MPEG-4 DVR User's Manual (Model: 16CH MPEG-4 DVR)

SAFETY PRECAUTIONS

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

This label may appear on the rear of the unit due to space limitations.

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

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

Warning
To reduce the risk of fire or electric shock, Do not expose this product to rain or moisture.
Do not insert any metallic object through ventilation grills.

Power disconnect : Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the main source; However, the unit is operational only when the ON-OFF switch is in the ON position. To disconnect it from the main source, you have to disconnect the Power cord.

FCC COMPLIANCE STATEMENT

A CLASS A computing device subject to certification by the Commission shall be identified pursuant to Par 2.925 et Seq of the chapter. In addition, the label shall include the following statement:

This device complies with Part 15 of 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 operation.

Where a device is constructed in two or more sections connected by wires and marked together, the statement specified in this Section is required to be affixed only to the main control unit.

The users manual or instruction manual for the EUT shall contain the following statement or equivalent.

Caution : Changes or Modifications not expressly approved by the party responsible for compliance could void the users authority to operate the equipment.

If the EUT requires accessories such as special shield cables and/or connectors to enable compliance with emission limits, the instruction manual for the EUT shall include appropriate instruction on the first page of the text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

For a CLASS A digital device or peripheral, the instruction furnished the user shall include the following or Similar statement placed in a prominent location in the text of the manual.

Note : This equipment has been tested and found to comply with the limits for a CLASS a digital device, pursuant to Part 15 of 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 in stalled and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the this equipment in a residential area is likely to cause harmful interference in which cause the user will be required to correct the interference at his own expense.

Before Starting Your DVR Operation

This document is a basic manual for the DVR users.
This manual describes the appearance and name of products, how to configure the system program, and how to use the system.
Before using DVR, a user should read the contents of user manual, and then deal with the product considering the precautions defined in the manual.
To open the system case and touch the inner parts for corrective maintenance, a user should contact the place where he/she purchased the products to get the help from expert.
In addition, if there is any question for use or any damage on the product, please contact call the place where he/she purchased the products.

Precautions for safety (User should observe)

1. Precautions for installation

- Install the product on a flat floor not closed and retain the distance of more than 15 cm from the rear panel to the wall.

- Install the product on a well-ventilated place.

- Keep it away from strong magnetism or electromagnetic wave.

- Installing it near radio equipment such as TV and radio may cause a fault.

- Do not install it on a place that is exposed directly to the sun or contains lots of heat such as near a heating apparatus.

- Do not install it on a cold place.

- Place the equipment or tools in the site remote from a busy road so that people are not hurt.

- Do not install it on a place where there is severe vibration, much humidity or soot.

- Should use the product in the rated voltage (The equipment is used as both 110V and 220V, but it is set to 220V for delivery. It is possible to adjust it with the changeover switch on the rear panel.)

- Connect it to the outlet with the ground terminal.

- Discard the vinyl bag well. (It is dangerous to put it on the head.)

2. Precautions for use

● For the repair, contact the company or the place where you purchased the product.

● Read the user manual before using the product.

● Do not open the cover at your discretion because there are parts sensitive to the environment within the equipment.

● Arrange the power cord safely and do not touch it with wet hands.

● Do not use a loose outlet or a damaged power cable.

● Do not use benzene, thinner and alcohol for cleaning. They may deform the product.

● Do not touch the exposed terminal.

● For the power-off of system, normally turn off the power of the program and then, power off the peripherals. (Do not power it off with the power button on the front panel of body.)

● Be careful to prevent a conductive object from falling into a hole that was punched for ventilation.

● Do not dissemble and remodel the product.

● Do not place a heavy thing on the body.

● Do not give a shock during the movement of equipment.

● If you use the product in the state of smoke or smell emitted, it may cause a fire or an electric shock. For this case, immediately block the power switch and contact the company or the place where you purchased the product to consult it with a special technician.

This user's manual is subject to change without any notice by function upgrade and so on.

Table of Contents

I. Introduction

1. Package Content

After purchasing DVR product, unpack it at first and unload it on a flat floor or a place where it is to be located. Then, verify that the following contents are contained.

- 16CH MPEG-4 DVR
- Adapter (DC12V)
- Power cord
- User's manual
- Install CD
- Remote controller (included two battery)

16CH MPEG-4 DVR

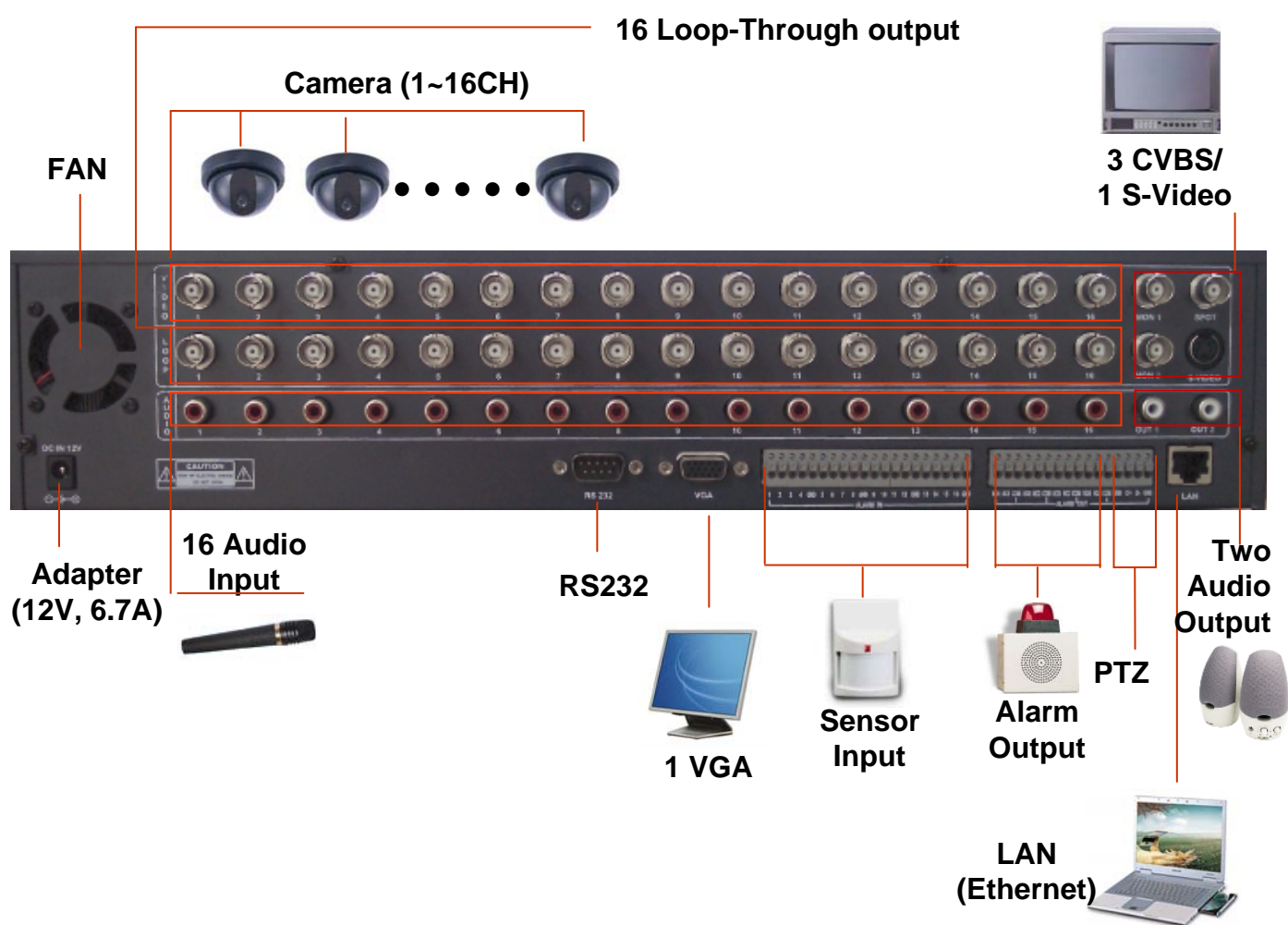Power cord

Adapter

User's Manual

Install CD

Remote controller

2. Features

This Embedded Linux Stand-Alone DVR can record 16 channel video and 16ch audio at the same time. It provides playback, live display, back-up and network function while it is in recording mode. And it also offers the following features:
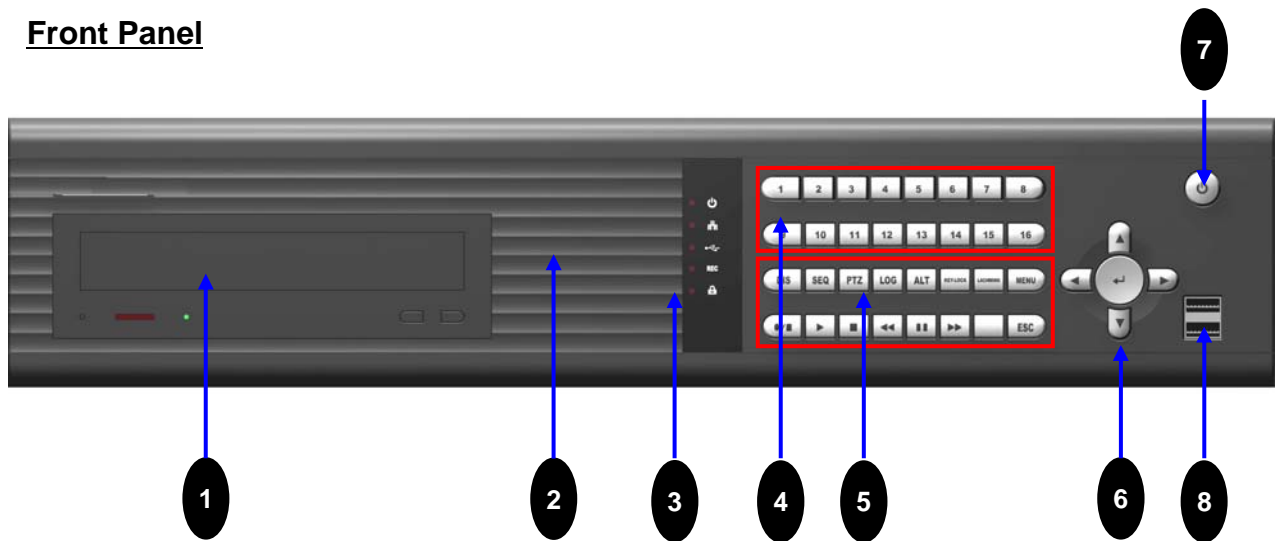
◆ **16 Composite video Input/ 16 Loop-Through Video output Connectors**
   - Compatible with Color (NTSC or PAL) and B&W (CCIR and EIA-170) Video

◆ **3 Composite video output/ 1 S-Video output/ 1 VGA output Connectors**

◆ **16 channel audio Inputs/ 2 channel audio outputs**

◆ **High quality video Display and Recording**
   - NTSC (720x480), PAL (720x576) real time display

◆ **Compression: MPEG-4 for video, G.723 for audio**

◆ **Multiple Search Categories (Date/Time, Motion, Alarm, Manual)**

◆ **Real time recording and Playback support**
   - 480 Fps recording and playback for NTSC at CIF image (400 Fps for PAL)
   - Pre-Recording by event recording mode

◆ **Continuous Recording in Disk Overwrite Mode**

◆ **Pentaplex: Simultaneously Live, Record, Playback, back-up and Network**

◆ **COPY**
   - CD-RW (Option: DVD) Back up and USB 2.0 USB Memory Drive support

◆ **User-friendly GUI Menu, Mouse Operation**

◆ **PTZ camera control support in local and remote area**

◆ **16 Alarm input Connections, 4 relay output connection**

◆ **Network Function**
   - Static IP, Dynamic IP (DHCP), PPPoE and DDNS support
   - Live or Recorded Video Accessing via Ethernet
   - Remote Configuration.
   - Multi-user accessing support/ CMS (Center Monitoring Software) support
   - Two way audio transmission, Remote Event (Alarm, Motion) Notification

◆ **Audio Recording and Playback**
   - **16ch audio recording**/ 1ch audio playback for selected audio channel.

3. Front Panel and Rear Panel Connection

Remote Controller

USB Memory Driver

16 Loop-Through output

Camera (1~16CH)

FAN

3 CVBS/ 1 S-Video

Adapter (12V, 6.7A)

16 Audio Input

RS232

1 VGA

Sensor Input

Alarm Output

PTZ

Two Audio Output

LAN (Ethernet)

II. INSTALLATION

Front Panel

1. CD Tray
   This can be used for backup media. According to option requirement, DVD also can
   be mounted. can be used as backup media

2. Jog and Shuttle
   Jog and shuttle enable user to operate DVR easier in handling such as fast
   forward, fast reverse playback and one frame movement in still picture.

3. LED Indicators

   1) POWER LED
      This red LED turns "ON" when Power is "ON".

   2) NETWORK indication LED
      This green LED will turn "ON", while data through network is transmitting.

   3) COPY LED
      This green LED will turn "ON" during data COPY through CD-RW or USB Memory
      driver.

   4) REC
      This red LED will turn "ON" during recording.

   5) KEY LOCK
      This yellow LED will turn "ON" while LOCK button is working.

   6) Remote Controller receiver.
      Remote controller sensor input window

● POWER
● NETWORK
● COPY
● REC
● KEY LOCK
● REMOCON
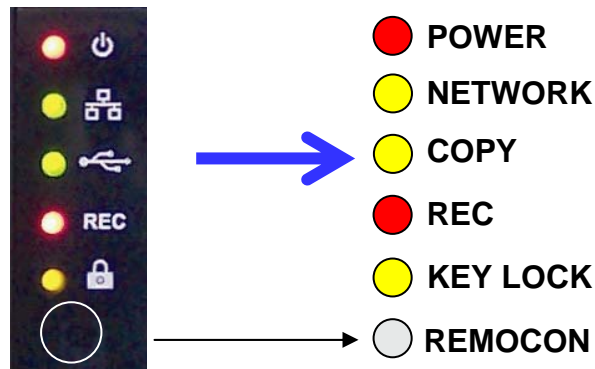
4. Channel Selection buttons for single channel display

Channel selection button from CH1 to CH16 can be used to display given channel on monitor.
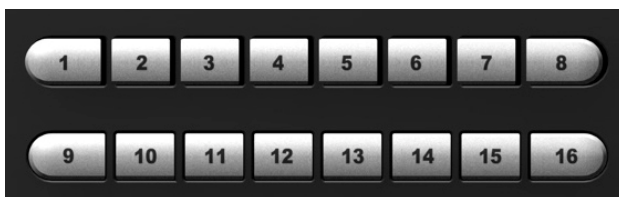
5. Function buttons

1) ALT

This button is reserved for future use.

2) KEYLOCK

In order for only authorized person to operate buttons in front panel, this LOCK button can be utilized. If this button is pressed, all of buttons in front panel are not operated at the same time yellow LOCK LED ON. To release button locking, password will be just requested after pressing LOCK button. If correct password is input, button LOCK will be released. When DVR is under key lock mode, this icon 🔒 will be appeared on the left top corner of monitor.

3) PTZ (Pan, Tilt and Zooming)

The camera(s) with panning, tilting and zooming function would be connected with one and some of video inputs of rear panel of DVR.   In order to control PTZ function of the camera, PTZ button is pressed first. An then direction button for panning and tilt can be pressed, ▶ ▶ and ◀ ◀ for zooming in/ out can be used in PTZ mode. When DVR is under PTZ mode, this icon 🔲 will be appeared on left top corner of monitor.

**4) COPY button (Backup)**

   This **COPY** button can be used to retrieve some of recorded files into backup media like USB memory drive or CD/ DVR after searching recorded files. According to backup media, Icon (CD or DVD) or (USB memory drive) will be appeared on the left top corner of monitor.

5) Sequential Display button

   If this button is pressed under given video display mode, each video display mode is switched sequentially. For example, if this button is pressed in QUAD mode, QUAD picture is switched sequentially from CH1-4, CH5-8 to CH13-16.

6) Display selection buttons

   Whenever these button is pressed, display mode can be changed from QUAD, 9CH to 16CH display mode. Whenever QUAD button   is pressed, displaying picture will be changed from CH1-4 to CH5-8, CH9-12 and CH13-16. Whenever button   is pressed, displaying picture will be changed from CH1-8 to CH9-16. This button shows 16 picture in monitor.

7) REC/ STOP button

   REC button is pressed to start recording and to stop recording again. This is toggle button. When DVR is under recording mode, this icon will be appeared on each cameo of each channel.

8) Search button

This can be used to find out proper recorded file for playback or copy (backup). Searching list can be displayed by pressing this button.

9) REW

This button can be used for high speed backward playback. It support 2 to 16 times playback speed.

10) PLAY button and **11) STOP button**

   If **PLAY** (▶) is pressed, playback picture will be frozen. If it is pressed again, playback will be restarted. This button is for picture pause and play. To stop playback, **STOP** button is used.

12) FF

   Press FF button to do high speed forward playback. It support 2 to 16 times playback speed.
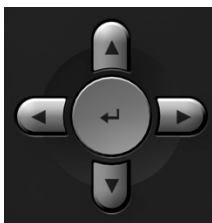
13) MENU

   MENU button is pressed to enter menu system.

14) ESC

   ESC button is used to return upper menu.

6. Direction button and Enter Button

Direction buttons are used to move LEFT, RIGHT, UP and DOWN in menu.
They also can be used to input password. ENTER button is used to save parameter, to select parameter in the menu. And also in playback it is used to select one of listed file for playback after searching recorded files by all, time, alarm, motion, manual and so on.

