

# **User's Manual**

## **Triplex Real Time Stand Alone DVR**

### **[ 4 / 8 / 16 Channel DVR ]**

## CAUTION

TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN COVERS.  
NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**Please beware of the following precautions before installing the DVR.**

- Avoid any place with moisture, dust, or soot.
- Avoid any place with direct sunlight or heating appliances.
- Keep the product away from electric shock or magnetic substances.
- Avoid high or low temperature.

(Recommended operation temperature is between 0° C ~ 40° C).

- Do not place any conductive material through the ventilation.
- Turn off the system before installation.
- Ensure enough space for cable connections.
- Place the system on a solid surface with sufficient air ventilation.

Avoid any surface that vibrates.

- Placing the system near electronic devices such as radio or TV may cause breakdown to the product.
- Do not disassemble the product without an assistance from the manufacturer.
- Do not place any heavy object on the system.

### Note

This equipment had 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.

**PLEASE READ THIS MANUAL THOROUGHLY FOR EFFECTIVE AND SAFE USAGE OF THE DEVICE.**

# Contents

<b>CHAPTER 1. KEY FEATURES</b>	6~7
<b>CHAPTER 2. PACKING DRTAILS</b>	8
<b>CHAPTER 3. NAMES AND FUNCTIONS</b>	9
3.1 FRONT PANEL	9~10
3.2 REAR PANEL	11~12
<b>CHAPETR 4. INSTALLATION</b>	13
4.1 INDIVIDUAL CONNECTION	13
4.1.1 POWER	13
4.1.2 CAMERA	13
4.1.3 MONITOR	14
4.1.4 VGA	14
4.1.5 AUDIO	15
4.1.6 USB	16
<b>CHAPTER 5. OPERATION</b>	
5.1 FACTORY DEFAULT	17
5.2 FRONT PANEL CONTROL	18
FUNCTION	
5.2.1 MULTI DISPLAY	18
5.2.2 PIP DISPLAY	19
5.2.3 AUTO DISPLAY	20
5.2.4 TRIPLEX DISPLAY	21~22
5.2.5 DVR INFORMATION	23
5.2.6 RECORD	24
5.2.7 SEARCH & PLAYBACK	25~26
5.3 REMOTE CONTROLLER	27
5.3.1 REMOTE CONTROL	
FUNCTION	27
5.3.2 MUTE	28

# Contents

5.3.3 DIGITAL ZOOM .....	29
5.3.4 PANORAMA .....	30
5.3.5 PTZ CONTROL .....	31~32
5.3.6 BACKUP .....	33~36
<b>CHAPTER 6. SETUP MENU .....</b>	<b>37</b>
6.1 LANGUAGE .....	37
6.2 SYSTEM SETUP .....	38
6.2.1 HDD SETUP .....	38
6.2.2 PASSWORD SETUP .....	39
6.2.3 CHANNEL NAME SETUP .....	40
6.2.4 DATE/TIME SETUP .....	41
6.2.5 BEEP & PTZ SETUP .....	42
6.2.6 SYSTEM RESET .....	43
6.3 DISPLAY SETUP .....	44
6.3.1 BLANK CHANNEL SETUP .....	44
6.3.2 PIP CHANNEL SETUP .....	45
6.3.3 ADJUST CHANNEL SETUP .....	46
6.3.4 VIDEO SIGNAL TYPE .....	47
6.3.5 SEQUENCE .....	47
6.3.6 BOUNDARY COLOR .....	48
6.3.7 BACKGROUND COLOR .....	48
6.4 EVENT SETUP .....	49
6.4.1 RECORD TIME .....	49
6.4.2 SENSOR IN .....	49
6.4.3 EVENT ACTION .....	50
6.4.4 MOTION SETUP .....	51
6.5 RECORD SETUP .....	52
6.5.1 RECORD TYPE .....	52
6.5.2 RECORD SPEED .....	52
6.5.3 RECORD QUALITY .....	52
6.5.4 PB SPEED .....	52
6.5.5 CHANNEL ENABLE .....	53
6.5.6 AUDIO SETUP .....	53
6.5.7 SCHEDULE SETUP .....	53



