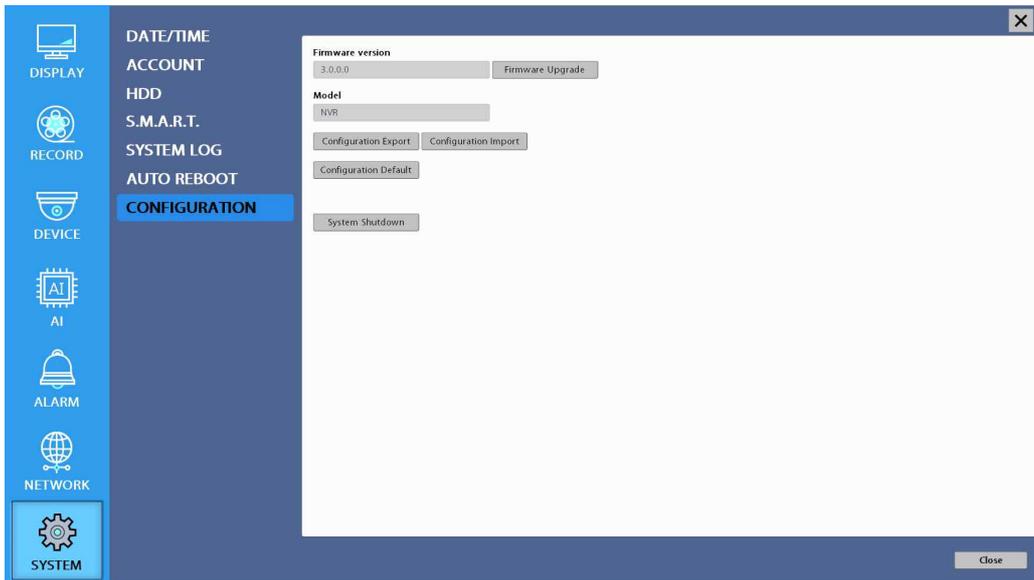
Firmware version	Show the firmware version.
Upgrade	Upgrade the firmware.
Export	Export system settings.
Import	Import system settings.
Default	Return to factory default settings.

You should connect correctly the USB devices, before you use firmware upgrade, export and import.