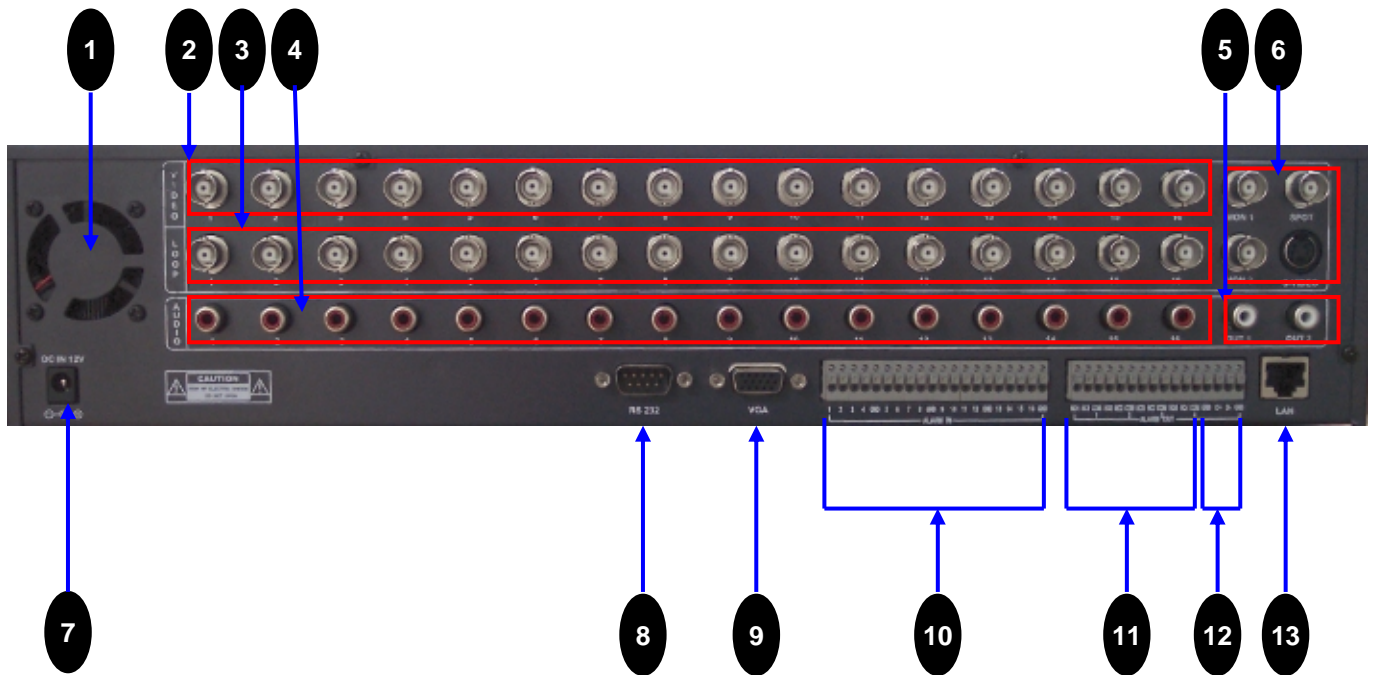## 7. Power Button (Power On/ Off button)

This Power button can be pressed to turn off DVR power. When this button is pressed, password is requested. When right password is input to DVR, DVR power will be turned off.

8. USB 2.0 connector (for Mouse with USB interface, USB memory Drive and so on.)

Two USB Connectors.

Rear Panel

1. FAN

2. 16CH Video Input: 16 channel composite video inputs with BNC connectors
Since this DVR automatically detects video format (NTSC or PAL) as soon as power is ON, NTSC or PAL video sources can be connected in DVR. But NTSC and PAL video sources for 16CH video inputs can not be mixed. If they are mixed, DVR can' not be operated properly.

3. 16CH Loop through outputs: 16 channel composite video outputs with D-SUB connectors. If the connection of loop-through video outputs into another video equipments is requested, 16CH Loop-Through outputs can be utilized for it. If loop-through video outputs will be connected to another video equipments, 75 Ohm termination switch should be "OFF". Then, another video equipments should be 75 ohm terminated.

4. And 5. 16CH Audio input (RCA) and 2CH Audio Output (RCA)
Unbalanced audio signal input and output with RCA jack. Connect the audio source to audio input, audio output to your amplifier because the DVR don't amplify audio output. A speaker with an amplifier will be needed for audio playback.. The audio input can be from an amplified source or directly from a microphone.

6. 2CH composite Video Output and 1 S-Video Output
   Two video output (MON1 and MON2) with same video output and one S-Video are
   used to monitor live, playback pictures. The other is used to monitor SPOT output
   which displays all of connected video channels sequentially.

7. Power Input (from Adapter)
   Connect the adapter to the DVR for DC power supply. (DC 12V/5.8A).

8. VGA Output
   VGA output can be connected to LCD monitor or CRT monitor with progressive scan
    directly which can receive analog R, G, B and synchronization signals.

9. RS232C (It can be utilized for future option.)

10. And 11. Alarm input and relay output:
   (16 alarm inputs and 4 relay output with NO, NC)
   To make secure connections on the Alarm Connector Strip, press and hold the button
   and insert the wire in the hole below of connector pin. After releasing the pin, pull
   gently on the wire to make certain it is connected. To disconnect a wire, press and
   hold the connector pin above the wire and pull out the wire.

   16 Alarm Inputs: 1,2,3,4,…, 16,G(Ground)
   You can use external devices to signal the DVR responding to events. Mechanical or
   electrical switches can be wired to the Alarm Inputs and GND (Ground) connectors.
   The threshold voltage is 4.3V and should be stable at least 0.5 seconds to be detected.

   G (Ground), **COM** (common): G is same as common.
   Connect the ground side of the Alarm input to G (Ground). Connect the ground side of
   relay output to COM connector.

    4 Relay output:
    4 relay output with NO or NC can be sent to external device. You can select NO or NC
    , according to characteristic of mechanical or electrical switch.

**12. RS485**: For camera pan and tilting control
   PTZ cameras can be controlled remotely through this RS485 port. The RS485
   connector can be used to control PTZ (pan, tilt, zoom) cameras. Connect RX+, RX- of
   the control system to the TX+, TX- (respectively) of the DVR.

13. Ethernet Port: RJ45 jack
   Connect a Cat5 cable with an RJ-45 jack to the DVR connector. Remote PC viewer
   software via network enable you to access live viewing, searching and other available
   functions.

Remote Controller

< Remote Controller buttons >
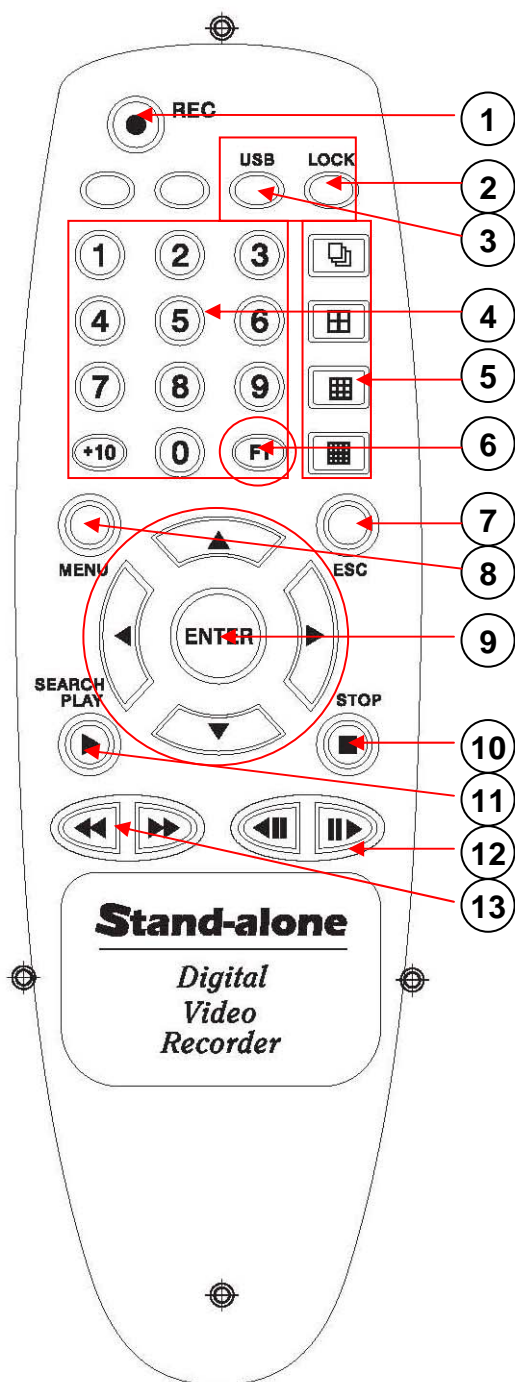
< Button Description >

No	Description	Button Name
1	Recording Start/ Stop button	REC
2	Button LOCK Enable/Disable	LOCK
3	COPY (Backup) Start button	USB/CD/DVD
4	Video CH selection buttons	1,2,3,…,0, +10 (Password Number Input)
5	1) Sequential display button 2) QUAD display button 3) 9 picture display button 4) 16 picture display button	Video Picture Display mode
6	ENTER, MEMU and ESC button and so on can be combined with this button.	Function
7	Movement to upper menu	ESC
8	Movement to menu mode	MENU
9	1) UP (▲)　　2) DOWN (▼) 3) LEFT (◄)　　4) RIGHT (►) 5) ENTER	Direction and ENTER buttons
10	Playback Stop button	STOP
11	Playback Start button	Search/ PLAY
12	PAUSE/ 1 field movement backward or forward. Schedule recording removal	
13	Fast Playback buttons Schedule recording reservation	FF, REW

< Special Function using F1 button >

1. Audio Channel selection for speaker output
 In live display mode or playback mode, if **MENU** button is pressed after **F1** button pressing, audio channel can be selected.

2. Motion Tracking Display On/ Off
 (It is limited in only Motion or alarm recording.)
 If **ESC** button is pressed after **F1** button pressing, motion tracking will be displayed.

3. Remote Controller ID Selection
 If No button from1 to 16 is pressed after **F1** button pressing, the DVR with corresponding Remote Controller ID can selected.
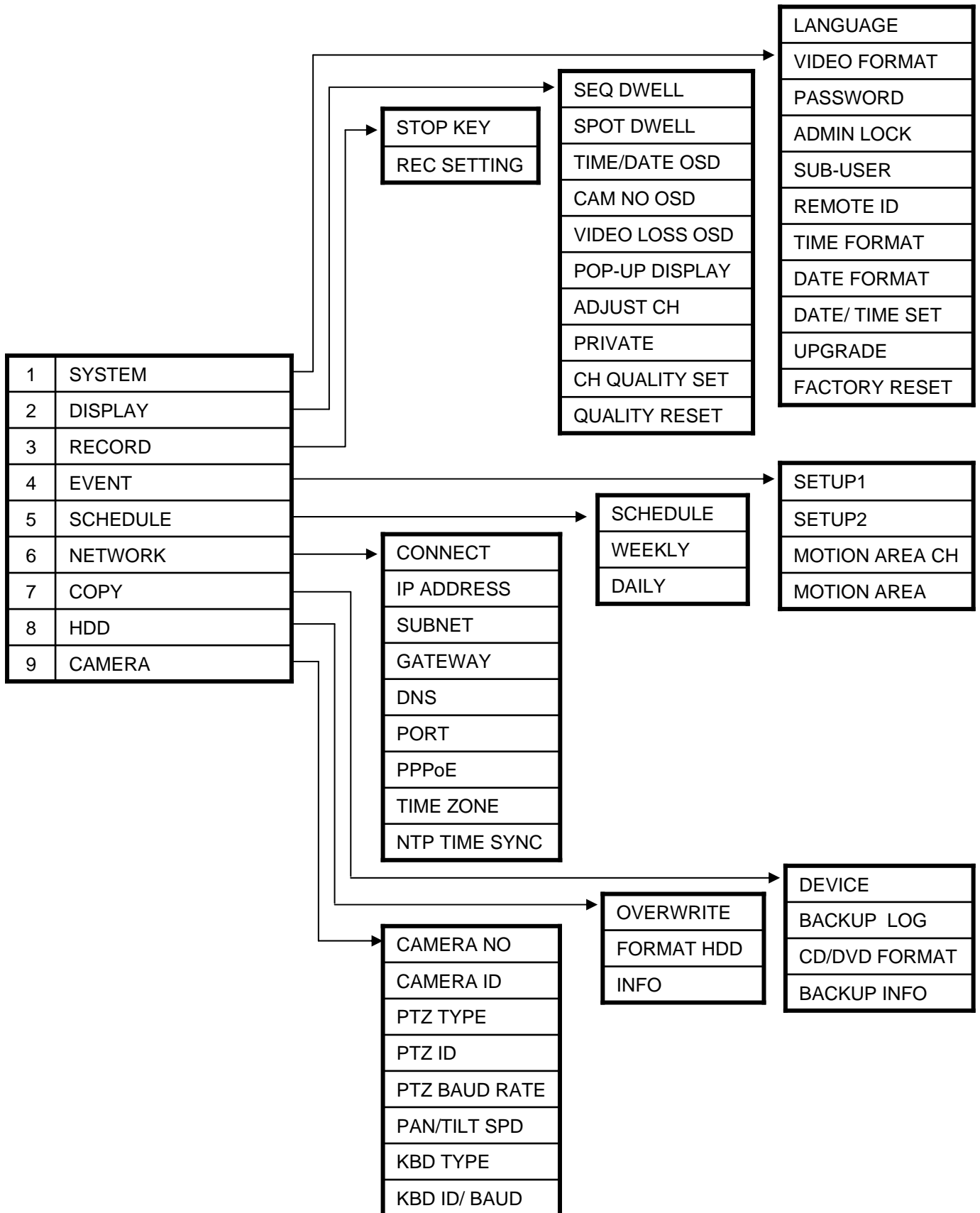
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Main Menu Display

Menu Icons

No.	ICON	NAME		No.	ICON	NAME
1		SYSTEM		6		NETWORK
2		DISPLAY		7		COPY
3		RECORD		8		HDD
4		EVENT		9		CAMERA
5		SCHEDULE				

16CH MPEG-4 DVR Menu Tree

1	SYSTEM
2	DISPLAY
3	RECORD
4	EVENT
5	SCHEDULE
6	NETWORK
7	COPY
8	HDD
9	CAMERA

SYSTEM
- LANGUAGE
- VIDEO FORMAT
- PASSWORD
- ADMIN LOCK
- SUB-USER
- REMOTE ID
- TIME FORMAT
- DATE FORMAT
- DATE/ TIME SET
- UPGRADE
- FACTORY RESET

DISPLAY
- SEQ DWELL
- SPOT DWELL
- TIME/DATE OSD
- CAM NO OSD
- VIDEO LOSS OSD
- POP-UP DISPLAY
- ADJUST CH
- PRIVATE
- CH QUALITY SET
- QUALITY RESET

RECORD
- STOP KEY
- REC SETTING

EVENT
- SETUP1
- SETUP2
- MOTION AREA CH
- MOTION AREA

SCHEDULE
- SCHEDULE
- WEEKLY
- DAILY

NETWORK
- CONNECT
- IP ADDRESS
- SUBNET
- GATEWAY
- DNS
- PORT
- PPPoE
- TIME ZONE
- NTP TIME SYNC

COPY
- DEVICE
- BACKUP LOG
- CD/DVD FORMAT
- BACKUP INFO

HDD
- OVERWRITE
- FORMAT HDD
- INFO

CAMERA
- CAMERA NO
- CAMERA ID
- PTZ TYPE
- PTZ ID
- PTZ BAUD RATE
- PAN/TILT SPD
- KBD TYPE
- KBD ID/ BAUD

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III. Main Menu Programming

1. Overview Main Menu

Before using your DVR for the first time, you will want to establish the initial settings. This includes setting items such as time and date, password, display, record mode, network and so on.

In order to program Main Menu, first press **MENU** button of front panel in DVR.

If ADMIN LOCK is set as YES (factory default is YES), below figure will be appeared.

Then input password number using 1, 2, 3, … , 9 Channel Buttons (Factory default is to press "1" button 8 times), and press ENTER button. **MAIN MENU** will be appeared.

NOTE:

To access the DVR Main Menu, press **MENU**. To escape MENU, **ESC** button can be used. Buttons for movement in Menu are ◀ or ▶. Button for selection is **ENTER**, Button for increasing or decreasing setting value is ▲ or ▼. Press **ESC** to return to the previous MENU after setting and to save the values of setup.

◀(**LEFT**), ▶(**RIGHT**), ▲(**UP**), ▼(**DOWN**) and **ENTER** (CENTER) buttons.

< MAIN MENU >
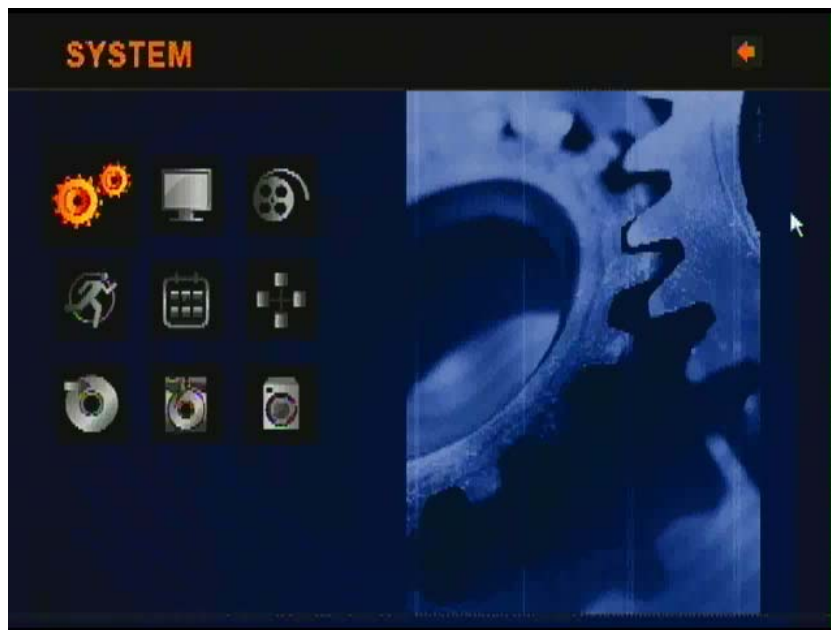
2. SYSTEM SETUP

To access SYSTEM SETUP, press **ENTER** button after moving highlight icon to SYSTEM SETUP in MAIN MENU. Below menu will be appeared on monitor.

1) LANGUAGE : Language Selection

The language which can be displayed in Menu can be selected.
Whenever left or right button is pressed , supported language can be selected.
For language selection by graphical user interface, **ENTER** button can be pressed.
Below GUI for language selection will be appeared.

By using up or down button, supported language can be selected.