# Contents

6.6 NETWORK SETUP .....	54
<b>CHAPTER 7. EXTERNAL TERMINAL INFORMATION .....</b>	<b>55</b>
7.1 RS-232 .....	55~56
7.2 ALARM IN/OUT & RS-485 .....	57~58
7.3 VGA .....	59
7.4 ETHERNET & USB .....	60
<b>CHAPTER 8. SPECIFICATIONS .....</b>	<b>61</b>
<b>CHAPTER 9. NETWORK CLIENT VIEWER MANUAL .....</b>	<b>62</b>
9.1 SYSTEM REQUIREMENT .....	62
9.2 NETWORK ENVIRONMENT .....	62
9.3 NETWORK VIEWER INSTALLATION .....	62
9.4 NAMES & FUNCTIONS .....	63~65
9.5 OPERATION .....	67
9.5.1 LIVE VIEW MODE .....	66~67
9.5.2 PLAYBACK MODE .....	68
9.5.3 DRIVE SCAN MODE .....	69
9.5.4 FILE PLAY MODE .....	70
9.5.5 CD PLAY MODE .....	71
<b>CHAPTER 10. Q &amp; A .....</b>	<b>72~73</b>



## CHAPTER 1. KEY FEATURES

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### Operation

- Display, Playback, Recording, Network and transmission simultaneously
  - Real time single or multi-screen display
  - Triplex display (8ch Live & 8ch playback display)
  - Pan& Tilt, 2X digital zoom and 3PIP display
  - Easy operation by IR remote controller
  - Hidden camera option (covert)
  - User-friendly setup menu and operation
- 

### Playback

- Multi-screen playback (Full, Quad, 6/ 8/ 9/ 16split)
  - Search by date / time list, event list and data / time
  - Select playback speed mode
- 

### Recording

- Select of the recording quality grade
  - Camera frame rate can be set by user
  - The recording speed of max. 120 images per second (NTSC)
  - Manual, schedule and event (motion, alarm) recording
  - Select of the recording image size (EACH / CIF)
  - 1 channels audio recording
- 

### Network

- Live and playback viewing and recording with exclusive client viewer
- Remote control via a networked PC with the exclusive client viewer
- (The viewer software is supplied for free.)
- Flexible connections - 10/ 100 Mbps Ethernet / ADSL

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## **Audio**

- 1 channel audio recording in real time
- Audio channel select for each channel

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## **BACKUP**

- Remote backup on a networked PC with the exclusive client viewer
- CD-RW backup
- USB Backup (Still image backup) (Only available for 16CH DVR)

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## **General**

- Selection of PAL / NTSC in a display setup menu
- Built-in hardware Watchdog
- Automatic time adjustment through Network
- VGA output for PC monitor (Optional)
- S-Video output
- Alarm In/Out, RS-485, RS-232 Connections
- Loop-through connections
- Support of multiple Languages