3-5. Firmware Upgrade

If you want to upgrade, please follow that;
1.   Download the latest firmware to USB memory root directory.
2.   Put this memory to USB slot of NVR.
3.   Choose 'Upgrade' and you can see the below screen will appear.
4.   Select the desired file, then choose 'OK'.
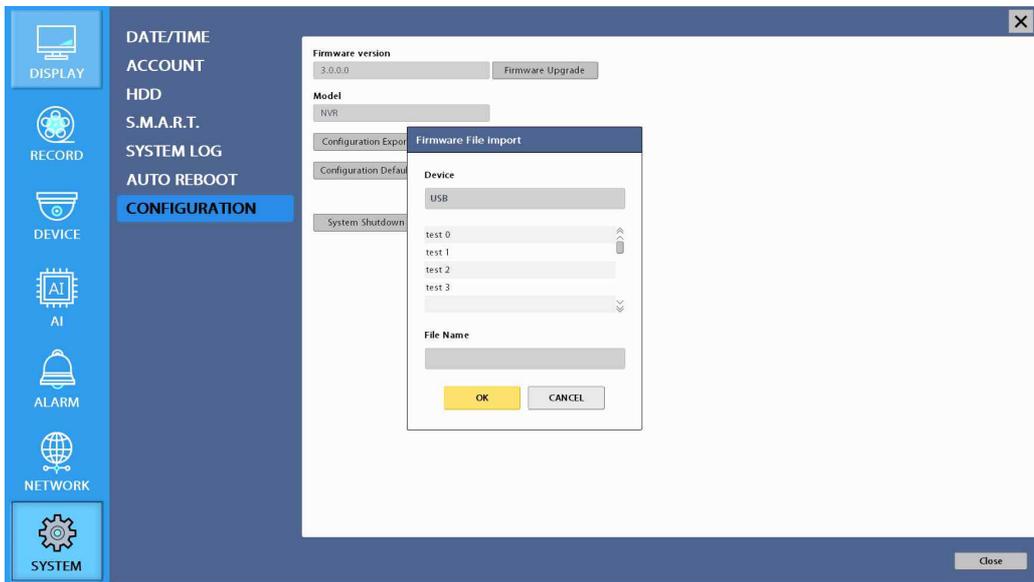
If you choose OK, you can see the below download window on the NVR screen.
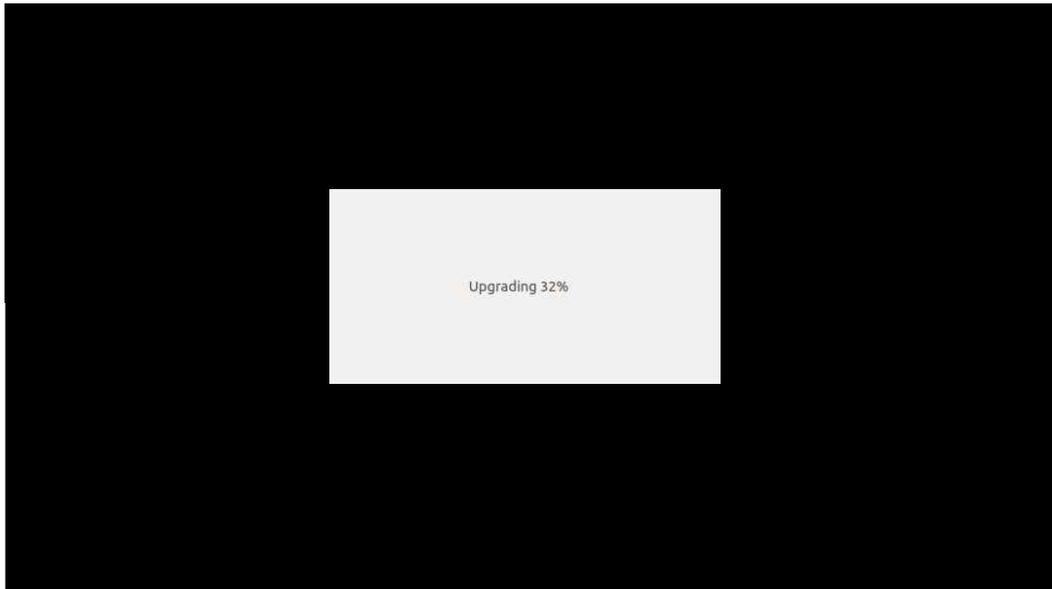
☞ WARNING!!!

Do not turn off the power during download procedure. If you power off manually, all memory will be deleted !

※ After upgrading, NVR will reboot automatically. Before rebooting, do not operate manually !

Trouble Shooting

Symptom	Checkpoint	Countermeasure
● Can't turn on power.	● Is NVR connected to power supply cable?	● Connect power cable
● There is no image on monitor	● Are NVR and monitor turned on? ● Are cables of NVR connected?.	● Turn on power. ● Connect NVR cable.
● Only INFO OSD is on monitor and no image	● Is camera turned on? ● Are cables of NVR and monitor connected?	● Turn on camera. ● Connect cables of NVR and monitor.
● There is Video Loss message.	● Is connection between NVR and camera normal?	● Check whether NVR and camera are connected properly
● Can't search with Client Program.	● Isn't another user using same IP?	● Use it after another use finishes using it. If another user is searching NVR remotely with same IP, you can not search.
●Motion Detection doesn't work well	● Isn't it too bright or too dark?	● Increase Motion Detection sensitivity. ● Install camera closer.
● There are differences between Live screen and actual condition during remote monitoring	● Isn't camera installed too far away?	● Since it buffers Live images, there might be changes with actual condition. (1~2 sec)
● Live doesn't work well in remote monitoring	● Is it set to True Color? ● Are PC specifications and VGA Card specifications are appropriate?	● Upgrade the VGA card to the latest driver.