2) VIDEO FORMAT: NTSC/ PAL

Video format is automatically detected after power ON. The detected video information will be displayed on VIDEO FORMAT. User don't need to change video format.
It is recommended that power is "ON" after camera(s) connection for video format recognition.

3) PASSWORD:

Move Highlight icon to PASSWORD in the SYSTEM Menu using **DOWN** or **UP** button . And press **ENTER** button to change password. Then below "old password" window will be appeared. Password can be changed using from 0 to 9 button. Max. password has 8 digit.
NOTE: **Factory Default is "11111111", press number 1 button by eight times".**

After inputting old password, input new password using from 0 to 9 button.

It needs to input new password again to confirm new password.

4) ADMIN LOCK: YES/ NO
Move Highlight icon to ADMIN LOCK in the SYSTEM Menu using **DOWN** or **UP** button .
If ADMIN LOCK is selected as YES by **LEFT** or **RIGHT**, password is requested
whenever entering menu. If NO, password isn't requested.

5) Sub-User :

Sub-User function can provide multiple user with the differentiated DVR accessing from ADMIN, user 1 to user4. The function(s) which each user can use is limited by ADMIN. This function is available only in **ADMIN LOCK with "YES" in SYSTEM SETUP.**
In order to assign different functions for each user, SUB USERS of SYSTEM SETUP MENU can be selected like ❶ .
Te detail function selection for each SUB USER can be done like ❷ .
There are SETUP (for MENU configuration setup), SEARCH (for PB and COPY), PTZ (for PTZ camera control), NETWORK, PRIVATE which can hide picture from monitor.
After doing setting, **ESC** button enable to return upper MENU.

"SUB USERS"

❶
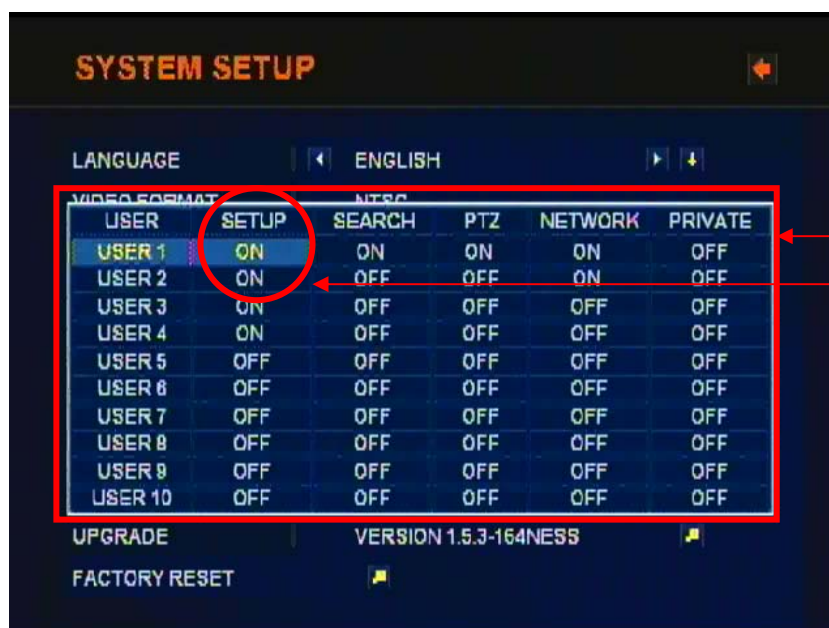
**"SUB USERS
Function Setting"**

❷

❸

**It should be "ON"
for password
changing.**

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The initial password for SUB-USER is same as ADMIN's password, "11111111".
The modification for each sub-user can be followed by specific user selection in MENU
mode. Then **SETUP** (for MENU configuration setup) for the user should be **"On" by
ADMIN in advance**. The procedure for password modification is like from **❶** to **④** .
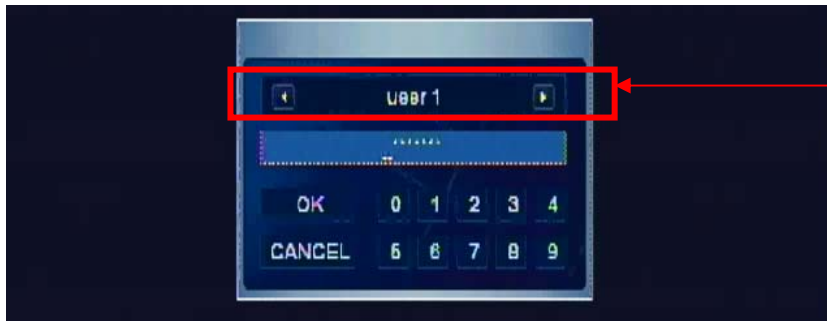
**"SUB USERS
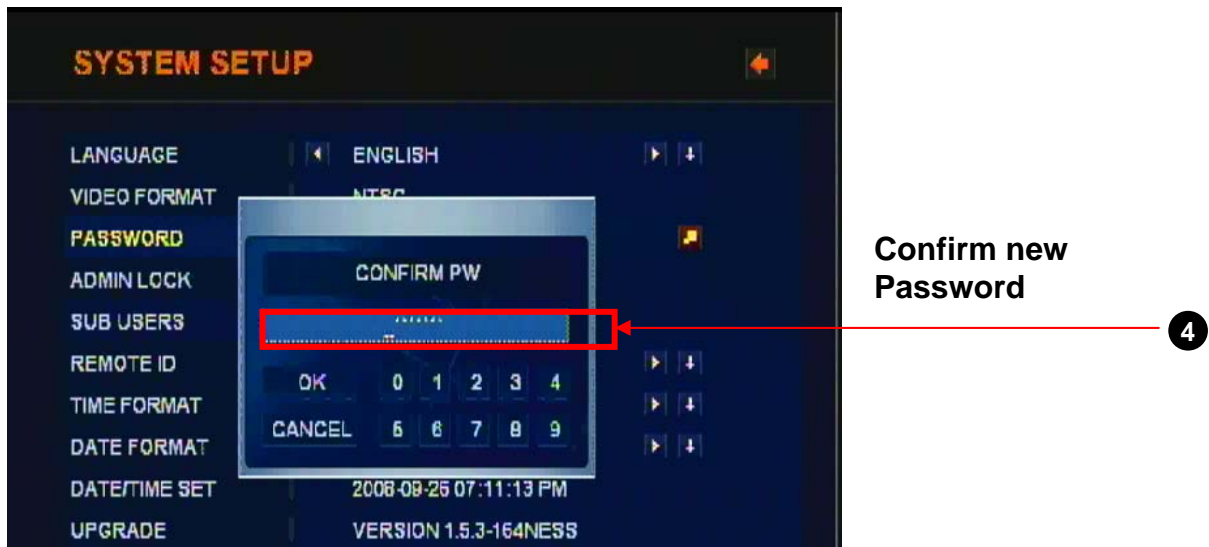 selection"**   ❶

**Initial password
is "11111111".**
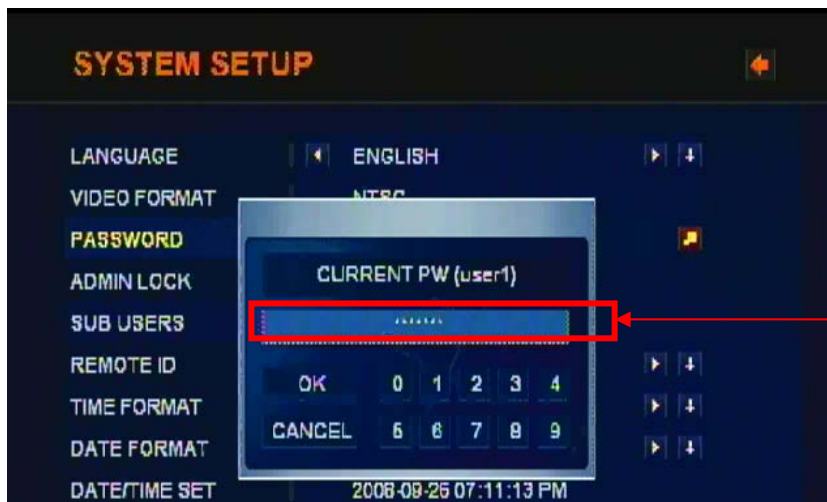
**Click Password.
Initial password
is "11111111".**   ❷
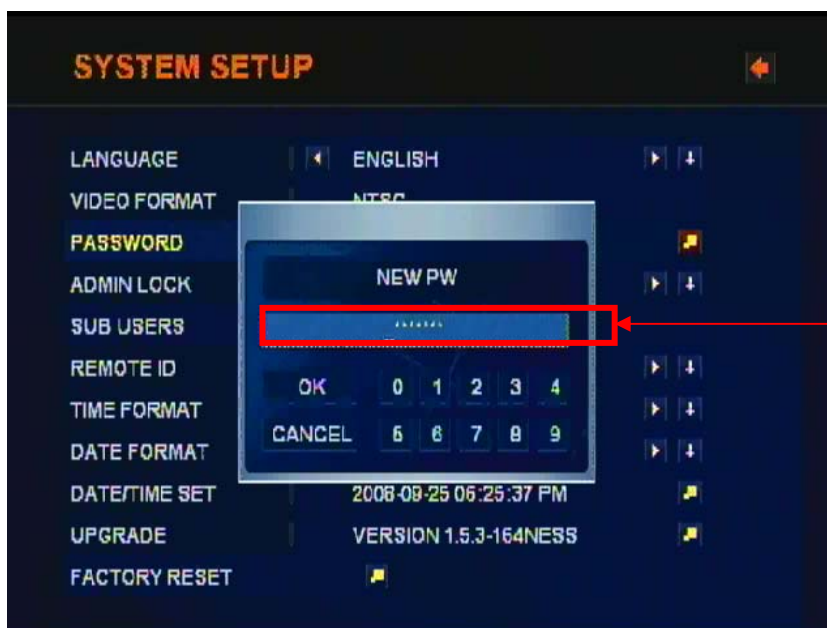
**Input new Password
(Max. 8 digit).**   ❸

**Confirm new
Password**

4

If **SETUP** (for MENU configuration setup) for the user **isn't** set as **"On" by ADMIN in
advance, below error message, "ACCESS DENIED!" will be appeared on monitor.**
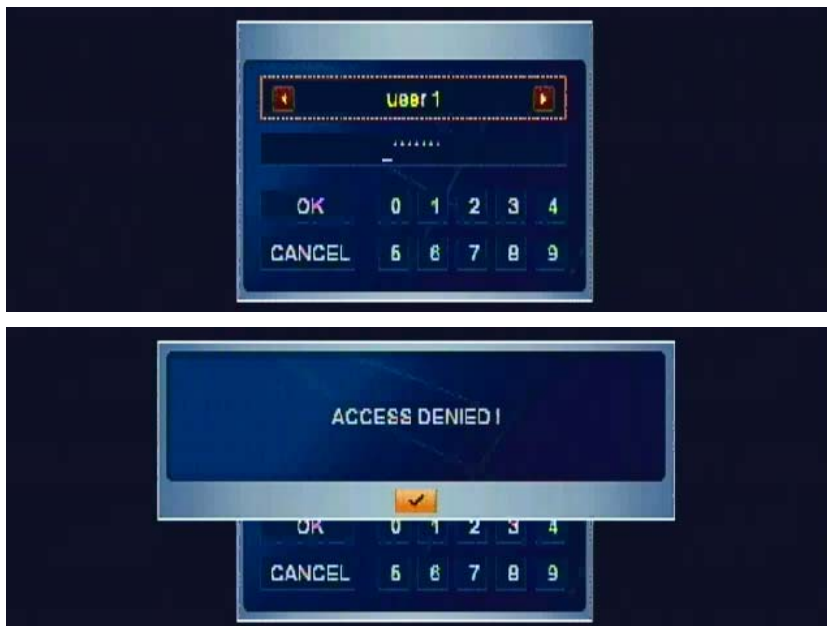
If password is not same, same window for password will be kept.

6) Remote ID :

DVR can set remote ID from 01 t0 16 by manual or mouse at first. If it set as "Off", DVR receives all the remote controller signal. It means that DVR don't use remote ID. Factory initial setting is "Off".

Remote ID function:

This remote controller ID function (REMOTE ID function) can be useful in when only one DVR among multiple DVR can be controlled by one remote controller. It is described as infra-red signal locking function coming from remote controller in the DVR which don't have same remote ID.
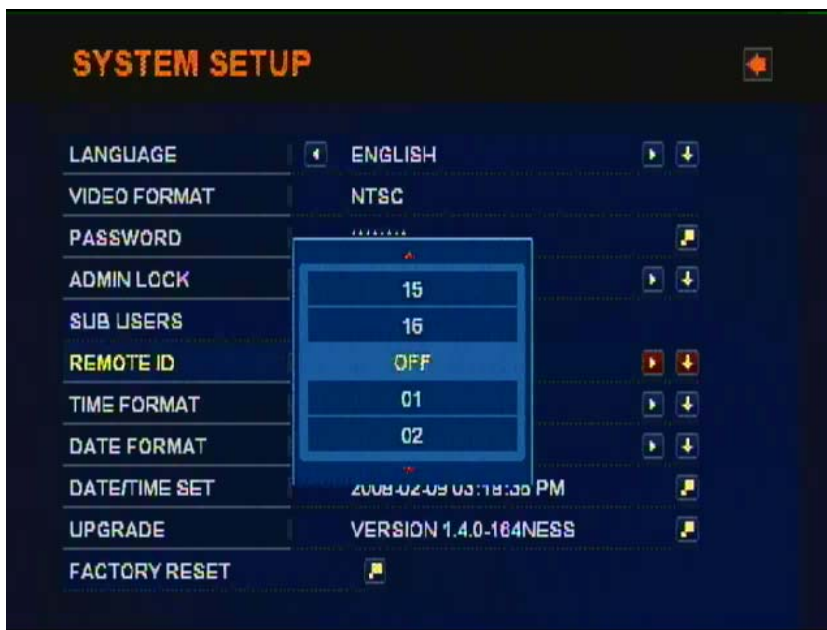
How to use Remote ID:

Remote ID in REMOTE ID of SYSTEM MENU of DVR can be set by manual or mouse. Each DVR can have REMOTE ID from 01to 16. Factory initial setting is "Off". It means that DVR don't use Remote ID.

If any number of Remote ID is pressed by F1 + No button from 1 to 16, other DVR which don't have same Remote ID will lock the signal from remote controller with displaying the "remote Lock Icon" on the left top side of monitor.

Remote Controller Lock function can be set only in live picture mode.

For example, below shows how to use Remote ID for 5set of DVR.

	In live picture (monitoring) mode		**Other picture mode**

DVR1   REMOTE ID = 1

F1(Function) + No 1. Only this DVR can act by remote CONT.

DVR2   REMOTE ID = 2

The Remote controller's **receiving signal is locked in other DVR (DVR2, …, DVR5).** Remote controller "Lock Icon" is displayed on the left top side of monitor.

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The Remote controller's **receiving signal is locked in other DVR (DVR1, … , DVR4).** Remote controller "Lock Icon" is displayed on the left top side of monitor .

All the DVR can receive signals from one remote controller temporarily.

To keep the lock function of remote controller can be pressed **F1 + No. 1** (to16) in **live picture mode.**

DVR3   REMOTE ID = 3

DVR4   REMOTE ID = 4

DVR5   REMOTE ID = 5

F1(Function) + No 5. Only this DVR can act by remote CONT.

Remote controller signal Locking Icon

7) TIME FORMAT: 24/ 12 HOURS

Move Highlight icon to TIME FORMAT in the SYSTEM Menu using **DOWN** or **UP** button and press the **LEFT** or **RIGHT** button to select 24 HOURS (military time) or 12 HOURS (AM/PM). Whenever Time Format is changed, clock information on monitor and file information in search list will be changed together.

8) DATE FORMAT: **MM-DD-YY**/ DD-MM-YY/ YY-MM-DD

Move Highlight icon to DATE FORMAT in the SYSTEM Menu using **DOWN** or **UP** button. Date format can be changed using **LEFT** or **RIGHT** button.

9) DATE/ TIME SET:

Move Highlight icon to DATE/TIME SET in the SYSTEM Menu using **DOWN** or **UP** button. And then press **ENTER** to set the time. Below GUI will be appeared.

It can be moved to DATE or TIME using **DOWN** or **UP** button. The movement to year, month, day is done by **LEFT** or **RIGHT** button. The year change can be done by **DOWN** or **UP** button. Month, day can be adjusted as same way. After setting DATE/ TIME, **YES** is used in order to save setting value and to return upper menu.

NOTE:
1. **If you set a date and time that is older than some of your recorded images, it is not easy to manage recorded files.**
2. **Before starting your DVR, DATE/ TIME should be setting properly.**

10) UPGRADE

Firmware can be upgraded through USB memory driver or network using Client software. For more detail information, **Please see "IV. Software Upgrade Procedure"**

11) FACTORY RESET: Return to factory default setting value.
   If **ENTER** is pressed for factory reset, below GUI will be appeared. If **ENTER** is pressed again, all the setting value will be returned into factory initial value with "DONE" message like below GUI.
   When firmware is upgraded, "factory reset" is recommended.

NOTE:
When all of menu setting are finished, menu mode is escaped, below figure "SAVE?" which ask to save all the setting will be appeared. If all the menu setting is needed to save, "Check Mark" can be pressed. If not, "X" can be selected.
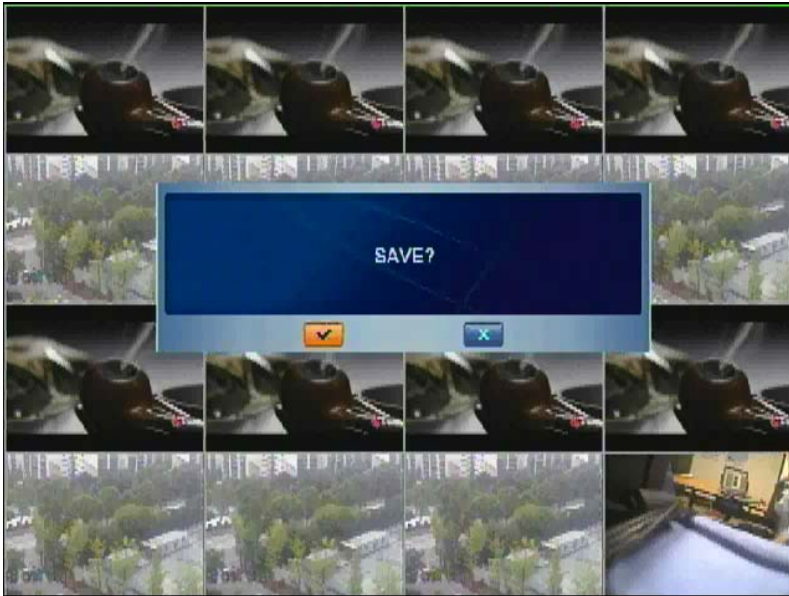
3. DISPLAY SETUP

To access DISPLAY SETUP, press **ENTER** button after moving highlight icon to DISPLAY SETUP in MAIN MENU. Above menu will appear on monitor.