## CHAPTER 2. PACKING DETAILS



2. Network Viewer Program CD



3. User's Manual



4. Remote controller



5. LAN Cable



6. DC Adaptor



7. Power Cord



8. Battery



9. HDD Screws

### CONTENTS

1. DVR System

2. Network Viewer Program CD

3. User's Manual

4. Remote controller

5. LAN Cable

6. DC Adaptor

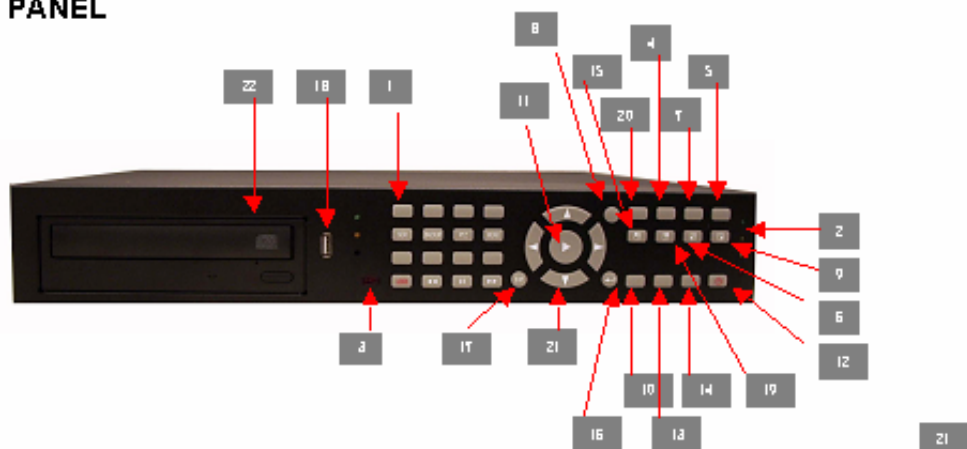
7. Power Cord

8. Battery

9. HDD Screws

## CHAPTER 3. NAMES AND FUNCTIONS

### 3.1 FRONT PANEL



#### 1. 1 to 16 Channel Selection / Direction

- To select a channel to be viewed as full-size screen during live display or playback.
- To navigate, press Up(1) / Down(2) / Left(3) / Right(4).

#### 2. LED Signs

- There are four LED signs that indicate current status.

**POWER** : DVR power status

**NET** : ON means connection status via network.

If someone accesses the DVR via network, LED light turns on.

**PLAY** : ON means the DVR is in search mode of playback.

**REC** : ON means the DVR is recording.

#### 3. Remote Controller Sensor

#### 4. Mode

- It converts to live display mode directly.
- To surf various live display modes like 16CH, 13CH, 9CH, 8CH and 6CH display by pressing the button repeatedly.

#### 5. PIP

- To convert to PIP mode (Picture in Picture).
- To surf various PIP modes like 1PIP, 2PIPs and 3PIPs by pressing the button repeatedly.

#### 6. SEQ

- To convert to auto switch mode.
- If you press AUTO on the front panel, channels will be automatically switched as follows.
  - Ch1 -> Ch2 -> Ch3 -> ... -> Ch14 -> Ch15 -> Ch16 -> 16Ch in CIF -> Ch1 -> Ch2 ...keeping this order until you press Auto button again to release the function.

## **7. TRI (TRIPLEX)**

- To convert to triplex function like 8 channel live display and 8 channel playback in the screen simultaneously.
- Press the button first, you will have CH1 ~ CH 8 live displays and playbacks and press it again, you will do other channels like CH9 ~ CH16 live displays and playbacks.
  - **When you press the button in live display mode**, you will see 8 channel live displays and 8 channel playbacks with no video.
  - **When you press the button in playback mode**, you will see 8 channel live displays and 8 channel playbacks that have selected.

## **8. INFO (INFORMATION)**

- To show system information of DVR

## **9. Back-Up**

- To burn CD for data back-up

## **10. REWIND (◀◀)**

- Speed X5, X10 and X20

## **11. PLAY (▶) / PAUSE (||)**

- To play and pause the recorded videos

## **12. Faster Forward (▶▶)**

- Speed X5, X10 and X20

## **13. STOP (■)**

## **14. RECORD**

- To start and stop recording.

## **15. SEARCH**

- To access recordings from HDD

## **16. ENTER**

- To enter a selection

## **17. MENU**

- To access System Setup Menu.

## **18. USB port**

- To backup still image

## **19. Zoom**

- To make zoom of picture ( 2x2 )