1) SEQ DEWLL TIME: NONE/ 1 to 60 seconds.
SEQ DWELL TIME can be adjusted using **LEFT** or **RIGHT** button. Or after pressing **ENTER** button, SEQ DWELL TIME from none, 1 seconds to 60 seconds which decide a period of channel by channel can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.
 - NOTE: It is just reflected in sequential display mode.
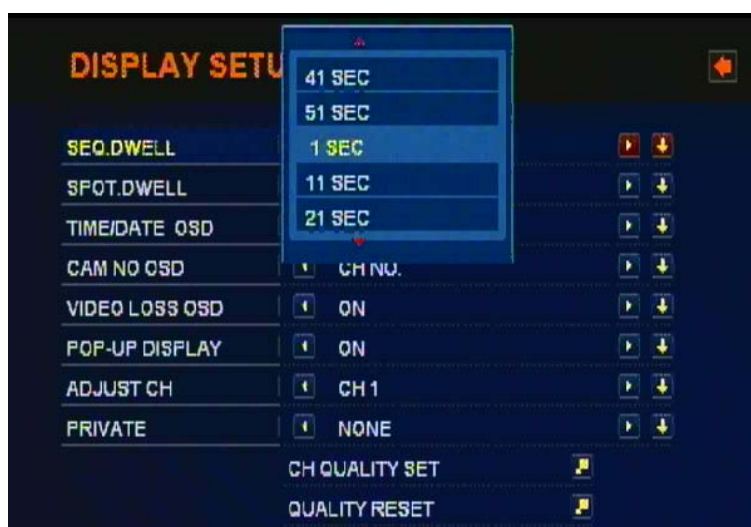
2) SPOT DWELL: 1 to 60 seconds.

SPOT DWELL TIME can be changed using **LEFT** or **RIGHT** button. Or after pressing **ENTER** button, SEQ DWELL TIME from none, 1 seconds to 60 seconds which decide a period of channel by channel can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.
All of video channels connected with video inputs of DVR can be sequentially switched for SPOT monitoring output.

3) TIME/DATE OSD: ON/ OFF

When it is set as OFF, characters which indicates time/ date will be disappeared on monitor. But time and date information still are added into recording files.
TIME/DATE OSD ON/ OFF can be changed using **LEFT** or **RIGHT** button.

4) CAM NO OSD: ON/ OFF

When it is set as OFF, characters which indicates camera number will be disappeared on monitor. **CAM NO OSD** ON/ OFF can be changed using **LEFT** or **RIGHT** button.

5) VIDEO LOSS OSD: ON/ OFF

VIDEO LOSS OSD ON/ OFF can be changed using **LEFT** or **RIGHT** button. When it is set as OFF, black pictures will be displayed in the cameo with video loss. When it is set as ON, "VIDEO LOSS" character with white color will be displayed in blue screen.

6) POP-UP DISPLAY: ON/ OFF

POP-UP DISPLAY ON/ OFF can be changed using **LEFT** or **RIGHT** button. When it is set as OFF, pop-up image of camera(s) which motion detection or alarm triggering is occurred will not be displayed. When it is set as ON, the channel (s) which motion is (are) detected or external alarm is (are) triggered will be POP-UP in monitor during maximum 30 seconds. In case that motion detection or alarm event is occurred more than two channels, POP-UP picture will be appeared in monitor turn by turn during 3 seconds for each channels. Total period of POP-UP display is 30 seconds.

7) ADJUST CHANNEL: CH1, CH2, CH3, CH4, … , CH16
  The camera channel needed to adjust brightness, contrast can be selected by **UP** or
  DOWN button. And then next BRIGHT and CONTRST can be adjusted properly.

  BRIGHTNESS/ CONTRAST : 1 to 99 %
   BRIGHTNESS can be changed using **LEFT** or **RIGHT** button. CONTRAST can be
   changed using **UP** or **DOWN** button.

  HUE/ SATURATION: 1 to 99 %
   HUE can be changed using **LEFT** or **RIGHT** button. SATURATION can be
   changed using **UP** or **DOWN** button.

  - NOTE: Minimum value is 1 (very dark), maximum value is 99 (very bright).

  In order to move from BRIGHTNESS/ CONTRAST to HUE/ SATURATION adjust or
  vice versa, **ENTER** button can be pressed. In the full screen, picture quality adjust
  channel can be moved easily by pressing ⏪ or ⏩ button.

< BRIGHTNESS, CONTRAST control >   < HUE, SATURATION control >

8) Private

The video channel which don't want to display on monitor can be selected by **LEFT** or **RIGHT** button. Selected channel isn't displayed on monitor while live or playback display. The private channel is displayed black screen.

< For example, below figure show CH16 with "private" display ON >

→ CH16 with Private "ON"

9) QUALITY RESET

Quality control including brightness, contrast , hue and saturation can be reset by factory initial value by this QUALITY RESET.

4. RECORDING SETUP
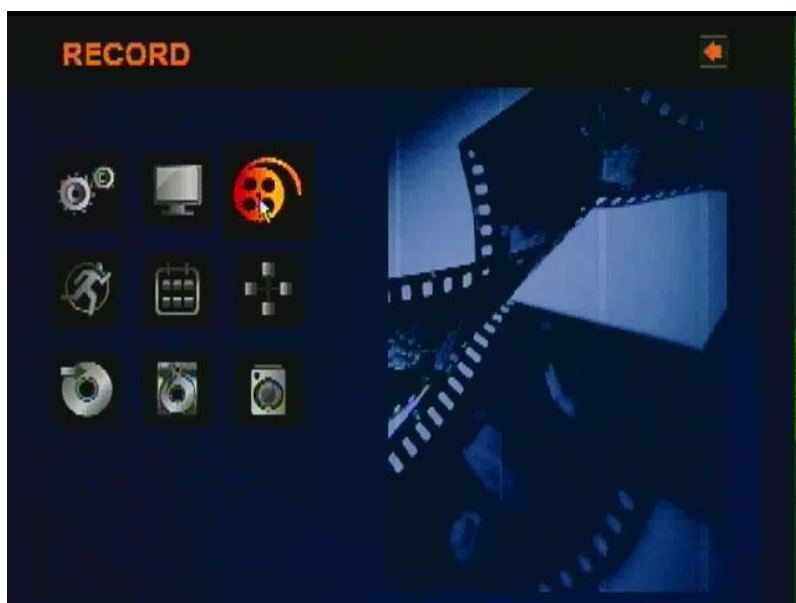
To access RECORDING SETUP, press **ENTER** when RECORDING SETUP in MAIN MENU using **DOWN** or **UP** and/or **LEFT** or **RIGHT** button is highlighted. The menu above will appear on monitor.

1) STOP KEY: DISABLE/ ENABLE

In case of manual recording, manual recording is started and stopped by the **REC/ STOP** button in the front panel of DVR. This **REC/ STOP** button **ENABLE** can protect the **"recording stop"** by unauthorized person intentionally. **The "STOP KEY DISABLE/ ENABLE"** can be changed using **LEFT** or **RIGHT** button. Or after pressing **ENTER** button, **"STOP KEY DISABLE/ ENABLE"** can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.
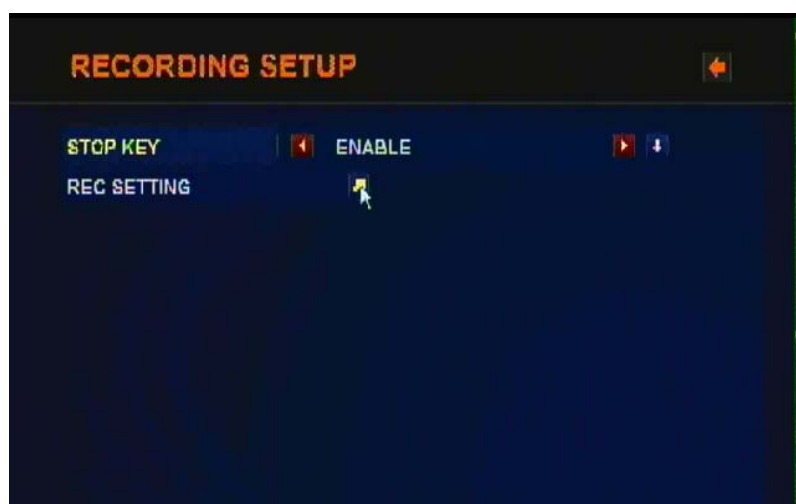
2) REC SETTING

- **Resolution**: FULL (4 CIF, D1), HALF(2 CIF, Half D1), NORMAL (CIF)
- **Quality**: VERY LOW, LOW, STANDARD, HIGH, VERY HIGH
- **FPS:** 30 to 1 FPS.(NTSC)/ 25 to 1 FPS (PAL)
- **REC**: MANUAL, Schedule, EVENT, OFF
- **Audio**: ON or OFF
- **Lock:** ON or OFF (If "Lock" is ON, this recorded file **isn't be deleted**, even though HDD over-writing is done. **In order to prevent HDD Full, it will be needed to release LOCK function as "OFF"**)

CH	Resolution	Quality	FPS	REC	Audio	Lock	
01	NORMAL	HIGH	30	Schedule	ON	OFF	→ Resolution:
02	NORMAL	VERY HIGH	30	Schedule	ON	OFF	
03	FULL	VERY HIGH	30	Schedule	ON	OFF	→ Quality (5 step):
04	NORMAL	HIGH	30	MANUAL	OFF	OFF	
05	NORMAL	VERY HIGH	30	MANUAL	OFF	OFF	→ FPS: 1 to 30 FPS
06	NORMAL	VERY HIGH	30	MANUAL	OFF	OFF	
07	NORMAL	VERY HIGH	30	MANUAL	OFF	OFF	→ REC: MANUAL/ …/ Off
08	NORMAL	VERY HIGH	30	MANUAL	ON	OFF	→ Audio: On/ Off
09	NORMAL	VERY HIGH	30	MANUAL	ON	OFF	
10	NORMAL	VERY HIGH	30	MANUAL	ON	OFF	→ Lock: On/ Off
11	NORMAL	VERY HIGH	30	MANUAL	ON	OFF	
12	NORMAL	STANDARD	30	MANUAL	ON	OFF	
13	NORMAL	STANDARD	30	MANUAL	ON	OFF	
14	NORMAL	STANDARD	30	OFF	ON	OFF	
15	NORMAL	STANDARD	30	OFF	ON	OFF	
16	NORMAL	STANDARD	30	OFF	OFF	OFF	

NOTE: FPS can automatically changed according to **video resolution.**

Channel No.	Video Resolution	Recording (and Playback) Speed
16CH DVR	CIF	Max. 480 Fps (Max. 400Fps in PAL)
	2 CIF (Half D1)	Max. 240Fps (Max. 200Fps in PAL)
	4 CIF (D1)	Max. 120 Fps (Max.100Fps in PAL)

* **CIF:** 320 x 240 in NTSC, 320x 288 in PAL
* 2CIF (Half D1): 720 x 240 in NTSC, 720 x 288 in PAL
* 4CIF (D1): 720 x 480 in NTSC, 720 x 576 in PAL

5. EVENT SETUP
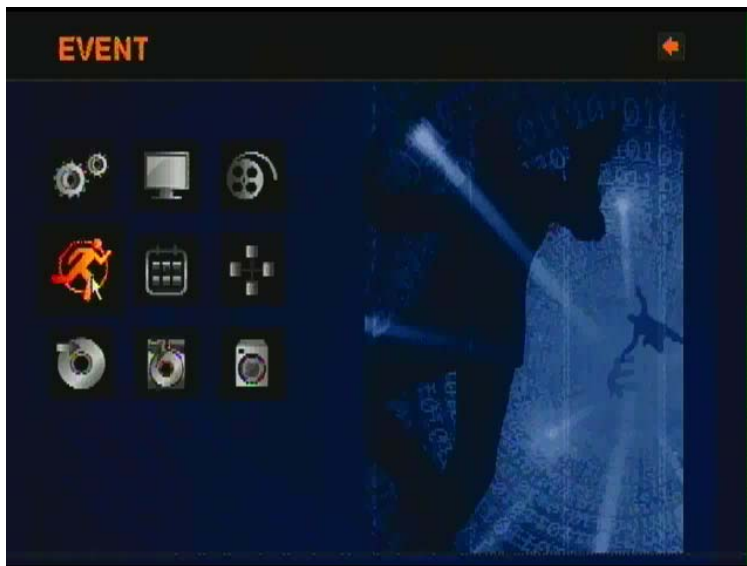
To access EVENT SETUP, press **ENTER** when EVENT SETUP in MAIN MENU using
DOWN or **UP** and/or **LEFT** or **RIGHT** button is highlighted. The above menu will be
appeared on monitor. All the parameters related to EVENT Recording from CH1 to CH16
which include QUALITY, FRAME RATE, DURATION can be selected separately.

EVENT Setup1 Selection
EVENT Setup2 Selection
Motion Area CH selection
Motion Area Selection
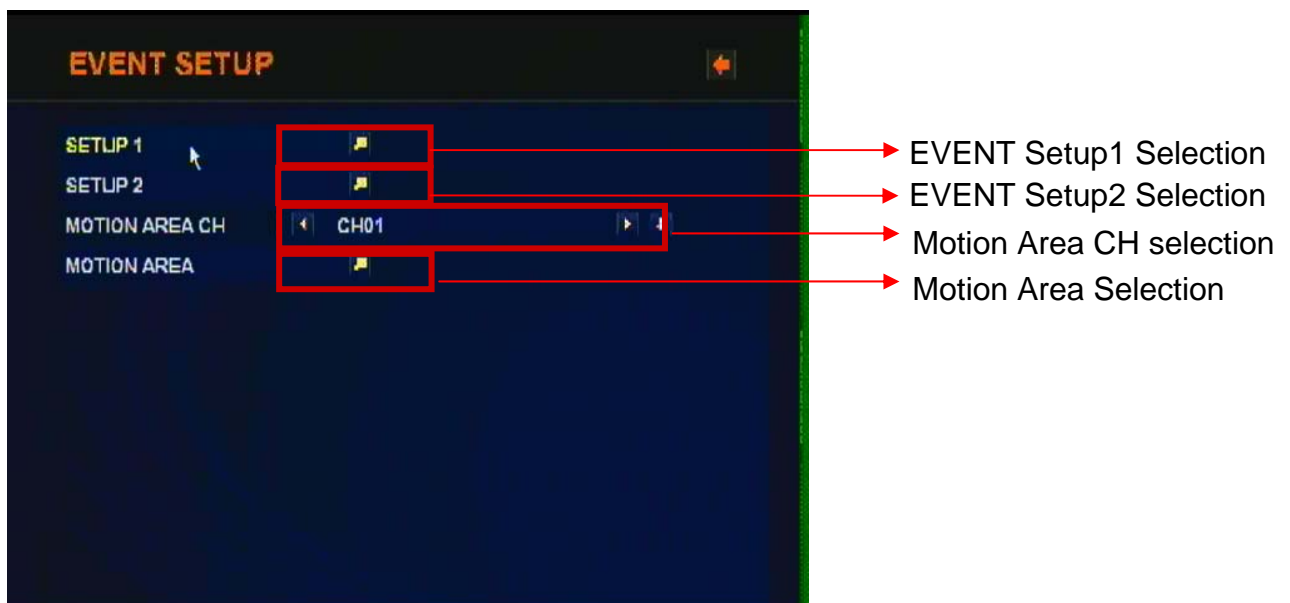
1) Event Setup1 parameter Setting
- **Quality**: VERY LOW, LOW, STANDARD, HIGH, VERY HIGH
- **FPS:** 30 to 1 FPS.(NTSC)/ 25 to 1 FPS (PAL)
- **EVENT**: ALARM or MOTION
- **PRE (Pre-recording):** ON/ OFF
  Pre-recording is available in only motion or alarm recording. Pre-recording time is roughly 5 seconds for each channel. If pre-recording is selected in only one channel, pre-recording time will be 80 (5 x 16) seconds.
- **Lock:** ON or OFF (If "Lock" is ON, this recorded file **isn't be deleted**, even though HDD over-writing is done. **In order to prevent HDD Full, it will be needed to release LOCK function as "OFF"**)

It can moved to each items by Movement button, **LEFT** or **RIGHT** , **UP** or **DOWN** button. Each parameter can be adjusted by **ENTER** button.

Recording Quality (5 step): Very Low, Standard, Very High

FPS: 1 to 30 FPS

EVT (Event): ALARM or MOTION

Pre (Pre-recording): On/ Off

Duration: recording time Selection. (30 sec to 60min.)

2) Event Setup2 parameter Setting

Sensitivity (5 step): Very Low, Normal, Very High

Sensor: N.O or N.C

Input: CH1 to CH16

Output: Trigger Output Selection Any output OFF, CH1 to CH4 can be selected.

Buzzer: On/ Off

3) MOTION AREA CH and 4) MOTION AREA
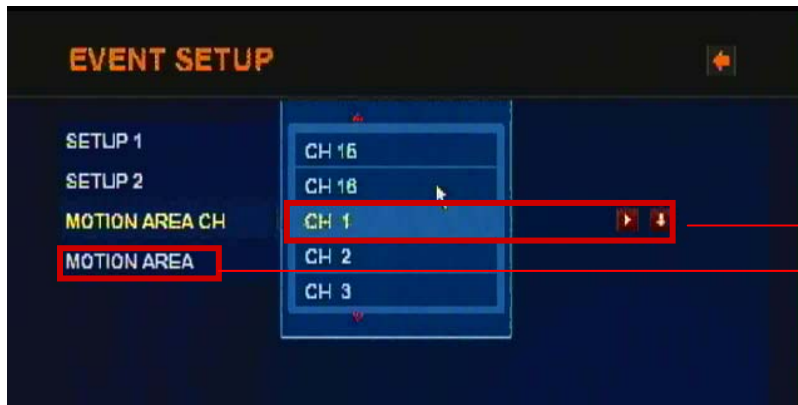
Motion Area CH selection
Motion Area selection
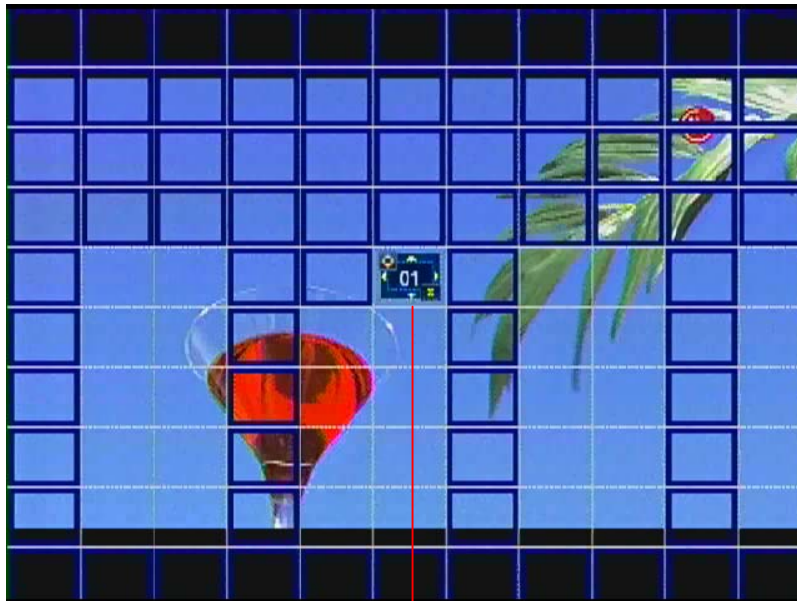
The **MOVE** mode which can just move motion area can move motion area by **LEFT** or **RIGHT** or **UP** or **DOWN** button.

Whenever **ENTER** button is pressed, marking within above red circle will changed from "DIRECTION" mark to "+" and "-" mark. In the **"Direction" mark**, motion area can be moved with direction button like **LEFT** or **RIGHT** or **UP** or **DOWN** button. In the **"+" mark,** motion area can be enabled by direction button. In the **"-" mark**, motion area can be disabled by direction button.

Motion channel can be changed by ⏪ or ⏩ button from CH1 to CH16.
ESC button can be pressed to return previous MENU.

6. SCHEDULE
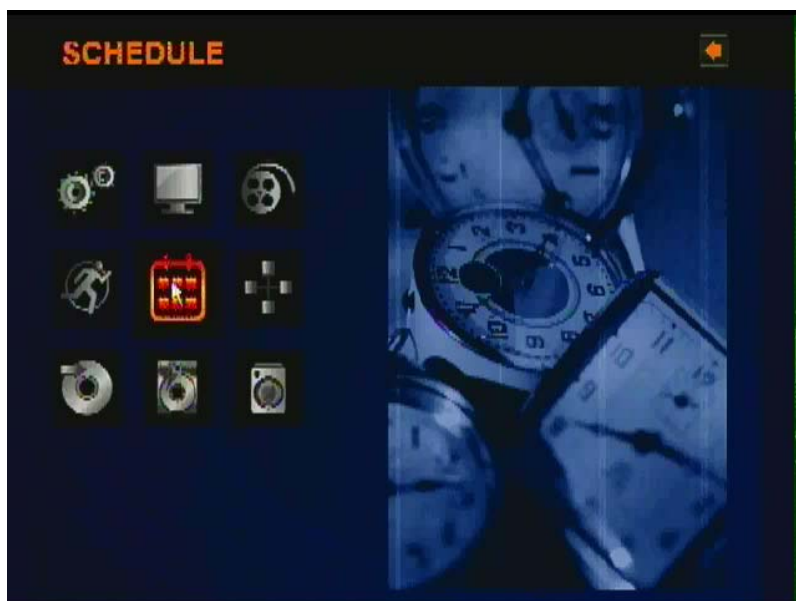
SCHEDULE SETUP in the main menu can be selected by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** button. If SCHEDULE is selected by **ENTER** button, below "Schedule SETUP" figure will be appeared. "OFF" or "Weekly SET" or " Daily SET" can be configured in Schedule SETUP. It can be selected by **UP** or **DOWN** and **ENTER** button. **"OFF"** means that there is **no Schedule SETUP**. It means that there is **no recording except manual recording, event recording.**

< Weekly SET >

If "Weekly SET" is selected, below figure will be appeared. It is possible to configure ALARM, MOTION and MANUAL together in Weekly SET figure. Each mode from ALARM, MOTION to MANUAL can be changed by **ENTER** button. In Weekly SETUP Figure, movement button consists of **LEFT** , **RIGHT** or **UP** , **DOWN** button. Schedule Setting can be done by **REW** (◀◀) or **FF (▶▶)** button. Schedule setting removal can be done by (◀❙❙ ❙❙▶) in remote controller. To return upper menu, **ESC** button can be used.
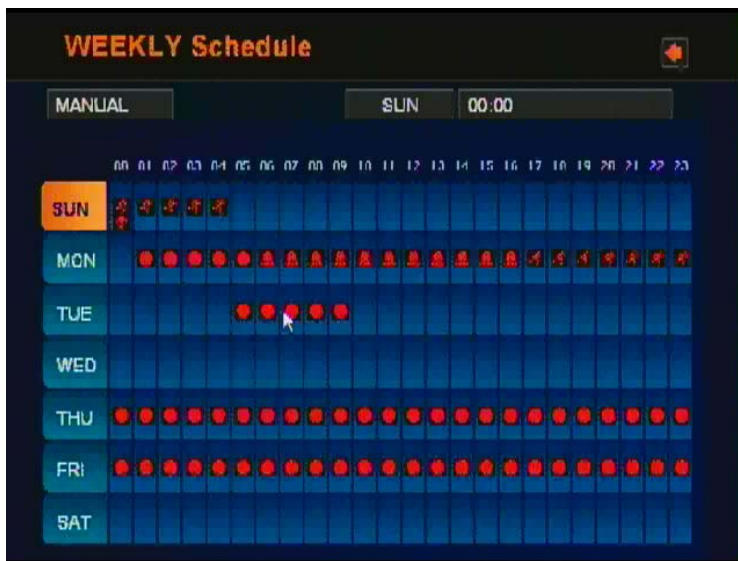
When recording schedule of Weekly SET is finished, 🔴 or 🏃 mark in date Box will be added.

🔴 This mark indicates there is MANUAL setting in specific day.

🏃 This mark indicates there is EVENT setting in specific day.
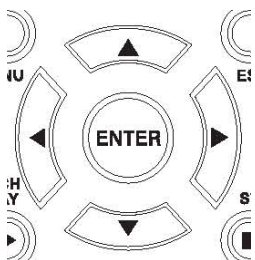
< Daily SET >
If "Daily SET" is selected, below figure will be appeared.
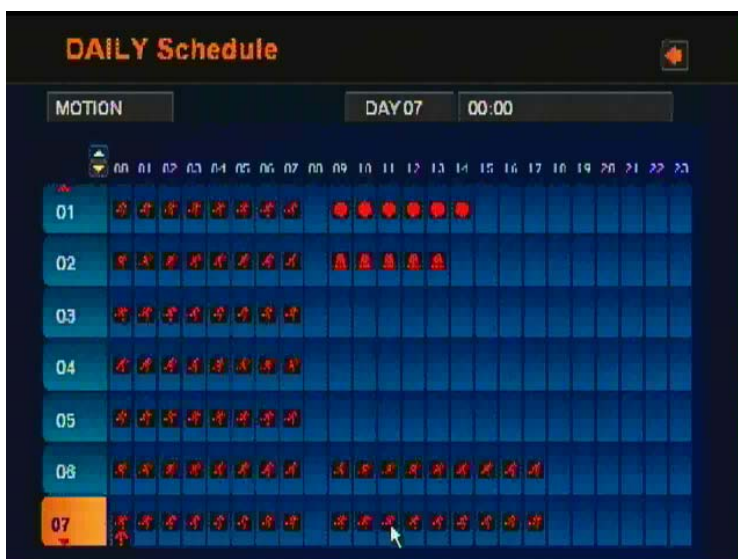
If **ENTER** button is pressed after moving given day in above "Daily SET" figure by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** , below figure will be appeared. It is also possible to configure ALARM, MOTION and MANUAL together in Daily SET figure as Weekly SETUP. Each mode from ALARM, MOTION to MANUAL can be changed by **ENTER** button. In Daily SETUP Figure, movement button consists of **LEFT** , **RIGHT** or **UP** , **DOWN** button. Schedule Setting can be done by **REW** (◄ ◄) or **FF (►►)** button. Schedule setting removal can be done by ◄ꟼ ꟼ► To return upper menu, **ESC** button can be used.

< The buttons of remote controller related to Schedule setup >
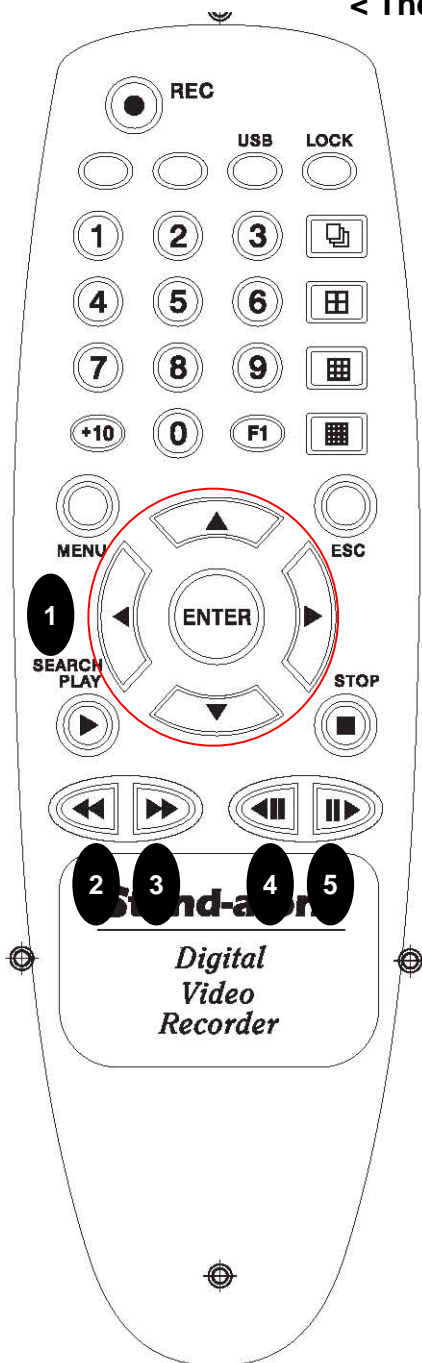
Schedule Recording setting		
2 ▶▶	Recording time setup. (Left to Right direction)	
3 ◀◀	Recording time setup. (Right to Left direction)	
Schedule Recording Release		
4 ▶❙	Recording time removal. (Left to Right direction)	
5 ❙◀	Recording time removal. (Right to Left direction)	
Direction button		
	Left.	
	Right.	
	Up.	
	Down.	
	ENTER: Recording Mode changing from ALARM, MOTION to MANUAL.	
ESC	Move upper menu after schedule setup.	

7. NETWORK SETUP

NETWORK SETUP in the main menu can be selected by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** button. If NETWORK is selected by **ENTER** button, above "NETWORK SETUP" figure will be appeared.

1) CONNECT: STATIC, DHCP and PPPoE
   STATIC IP or DHCP or PPPoE of CONNECT can be selected by **LEFT** or **RIGHT** button. Or after pressing **ENTER** button, STATIC or DHCP can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.

2) IP ADDRESS, 3) SUB NET MASK, 4) GATE WAY, 5) DNS:
   If DHCP is selected in 1) CONNECT, IP ADDRESS/ SUBNET/ GATEWAY/ DNS will be automatically assigned. But If STATIC is selected, manual input for IP ADDRESS/ SUBNET/ GATEWAY/ DNS will be needed in it.

For assigning the number of IP address, SUBNET, Gateway and DNS in STATIC IP mode, **ENTER** button can be pressed on the column of IP address, SUBNET, Gateway and DNS. Then below new NETWORK SETUP figure will be appeared as below figure.

The 4 number group with 3 digit expressing IP address, SUBNET, Gateway and DNS can be increased by **UP** button or decreased by **DOWN** button. The position movement between 4 numbers can be done by **LEFT** or **RIGHT** button.
The position movement from IP address, SUBNET to DNS can be done by **UP** or **DOWN** button. In order to save the assigned number of IP address and so on, "Yes" should be selected by **ENTER** button in "check box.
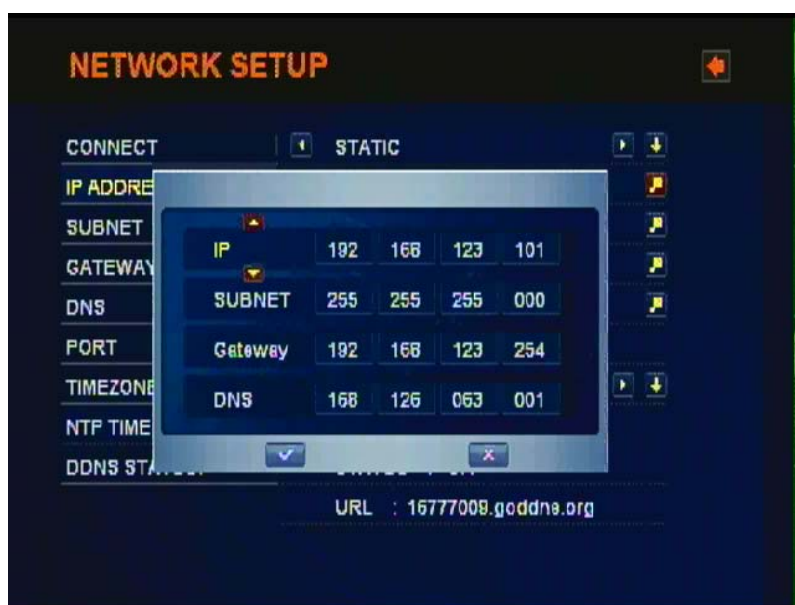
6) PORT : Port number for TCP/IP connection in DVR
Net-Viewer software should have same port Number to access remote DVR through network.
Default Port No. is 10000. If Port is set as 10000, port number of from 10000 to 10020 is used in DVR. Therefore, If DVR is used in network environment with firewall, port number of from 10000 to 10020 should be opened for DVR remote access.
If IP sharing machine or router is used with DVR, "port forwarding" should be done.

7) TIME ZONE : City Name
Time information can be synchronized with time server. For example, If Seoul is selected, it is used to synchronize with Korean time, GMT + 9.

NOTE:
Time zone setting can be useful for **Summer Time setting.**
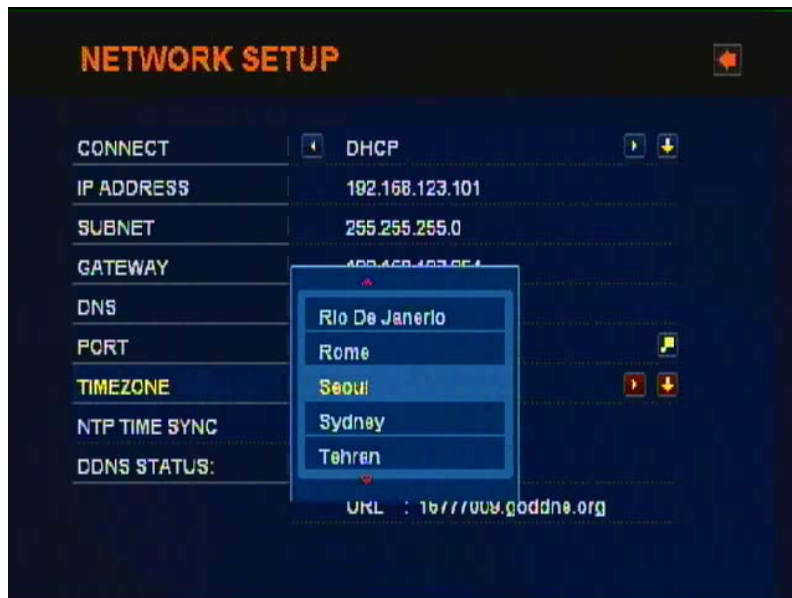
8) NTP TIME SYNC: OFF/ON
DVR can synchronize "standard time" with Time Server using Network Time Protocol.

NOTE: If DNS server is not set properly in fixed IP address, this function will not be operated.
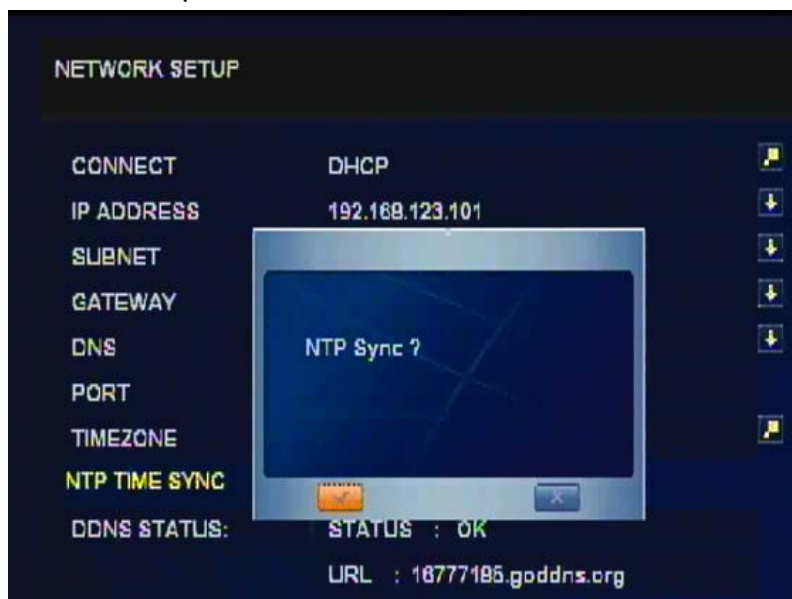
9) DDNS STATUS: Dynamic DNS status display (This DDNS status is just readable.)
It is recommended not to use this DDNS service for fixed IP or IP sharing machine.
NONE – It indicate that DDNS is not used.
ERR - DDNS IP update failure
OK   - Normal operation

NOTE: It might take Max 24 hours to support DDNS Service by DDNS server after DVR installation.