## **20. PTZ**

- To control the Speed dome function of Pan/Tilt/Zoom

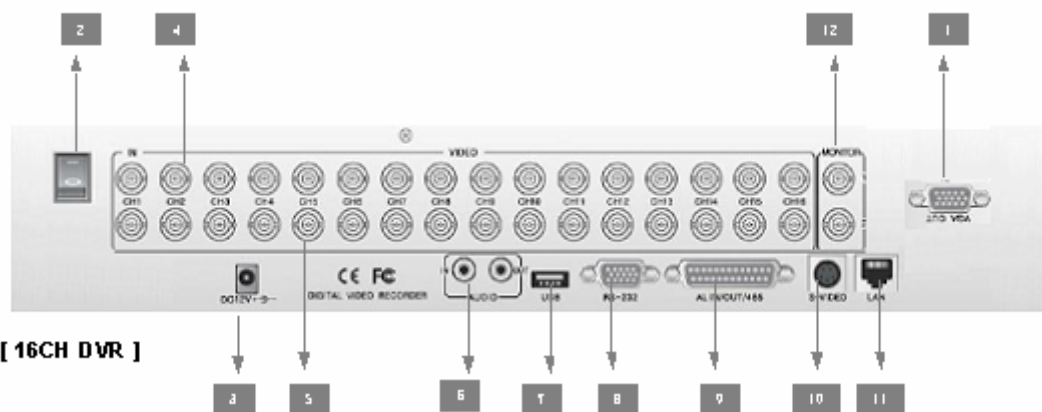
## **21. ▲▼◀▶**

- To move cursor direction to up / down / left / right

## **21. CD-RW**

- To back-up data into CD

### 3.2 REAR PANEL



### **1. VGA Output Port (Optional)**

- This is mainly for PC monitors.

### **2. Power Switch**

### **3. DC Power Jack**

### **4. 16 BNC connectors for camera input**

### **5. 16 BNC connectors for monitor output**

These are mainly for monitors. And also you can use these for VCR recorder backup.

### **6. Audio In / Out Port**

### **7. USB Port**

### **8. RS-232 Port (9 Pin D-Sub Connector)**

- It is mainly for download port for system upgrade.

### **9. Alarm In / Out and RS-485 Port (25 Pin D-Sub Connector)**

- It is to communicate with external sensors, alarm and PTZ camera to control.

### **10. S-Video Output**

### **11. LAN Terminal**

- It is to connect to LAN or Internet.

### **12. BNC connectors for monitor output**

- These are mainly for monitors. And also you can use these for VCR recorder backup.



## CHAPTER 4. INSTALLATION

### 4.1 INDIVIDUAL CONNECTION

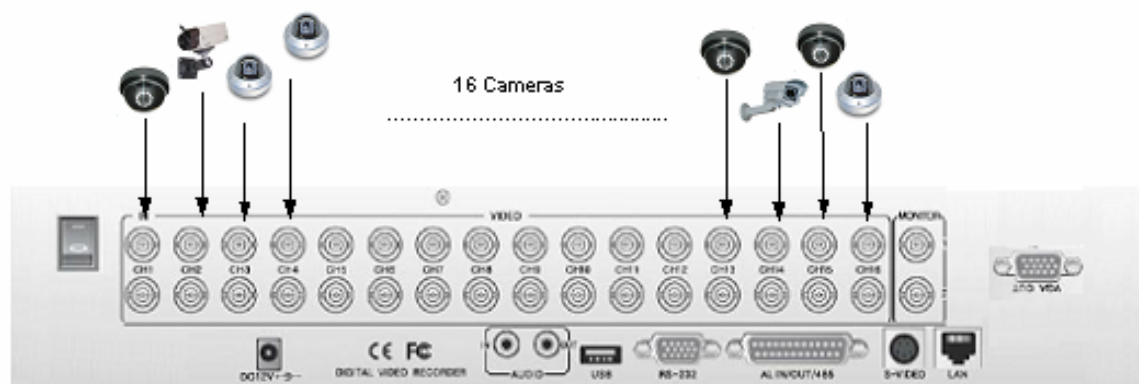
#### 4.2.1 POWER



\* Connect the DC adaptor to be provided in the package.