8. COPY (BACKUP)

BACKUP in the main menu can be selected by movement button such as **LEFT**, **RIGHT** or **UP**, **DOWN** button. If BACKUP is selected by **ENTER** button, below "BACKUP" figure will be appeared.

1) DEVICE: USB or CD-R,R/W or DVD R/W
   USB: USB Memory Driver
   CD-R,R/W or DVD R/W

2) BACKUP LOG: NONE or ENTER
All of log information including DVR power ON/ OFF, recording time, event time and so on can be BACKUP through USB Memory drive. After BACKUP log file, you can see BACKUP log information using WORD-PAD of PC. After pressing **ENTER** button, ENTER can be selected by **UP** or **DOWN** button for BACKUP LOG. And then **ENTER** button is used to start the BACKUP of LOG data. If there is no BACKUP media, "No BACKUP media !" message will be appeared.

Log Backup Start

Log Backup Complete

3) CD/DVD RW FORMAT
It is used for CD/DVD RW FORMAT.
When recorded files in DVR is copied or backup into CD R/W or DVD R/W, it is recommended to format CD or DVD using this CD/ DVD RW FORMAT function before backup.
It will take about 8 min. to format CD R/W and about 3 min. to format DVD R/W.

NOTE: The format which DVD can supported in this DVR is **CD-R, CD R/W, DVD +R, DVD –R, DVD R/W**.

4) BACKUP INFO:
First, connect USB memory drive in USB port of DVR front panel. And then enter menu mode. You can see the information of USB Memory Drive inserted in DVR like USB memory drive manufacturer, total memory size, available memory size.

* The simple File Player for backup image file:
When recorded file is copied into USB memory drive or CD, DVD, simple File Player also is copied from DVR set. Copied image can easily played using this simple File Player.

NOTE: For more detail information about File Player program, confer the user's manual of NetViewer program.

< The BACKUP procedure using USB memory driver, CD or DVD >

1) In order to search the file which is copied in USB memory or CD or DVR, search button of front panel of DVR ⌕ (SEARCH button in remote controller) can be pressed. Below GUI will be appeared.

2) When Option "ALL" is highlighted, you can select one of recording type including all, manual alarm, motion and schedule recording using **UP** or **DOWN** button. According to selection of recording type, recorded files will be listed in below calendar. After moving to calendar by **ENTER** button, direction button including **LEFT** , **RIGHT** or **UP** , **DOWN** can be pressed to select specific date.

In order to select specific file in given day for data backup, **ENTER** button can be used. Below GUI will be appeared.

3) After selecting the file which want to copy using direction button including **LEFT** or **RIGHT**, **COPY (BACKUP) button** of front panel of DVR (**USB** button in remote controller) can be pressed.
In the Below GUI, COPY (BACKUP) time can be decided.

4) If COPY(BACKUP) time is decided by **ENTER** button in calendar GUI, below GUI will be appeared. The channel(s) which want to copy can be selected here. According to ❶ channel selection, information about total file size to be copied will be shown like

5) DVR will start to copy the selected file with backup progress information, if **ENTER** button is pressed in check box.
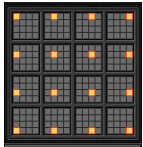
< The procedure of backup file playback using simple File Player program >

A) Simple File Player is found in backup media like USB memory drive, CD or DVD with backup files. And File Player can be executed for backup files playback.

B) Search backup files using "File Open" icon **2** of File Player program.

C) Playback the backup file as double-clicking the file.

< File Player Program >
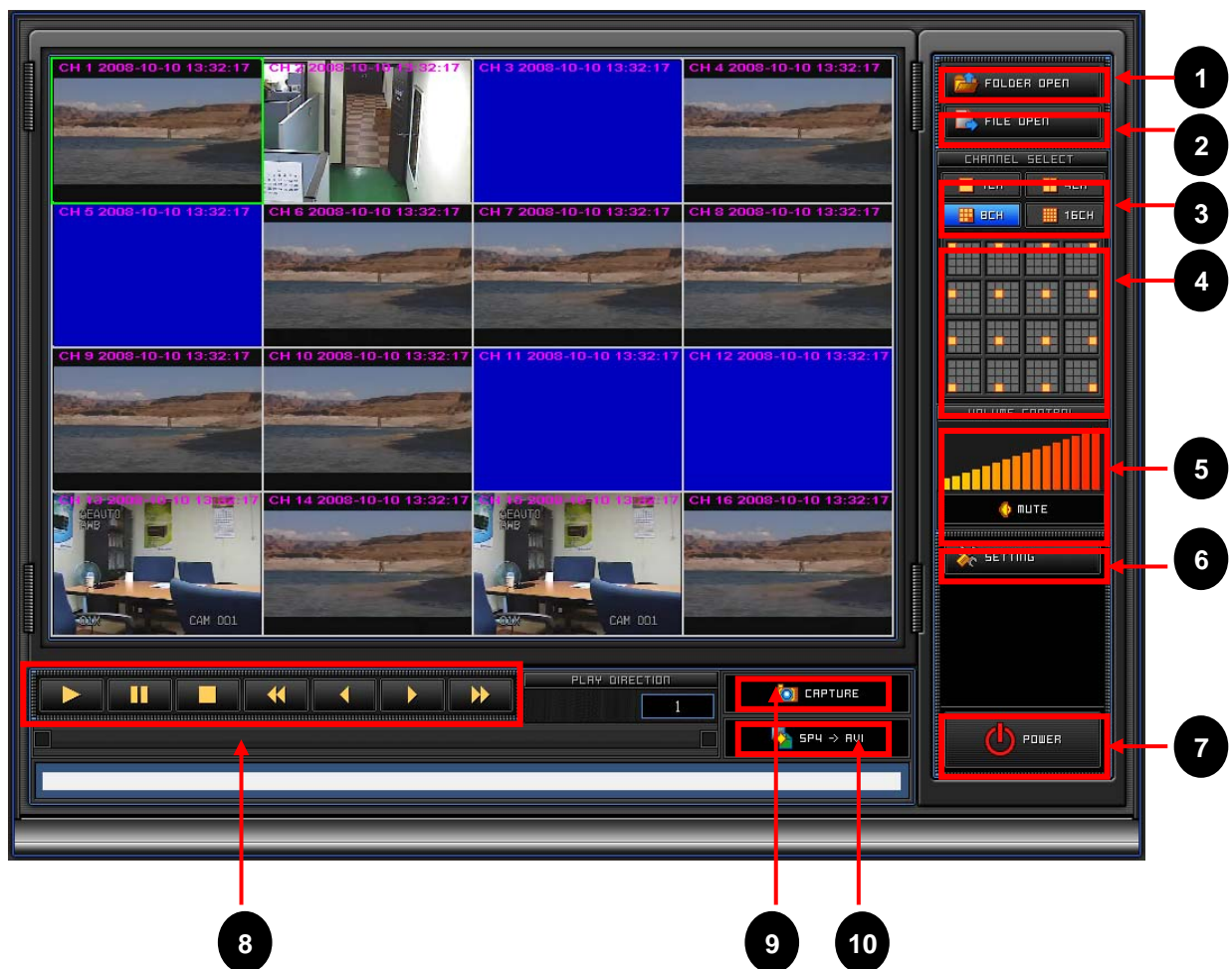
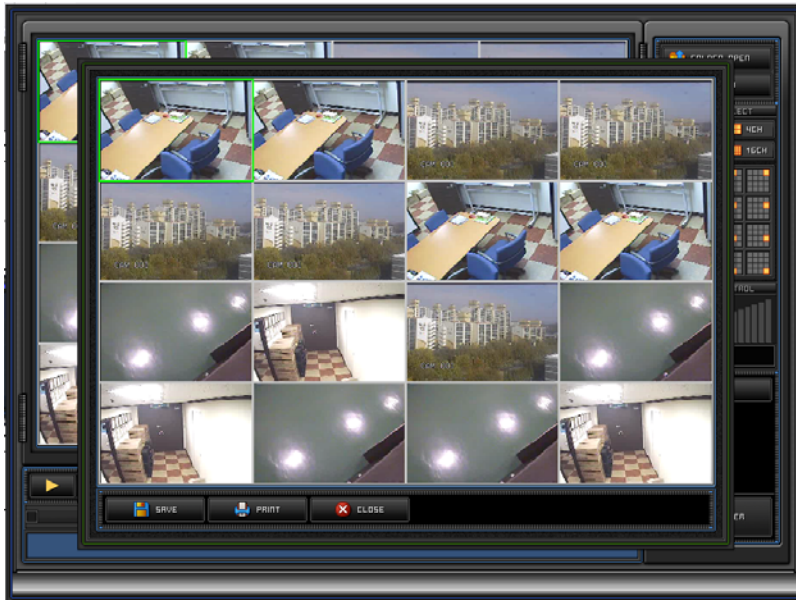**< Icon Description >**

| No.	Name
1	**Folder Open** This "Folder Open" selection is for playback all the recorded files in same folder. If "Folder Open" is just for live monitoring recording in local PC.
2	**File Open** This "File Open" selection is for playback one recorded files. If "File Open" icon is clicked, default directory, C:\DVRBACKUP will be shown. The directory related to BACKUP media like USB or CD can be searched in there. For file playback, searched file can be selected. And then click play button of No.8. to playback it.
3	**Channel Select** Channel Select of File Player program support 1ch, 4ch, 8ch and 16ch display window. For single channel video display or playback, 1ch icon can be clicked. For 8 channel video display or playback, 8ch icon can be clicked. For any 4ch display in the 4ch display, first picture can be selected in 16ch display. And then 4ch icon selection make any 4ch display possible. For example, 4ch display from ch5 to ch8 is possible after ch5 selection in 16ch display and 4ch display icon selection. Though File open for single file playback is selected, 4ch or 8ch or 16ch selection in "Channel Select" enable selected all the channel to display.
4	**Single Channel Select** Each channel of 16 channel display can be selected for single channel display.
5	**Volume Control and mute** For audio playback with video, single channel which want to listen should be selected first using Single Channel Select or double click of that channel. The audio volume can be adjusted by dragging of left button of mouse. Mute ON or OFF can be selectable by mute icon.
6	**Setting** It is used for OSD addition/ Deletion and directory assignment for local file saving as below figure. The OSD with channel and time information can be separately controlled. The directory to save live video or backup video also can be changed by user.

No.	Name
7	**Power** It is used to close File Player Program.
8	**Playback Icons** Playback : This icon is used for starting playback. STILL/ PAUSE This icon is used for still or pause playback file. STOP This icon is used for stopping playback. GOP SKIP (Backward) This icon is used for faster playback in backward. It is a little faster than normal playback speed. FRAME SKIP (Backward) FRAME SKIP (Forward) GOP SKIP (Forward) This icon is used for faster playback in forward.

No.	Name
9	**Capture** It is used for capturing single picture or printing it as below figure. Captured single picture is saved into JPEG file.

No.	Name
10	**File Conversion (from MPEG4 to AVI)** THE MPEG-4 file format recorded in HDD can be converted into AVI file format which can be playback using common software like Windows media player installed in most of PC. Conversion procedure will be followed below figure.
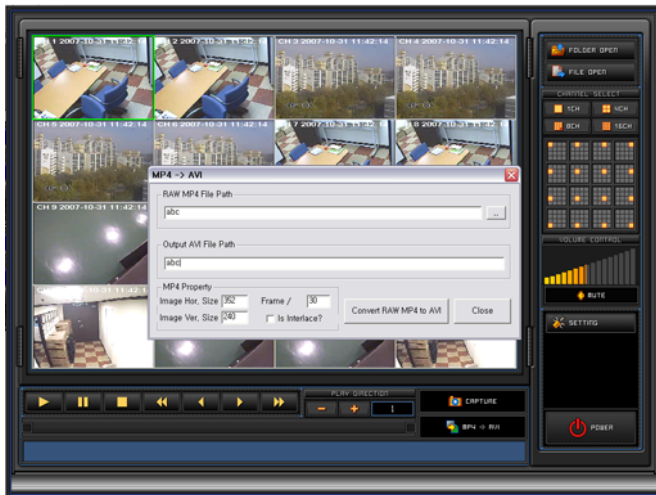
If MPEG-4 to AVI file conversion is clicked, left figure will be appeared.
First, select file path including MPEG-4
     file which is needed to convert
     into AVI file. If file path is assigned,
     AVI output path will be assigned in
     same directory.
Second, click " Convert Raw MP4 to AVI"
     for conversion.

When MPEG-4 to AVI file conversion is finished, left figure will be appeared.
Then please just click "OK".

9. HDD INFORMATION

HDD in the main menu can be selected by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** button. If HDD is selected by **ENTER** button, above "HDD INFORMATION" figure will be appeared.

1) OVERWRITE:
HDD OVERWRITE can be used for repetitive recording in to same HDD space.
First recorded area in HDD can be replaced with new recording data.
OVERWRITE can be selected by **LEFT** or **RIGHT** button. Or after pressing **ENTER** button, OFF or ON can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.

2) FORMAT HDD:
This support quick HDD format function. In order to format HDD in FORMAT HDD, after pressing **ENTER** button, "YES" or "NO" can be selected by **UP** or **DOWN** button for FORMAT HDD. If "YES" is selected, "Yes" or "No" can be selected for HDD format in below figure.
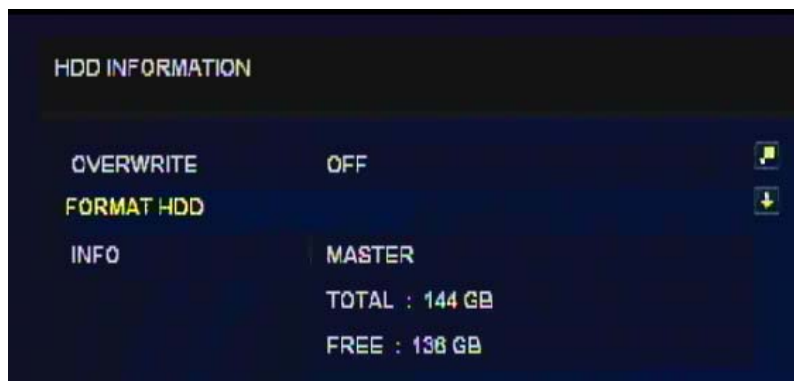

49
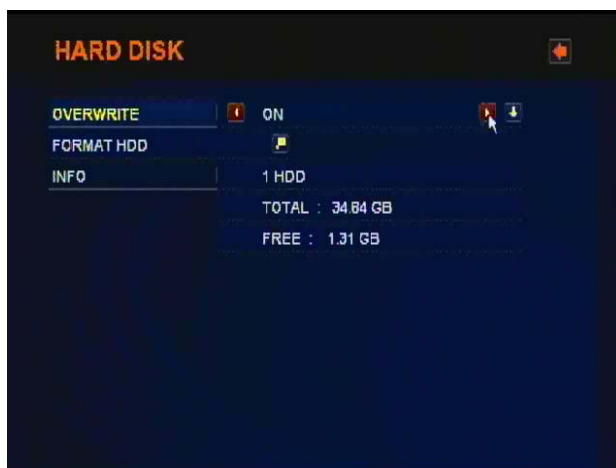
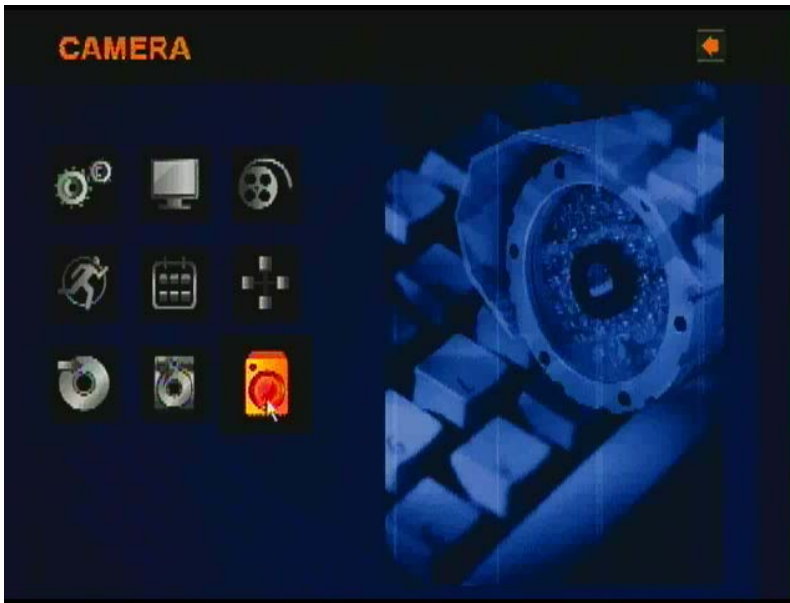If "YES" is selected, below figure will be appeared.

If HDD format is finished after 10- 20 seconds, below figure will be appeared.
Finally, if OK is selected, everything related to HDD format will be done.
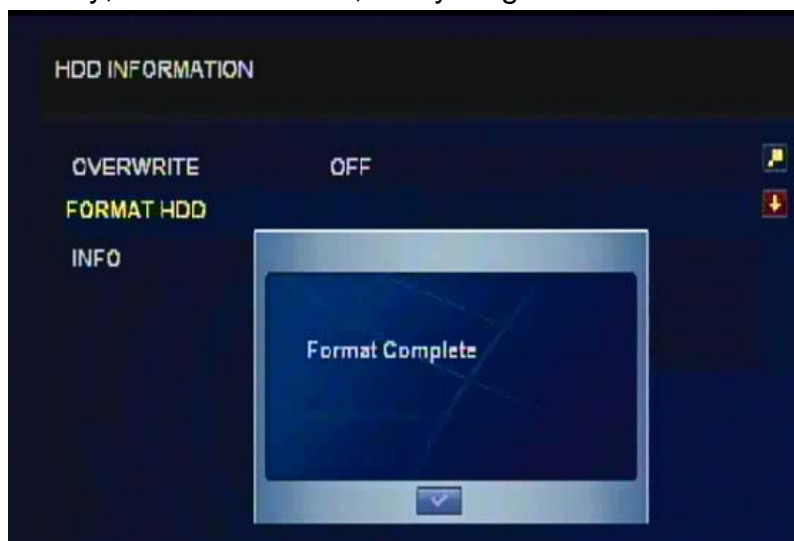
3) INFO: It shows total HDD capacity mounted in DVR.