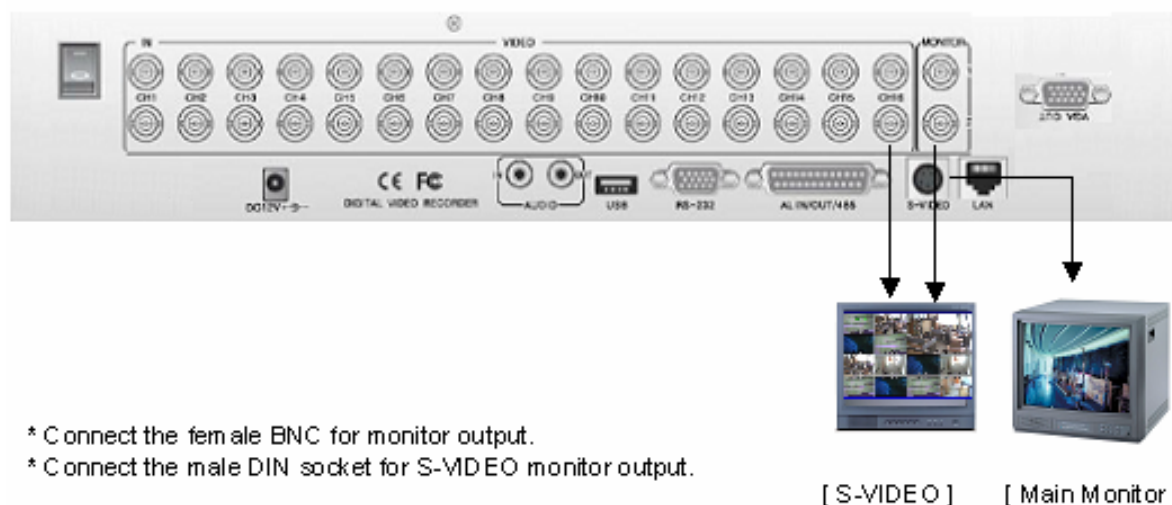
\* And then turn on the power switch.

#### 4.1.2 CAMERA

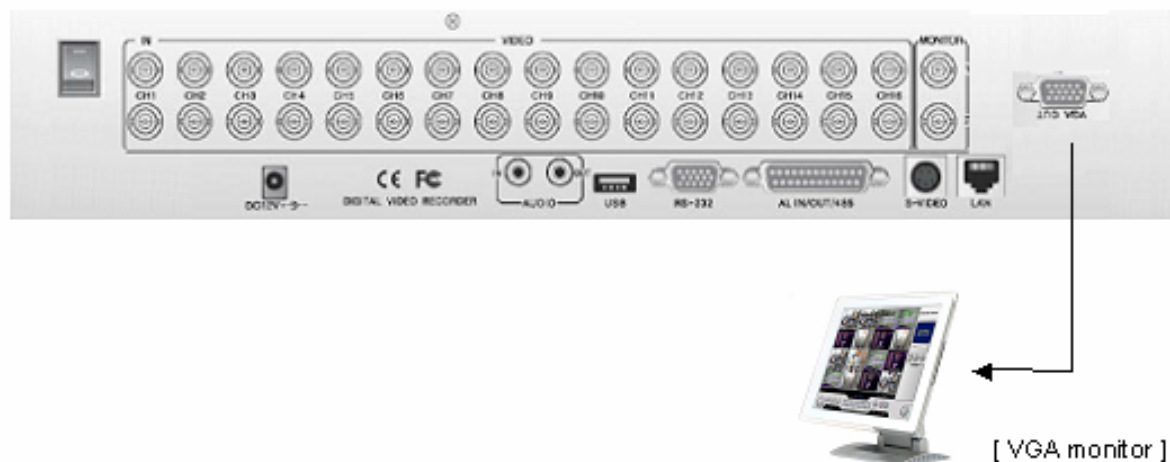


\* Connect a female BNC connector of each camera to a male BNC connector, "CAMERA IN" port.

### 4.1.3 MONITOR

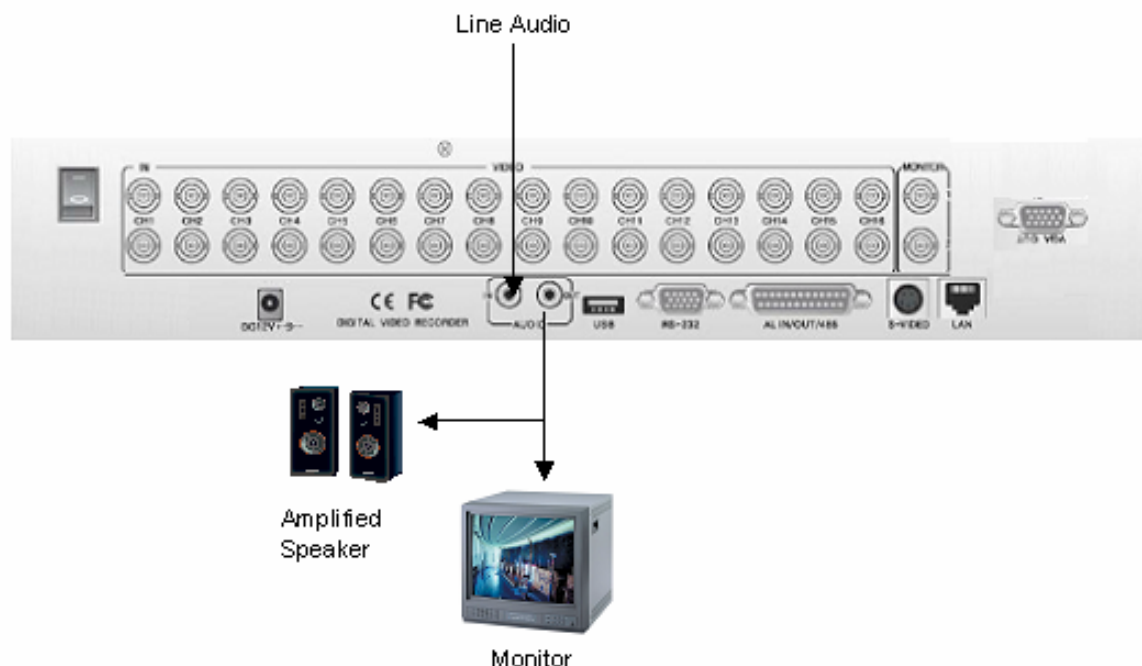


#### 4.1.4 VGA (Optional)



\* Connect the D-sub connector of computer (VGA) monitor to VGA out of DVR.

#### 4.1.5 AUDIO



##### \* Audio Input

- AUDIO IN : Connect the RCA Line Jack of the relevant equipment (for example, a camera with a built-in microphone ) to the AUDIO IN port.

##### \* Audio Output

- AUDIO OUT : Connect the RCA Line output to a monitor with a built-in speaker.

##### Note

This DVR can be connected only with a line audio and not support a microphone for audio input and output.

To record audio, AUDIO function should be enable in the AUDIO setup of main menu.

As the audio is linked to a camera, it is required that linked camera should be viewed in the screen during playback in order to hear the recorded audio.

#### 4.1.6 USB (USB 2.0 port)



\* The USB port is provided to connect USB memory stick for still image copying.

**This function is not supported currently.**

##### \* Installation Process

- 1) Turn off the power of DVR.
- 2) Connect USB memory stick to DVR.
- 3) Turn the power of DVR on.

## CHAPTER 5. OPERATION

### 5.1 FACTORY DEFAULT

To be added in final version

## 5.2 FRONT PANEL CONTROL FUNCTION

### 5.2.1 MULTI DISPLAY

Users can enjoy this "MULTI DISPLAY" functions in any mode.  
It converts to 16 channel live display on the screen as below by pressing MULTI button.

\* To convert to live display, press MULTI button in any mode.



You can surf 13 CH / 9 CH / 8 CH / 6 CH display by pressing MULTU button repeatedly.

[ 13 CH display Mode]



[ 9 CH display Mode]



[ 8 CH display Mode]



[ 6 CH display Mode]





## 5.2.2 PIP DISPLAY

You can select PIP ( Picture In Picture ) options by pressing PIP button repeatedly. PIP mode offers a convenient way of monitoring multiple channels while focusing more attention on a particular channel. It has a main video channel view and up to 3 small video channel views on the screen.

You can surf 1 PIP/ 2 PIPs/ 3 PIPs mode with 4 positions by pressing PIP button repeatedly.

To release this mode, press other function button on the front panel.