10. CAMERA SETTING

CAMERA in the main menu can be selected by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** button. If CAMERA is selected by **ENTER** button, above "CAMERA SETTING" figure will be appeared. The movement from CAMERA NO to PTZ type in CAMERA SETTING can be done by **UP** or **DOWN** button.

1) CAMERA NO: CH01 – CH16
Camera ID and PTZ protocol for 16 cameras can be separately adjusted in CAMERA SETTING menu. After selecting CAMERA NO. first, camera ID and PTZ can be adjusted. CAMERA NO can be selected by **LEFT** or **RIGHT** button.

Or after pressing **ENTER** button, OFF or ON can be selected by **UP** or **DOWN** button. And then **ENTER** button is used for confirming setting value.

2) CAMERA ID

After selecting CAMERA NO first for CAMERA ID changing, CAMERA ID can be changed by imaginary keyboard of below figure. When **ENTER** button is pressed, below figure will be appeared.

Movement in imaginary keyboard can be done by movement button such as **LEFT** , **RIGHT** or **UP** , **DOWN** button.

If **ENTER** button is pressed under **"SPACE"** selection, under-bar character will be generated. If **ENTER** button is pressed under **"BACK"** selection, one character which is added last will be eliminated. If **ENTER** button is pressed under **"MODE"** selection, alphanumeric small character and large character will be exchanged. If **ENTER** button is pressed on alphanumeric character, that character will be added in CAMERA ID.

In order to save modified CAMERA ID, "OK" should be selected before leaving imaginary keyboard.

3) PTZ TYPE (Pan, Tilt and zooming protocol selection)

The high end camera(s) with panning, tilting and zooming function would be connected with some of video inputs. The camera(s) has(have) its own control protocol needed to control panning, tilting and zooming, according to PTZ camera manufacturer.

In order to control the camera with PTZ function in local DVR as well as in network viewer software remotely, proper PTZ TYPE should be selected in here. Your DVR supports over ten PTZ cameras. According to customer requirements, PTZ control will be added in it.

* NOTE: PTZ stands for pan, tilt and zooming.
* PTZ protocols: Panasonic/ Pelco-D/ PelcoP/ Techwin/ Niko/ DRX502A/KRE_302/ GC755NP/ TOA_554/ RAS716/ LPT-100/ KD/ INTER-M/ LILIN MLP2 and so on.
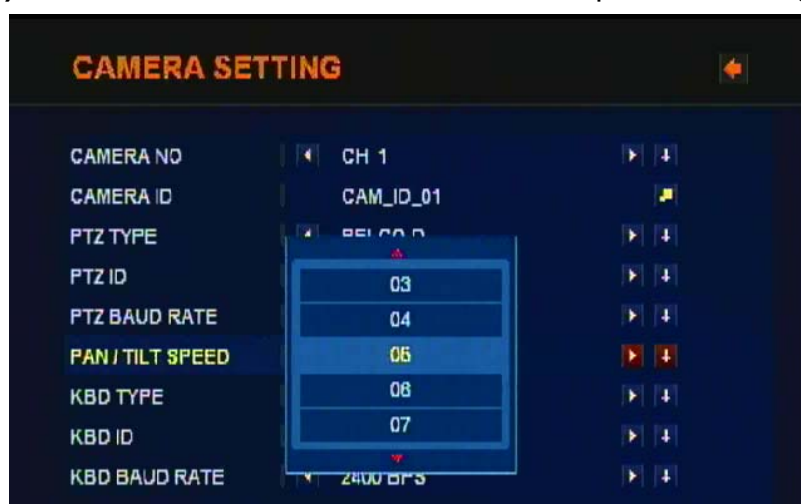
4) PTZ ID: ID No. from 00 to 19.
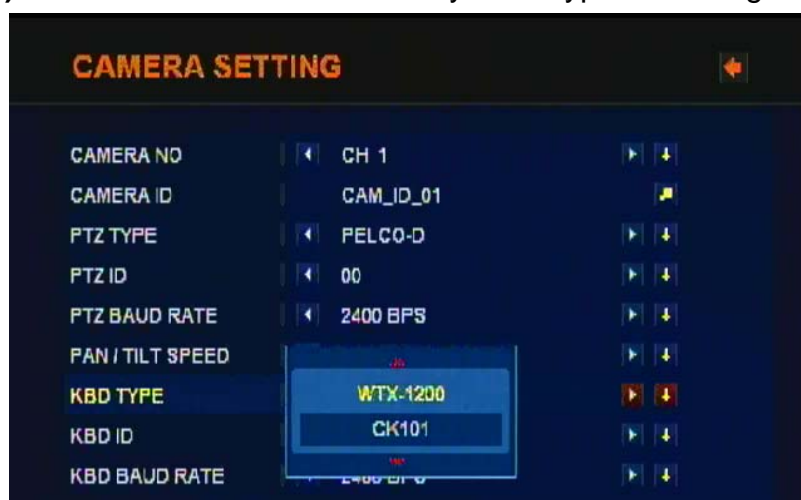PTZ camera ID can be selected for different channel connection.

5) PTZ BAUD RATE: Baud rate from 2400 to 19200 BPS can be selected according to PTZ camera.

6) PAN/ TILT SPEED: Select PAN/ TILT speed according to PTZ camera manufacturer.
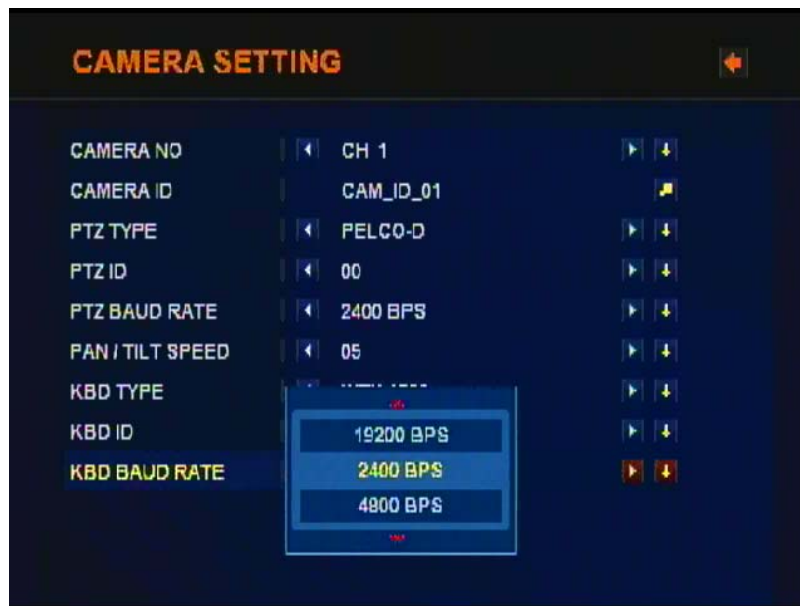

7) KBD TYPE: Select Control keyboard type according to manufacturer.

**8) KBD ID:** Select Control keyboard ID.

9) KBD BAUD RATE: Baud rate from 2400 to 19200 BPS can be selected according to PTZ camera.

11. **Searching** and **Playback**

1) Press $\boxed{\mathcal{Q}}$ button of front panel (**SEARCH** button in remote controller) for searching recorded files. Below calendar GUI will be appeared.

2) Press **DOWN** or **UP** button to select ALL/ SCHEDULE/ MOTION/ ALARM/ MANUAL to find out recorded file much faster which want to play in ❶ . And press **ENTER** button.

3) Press **LEFT** or **RIGHT** or **DOWN** or **UP** button to select recorded date in ❷ . And press **ENTER** button.

4) Select specific time of 24 hours using **LEFT** or **RIGHT** button in ❸ . Then press **ENTER** button for playback
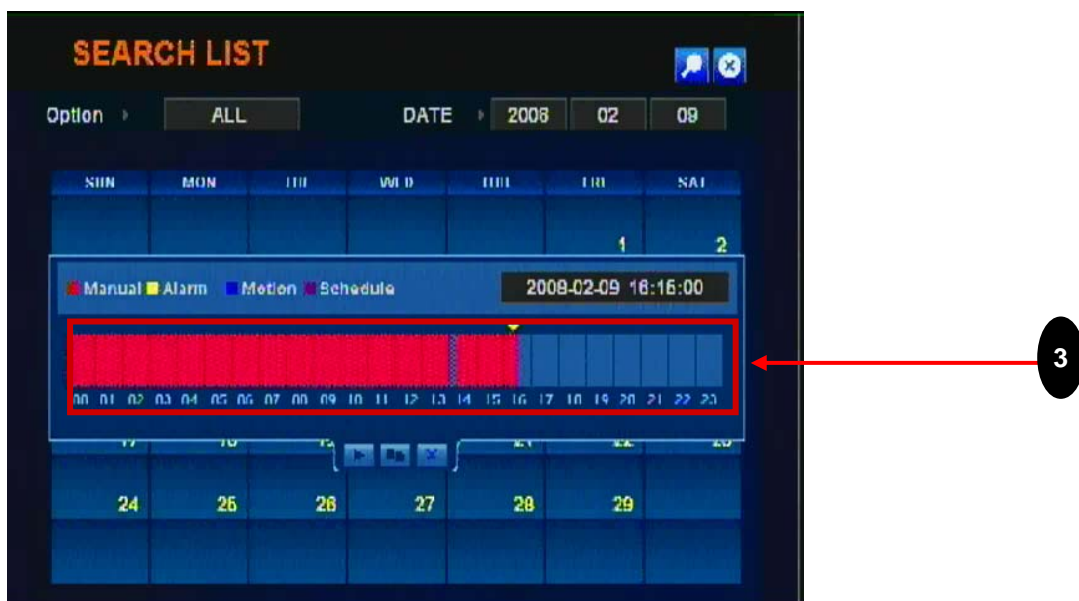
The search by time

1) Press ⊡ button of front panel.
   Below calendar GUI will be appeared.

2) Press **MENU** button for search by time.

3) Select playback **Year/ Month/ Day** and **Hour/ Minute/ Second** in ❶ .
   The selected file will be played, if recorded file is existed.

While your DVR is in playback mode, the display channel which want to watch could be selected by display selection button or single channel button. Fast forward (**FF, ▶ ▶**) or fast backward playback (**REW ◀ ◀**) can be done by **FF (▶ ▶)** and **REW (◀ ◀)** button. In order to freeze picture in playback, __PLAY/PAUSE__ button is used. The movement of single field in still picture mode can be fulfilled by __LEFT__ or __RIGHT__ button.
And Jog and shuttle dial also enable user to use FF, REW as well as single frame movement easily. Your DVR supports x2,x4,x8,x16 playback for Fast Forward, x2,x4,x8, x16 play back for Fast Backward.

Note: This DVR support continuous playback.

For display channel selection, (Display selection button) ⊞ ⊞⊞ ⊡⊞ can be pressed. Whenever these button is pressed, display mode can be changed from QUAD, 9CH to 16CH display mode. Single channel display can be displayed by No 1 to No 16 button display. QUAD display can be displayed by QUAD button. Whenever QUAD button is pressed, displaying QUAD channel will be changed from CH1-CH4 to CH5-CH8, CH8-CH12 and CH13-CH16.

< Playback Display Picture >
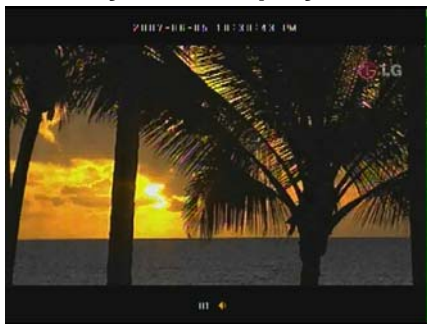
< Playback single CH >

< Playback 4 CH >

< Playback 9 CH >
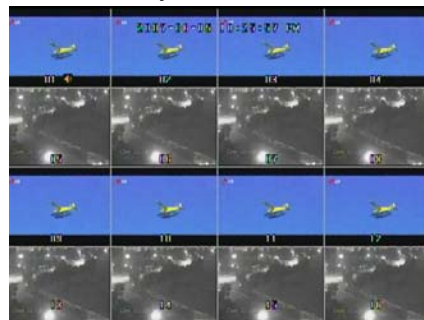
< Playback 16 CH >

Playback audio selection for speaker output:

One of audio channels which want to output through speaker can be selected by **"MENU" button just after pressing "F1" button.** Audio channel can be easily selected by movement buttons in the figure.
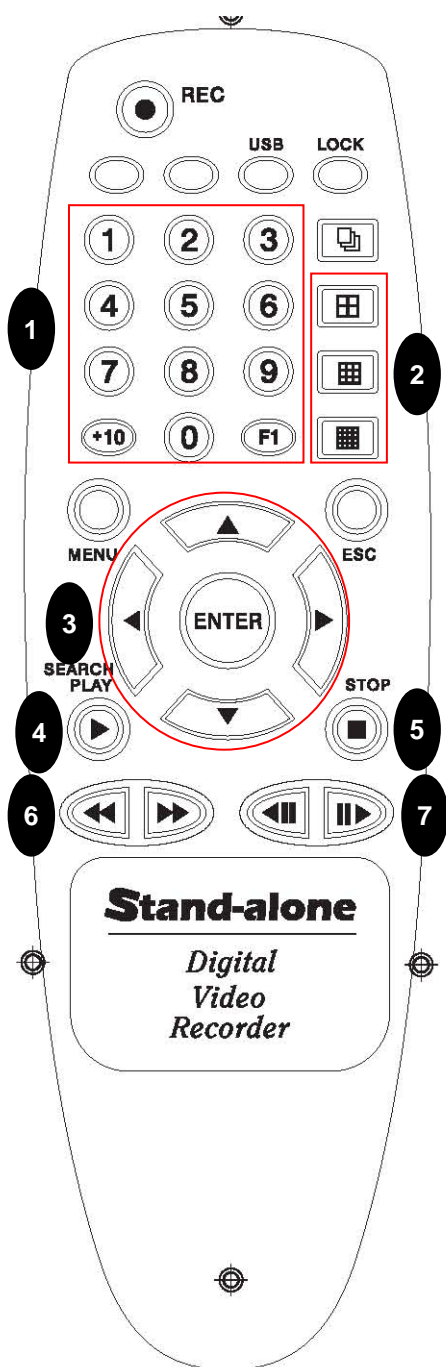
< The buttons of remote controller related to playback >

Display channel selection	
1	Full picture display selection
2 ⊞	QUAD picture display selection When this button is pressed first time, QUAD from ch1 to ch4 will be displayed. Whenever this button is pressed, next QUAD will be displayed sequentially from "ch5-ch8", "ch9-ch12" and "ch13-ch16".
2 ⊞	9 picture display selection When this button is pressed first time, 9 picture from ch1 to ch9 will be displayed. Whenever this button is pressed, next 9 picture will be displayed sequentially from "ch8-ch16" and "ch1-ch9".
2 ▦	16 picture display selection
Playback start and Playback stop	
4	Searching Start and Playback Start
5	Playback Stop
Fast Playback	
6 ▶▶	Fast Forward, x2,x4,x8,x16
6 ◀◀	Fast backward, x2,x4,x8,x16
Frame by frame movement	
7 ▮▶	1 Frame forward movement
7 ◀▮	1 Frame backward movement
3 Direction button	
LEFT	Left. Time selection from 0 to 23 Hr.
RIGHT	Right. Time selection from 0 to 23 Hr.
UP	Up. Searching Category and listed file selection.
DOWN	Down. Searching Category and listed file selection.
ENTER	From (to) searching category to (from) calendar area.

12. Live DISPLAY Mode

There are some of live display modes such as single (as full), QUAD, 9 picture, 16 picture and sequential mode regardless recording mode. When there are motion detection or alarm triggering, the video channel which motion is detected or alarm is triggered would be display on monitor during sequential time in DISPLAY menu.

12-1. Live Picture Display Mode

A) Full Picture

If each video channel is selected, the selected channel will be displayed as full screen. The video channel from CH11 to CH16 in remote controller can be selected with "10 digit" button and "1 digit" button together.

Ex) For selecting CH15, press "10 digit" (10+) and then press No.5 for "1 digit" number.

B) QUAD picture

If QUAD picture button ⊞ is pressed first time, QUAD picture with CH1 to CH4 will be displayed on monitor. Whenever it is pressed, QUAD picture displayed on monitor will be changed from CH1-CH4, CH5-CH8, CH9-CH12 to CH13-CH16 on and on. The QUAD picture mode for monitoring can be selected by pressing this button repeatedly.

C) 9 picture Display

If 9 picture button is pressed first time, 9 picture with CH1 to CH9 will be displayed on monitor. Whenever it is pressed, 9 picture displayed on monitor will be changed from CH1-CH9 to CH8-CH16 on and on. The 9 picture mode for monitoring can be selected by pressing this button repeatedly.

D) 16 picture Display
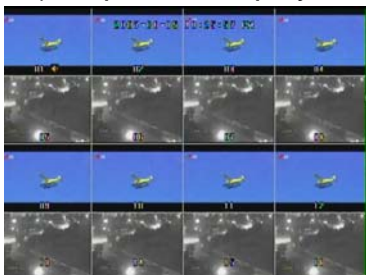
If 16 picture button is pressed first time, below 16 pictures will be appeared on monitor.

E) Sequential Picture Display Mode:
   All of video channels connected with video inputs of DVR are sequentially displayed on monitor, when **SEQ** button is pressed for Sequential Display mode.

F) Live audio selection for speaker output:

One of audio channels which want to output through speaker can be selected by "MENU" button just after pressing "F1" button.
Audio channel can be easily selected by movement buttons in the figure.

12-2. OSD Display

< OSD display position >
A) Time information: Middle-Top
B) Camera ID: Left-Bottom of each cameo
C) Recording: Middle-Bottom of each cameo
D) Video Loss: Center of each Cameo

Function	Symbol	Details
Recording	● 🏃	Manual, Motion, Alarm
Key Lock	🔒	It is displayed in "left top" on monitor.
Network	▦	It is displayed in "left top" on monitor.
PTZ	◈	It is displayed in "left top" on monitor.
BACKUP	💿	CD or DVD. It is displayed in "left top" on monitor.
	🔗	USB. It is displayed in "left top" on monitor.
REMOTE ID	🔒	Multiple DVR installed same space can be controlled by one Remote Controller using Remote Cont ID. It is displayed in "left top" on monitor.

13. RECORDING

This DVR has the performance which can record real-time 16ch video and 16 audio at the same time. Recording enable/ disable, resolution, recording quality, frame rate and audio ON/ OFF, pre-recording ON/ OFF and so on related to individual video channel and audio channel can be adjusted separately.

There are several recording modes such as Manual, Event, Schedule.

According to recording mode, recording parameter can also be configures separately in RECORDING, EVENT and SCHEDULE menu.

The recording condition of each recording mode

Recording	Setting	Recording start/Stop
Manual	ON	Recording can be started or stopped by REC button. Each channel for recording should be set as "**MANUAL**" in **REC SETTING** of RECORDING menu.
	Schedule	Manual recording by schedule should be set as **"MANUAL" in Schedule.SETUP** menu in the Weekly or Daily Schedule setup. It is set as "**Schedule**" in **REC SETTING** of RECORDING menu.
Event	ON	Recording can be started or stopped by **EVENT SETUP (motion or alarm).** Each channel for recording should be set as "**EVENT**" in **REC SETTING** of RECORDING menu
	Schedule	Event (motion or alarm) recording by schedule should be set as **"EVENT" in Schedule SETUP** menu in the Weekly or Daily Schedule setup. It is set as "**Schedule**" in **REC SETTING** of RECORDING menu.
Schedule	ON	For Schedule recording should be set as "**Schedule**" in **REC SETTING** of RECORDING menu with Weekly or Daily Schedule setup.

→ Recording mark

14. PTZ Control Procedure

a) Select the camera (which PTZ camera is connected) to control PTZ using **Channel Selection button** from CH1 to CH16 in front panel of DVR.

b) Press **PTZ** button ⊕ to select PTZ mode. PTZ MODE OSD 🔲 will be displayed on upper right corner of monitor.

c) Use **UP**, **DOWN** button for **up and down** movement of PTZ camera, **LEFT**, **RIGHT** for **left and right** movement and ◄◄ , ►► buttons for **zoom IN and OUT.**

d) To escape PTZ control mode, press **ENTER** button or any button. Then the PTZ MODE OSD on upper right corner of monitor will be disappeared.

NOTE:
 Before using PTZ control mode, please check that PTZ protocol in PTZ TYPE of CAMERA SETUP is correctly selected.

PTZ Icon ————→

IV. Firmware Upgrade Procedure

1.   Firmware (F/W) Upgrade procedure

1) Copy upgrade firmware file, **"dvr535352xx.tgz"** into USB Memory Drive in advance.
2) Insert USB Memory Drive into USB port in front panel of DVR.
3) Press MENU button.
4) Select **SYSTEM SETUP** menu in main menu.

* CAUTION:
It will take about 10-15minute to finish F/W upgrade. Please don't POWER OFF or don't remove USB Memory Drive from DVR. Fatal error in main board might be happened.

5) Move to **UPGRADE** of **SYSTEM SETUP**. Press **ENTER** button of front panel in your DVR. Below GUI will be appeared. For firmware upgrade, **ENTER** button can be pressed again.

If there is no USB memory driver for firmware upgrade, below GUI will be appeared.
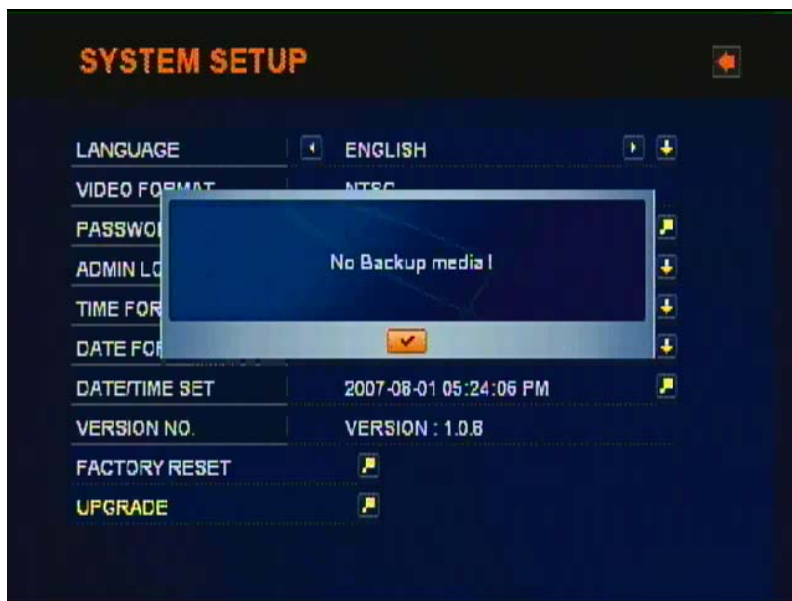
6) While "Please wait" is appearing, S/W upgrade will be executed. It
takes around 10 minutes. After completing S/W upgrade, your DVR will be
automatically rebooted.

7) **S/W Upgrade Completion !!!**
   S/W upgrade version will be seen on VERSION NO. of SYSTEM SETUP.

Upgrade Version No.

66

APPENDIX 1. 16CH MPEG-4 DVR Specification

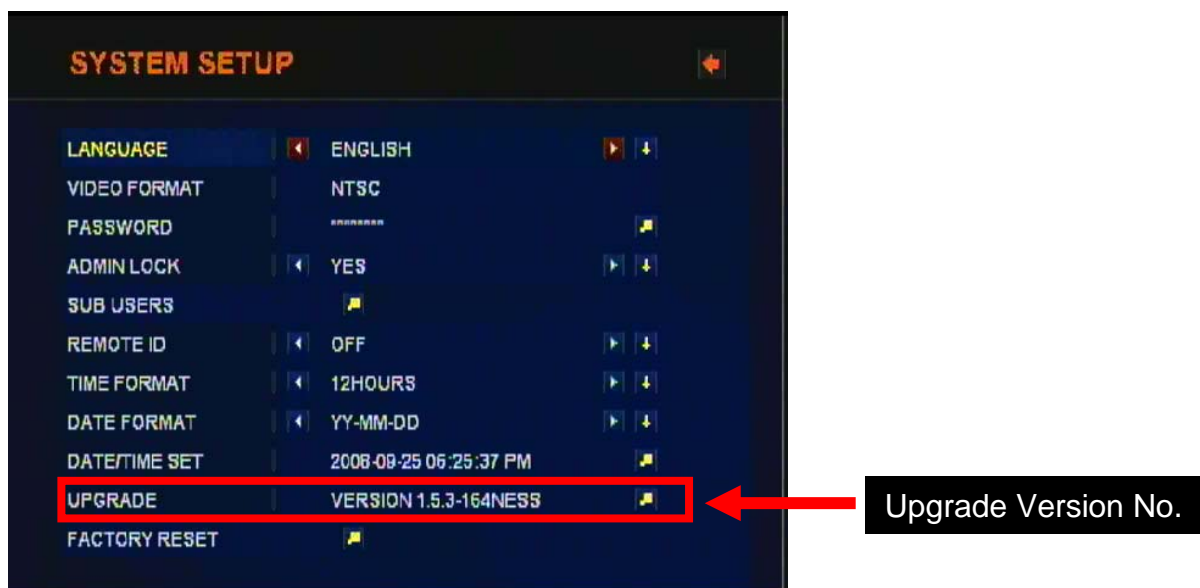| Description		Specification
		16CH
Video	Input	16CH, composite Video, BNC
	Output	2CH
		S-Video/ VGA Output (Max. 1024x768)
Audio	Input/Output	16CH Input and 2CH Output
Resolution	Display	4x4 Image (NTSC:720x480, PAL:720x576)
	Recording	NTSC: 720x480, 720x240, 320x240, PAL:720x576, 720x288, 360x288 active pixels
Compression	Algorithm	MPEG-4 for video, G.723 for audio
Operation	OS	Embedded Linux
	Pentaplex	Recording, Playback, Monitoring, Back up & Network at the same time
	System control	Button, Remote Controller, Mouse
Frame rate	Recording (FPS)	Each 16CH video and audio real time recording.
		480(352x240), 120(720x480) in NTSC
		/ 400(352x288), 100(720x576) in PAL
		Recording mode (Frames/sec): 30 to 1 FPS for each channel
Recording	Recording mode	Continuous, Scheduled, Motion , Alarm Recording
	Alarm (Event, Motion)	Selectable recording CH & pre-recording
		Duration: 30sec, 1,2,3,4,5,6,7,8,9,10,20,30,40,50 min
	Alarm In/ Relay Out	16 (NO or NC) Alarm Input/ 4 NO and 4 NC Relay Out
Playback	Normal, Fast PB and Search Jog & Shuttle	Normal: x1 speed
		Fast Forward: x2,x4,x8,x16 (NTSC, PAL)
		Fast Backward: x2,x4,x8,x16(NTSC, PAL)
		480(NTSC)/ 400(PAL)
		Search list sorting support: All, alarm, motion, schedule and time.
HDD	Management	Normal Two, Max Four (EIDE: ATA-6, 3.5 inch, 7200 rpm or SATA)
Network	Protocol	10/100 Base-T TCP/IP, UDP, HTTP, SMTP, NTP, DHCP, DDNS
	Network Function	Easy GUI, Live Monitoring, Remote Configuration, PTZ control, Backup and Playback
		Web (IE) viewer, Event Notification, Multi-user accessing, Two way audio support. CMS software
	Time Setting	Network Time Protocol Support
PTZ	Pan/Tilt/Zoom	RS485
Archiving	Copy	CD R/W (or DVD) and USB 2.0 for data backup
	USB 2.0	Firmware Upgrade via USB, System log file (USB Memory drive, USB HDD)
F/W upgrade	USB2.0	Firmware Upgrade via USB
Electrical	Power	AC to DC Adapter, 12V, 5.8A (In case of 2 HDD)

APPENDIX 2. Pin Description of connectors

1. USB Pin Descriptions (Front panel)
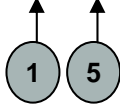
Pin NO.	Pin description
1	VCC
2	D- (TX-)
3	D+(TX+)
4	GND
5	SHIELD

2. VGA Pin Descriptions
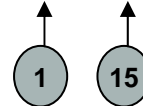
Pin NO.	Pin description
1	R
2	G
3	B
4	No connected
5	No connected
6	SYNC
7	No connected
15	No connected

3. RS232 Pin Descriptions
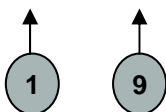
DVR

Pin NO.	Pin description
1	GND
2	RS485 D+ (TX +)
3	RS485 D- (TX -)
4	GND

Slave Unit like PTZ Camera

Pin NO.	Pin description
-	GND
-	RS485 D+ (RX +)
-	RS485 D- (RX -)
-	GND
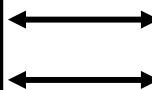
4. Alarm Input & Outputs Pin Descriptions

1

1　　　　　**12**
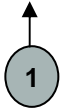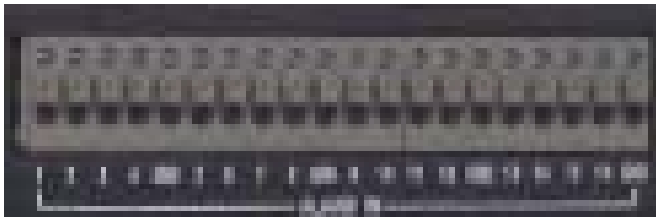
< Alarm Input Pin >

Pin NO.	Pin description
1	Sensor input 01
2	Sensor input 02
3	Sensor input 03
4	Sensor input 04
5	GND (Common)
6	Sensor input 05
7	Sensor input 06
8	Sensor input 07
9	Sensor input 08
10	GND (Common)
11	Sensor input 09
12	Sensor input 10
13	Sensor input 11
14	Sensor input 12
15	GND (Common)
16	Sensor input 13
17	Sensor input 14
18	Sensor input 15
19	Sensor input 16
20	GND (Common)

< Alarm Output Pin >

Pin NO.	Pin description
1	Relay output NO1
2	Relay output NC1
3	GND (Common)
4	Relay output NO2
5	Relay output NC2
6	GND (Common)
7	Relay output NO3
8	Relay output NC3
9	GND (Common)
10	Relay output NO4
11	Relay output NC4
12	GND (Common)

5. RS485 Pin Descriptions

DVR

Pin NO.	Pin description
1	GND
2	RS485 D+ (TX +)
3	RS485 D- (TX -)
4	GND

Slave Unit like PTZ Camera

Pin NO.	Pin description
-	GND
-	RS485 D+ (RX +)
-	RS485 D- (RX -)
-	GND
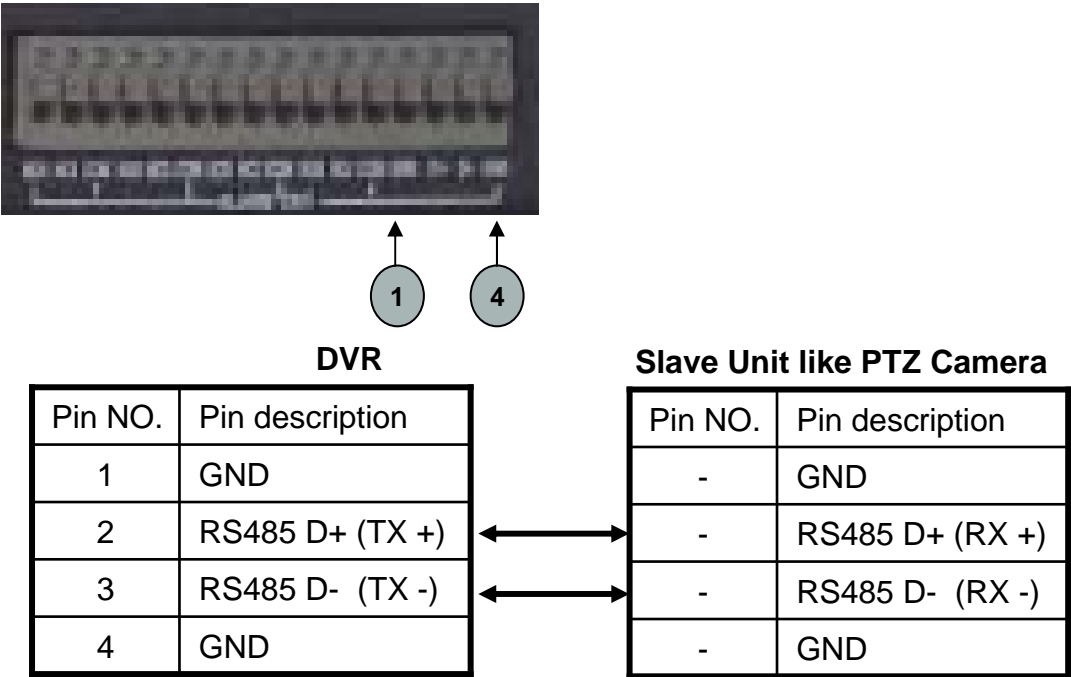
6. LAN port (RJ-45) Pin Descriptions

Pin NO.	Pin description
1	TXD+
2	TXD-
3	RXD+
4	No connected
5	No connected
6	RXD-
7	No connected
8	No connected
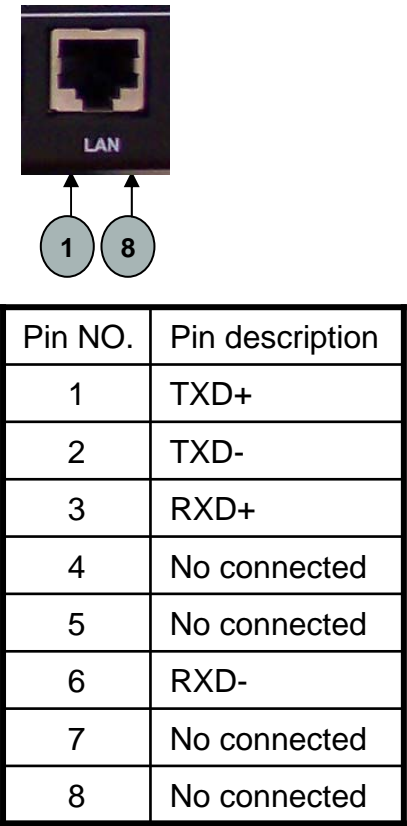
Warranty Guide

The quality of this product is guaranteed by strict quality control process and tests. If the Product is damaged despite following the instructions provided in the manual, this Warranty will be in effect, provided the product is damaged within 1 year of purchase.

Warranty Guide

- Check the Product Warranty Sheet to make sure it is still in effect.

- Check the problem again and contact your dealer you purchased from.

- About product repair, exchange, or refund, we follow the "compensation regulation for customer's loss" announced by "the Economic Planning Board".

Warranty

- If the product is damaged despite following the instructions provided in the manual, this warranty will be in effect, provided the product is damaged within 1 year of purchase.

- Service fee and replacement parts will be charged in below cases:
  1. Damaged the user's carelessness.
  2. Damaged due to a natural disaster.
  3. Damaged due to the user not following the instructions and cautions written in the user's guide
  4. Damaged due to incorrect power voltage, and/or frequency being used.
  5. If the Product Warranty sheet is expired.
  6. Damaged due to an engineer not employed by our company modifying the system.

- If your system is damaged after the warranty period, free repair service will not be available. If you wish the system to be repaired, service fee and replacement parts will be charged.

Warranty

Product/ Model Name	
Serial Number	
Purchasing Dealer	
Purchasing Date	
Warranty Period	1 year from the purchasing date
Customer	

- The product Warranty Sheet will not be issued again.
- The Product Warranty Sheet must be filled on the same day of the product's purchase.
- It will be requested to show this warranty to receive free repair service.