[ 1PIP ]



[ 2 PIPs ]



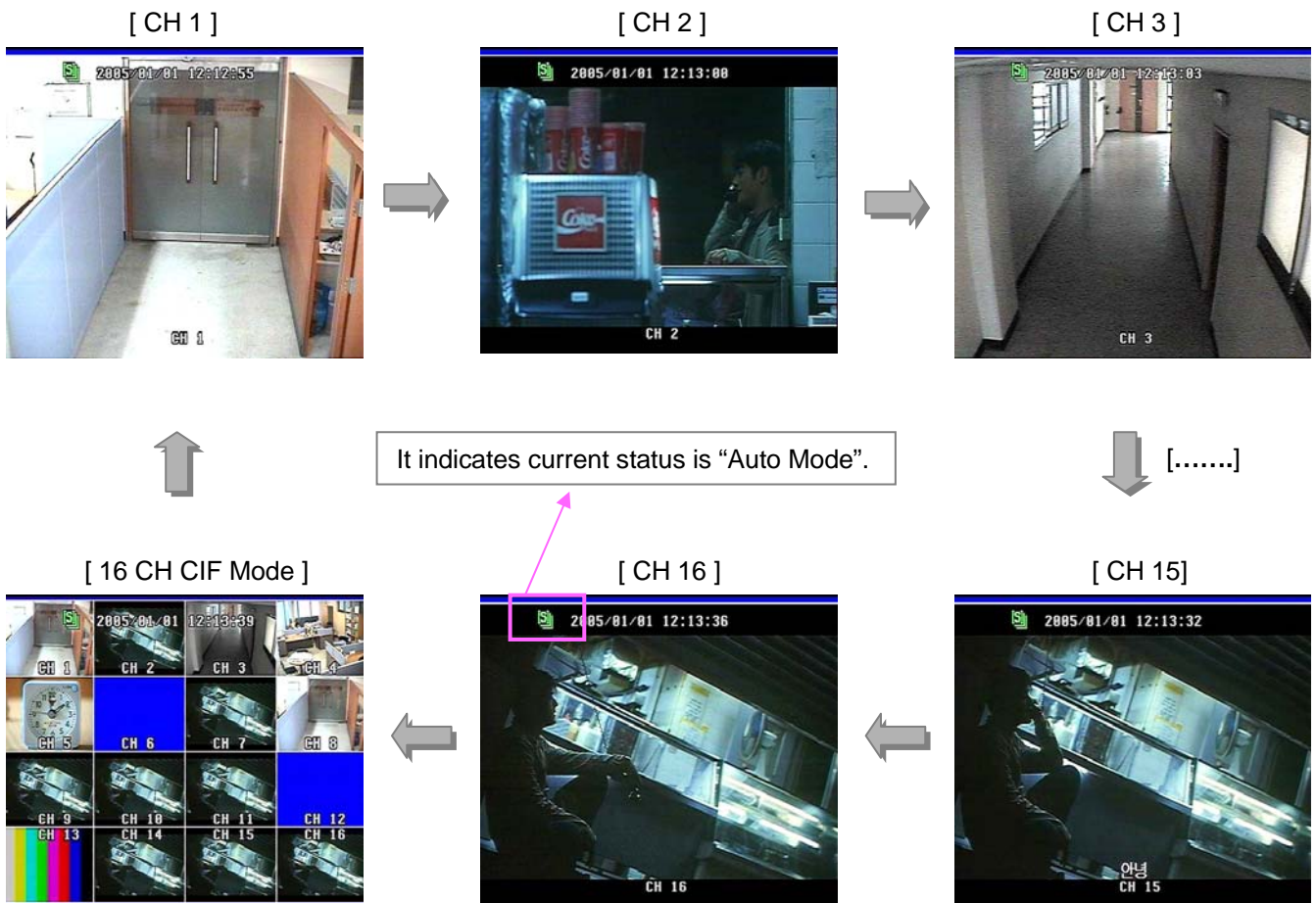
[ 3 PIPs ]



### 5.2.3 AUTO DISPLAY

If you select Auto Mode, channels will be switched automatically among 17 types of display in the order of "CH 1-CH 2-CH3- ...- CH 15- CH 16-16 channel Mode" and keep the order until you press other function button. The DVR skips channels with no video.

You can find that the DVR indicates "S" in the upper left of the screen in this mode. To release this mode, press other function button on the front panel.





## 5.2.4 TRIPLEX DISPLAY

You can now experience triplex function (simultaneous recording, playback and network transmission) with our new line of Digital Video Recorders.

It enables you to convert playback mode to live mode directly without any delay.

[ 16CH Playback]



- Press TRI button on the front panel in playback mode and then you will see **8 channel live display mode and playback mode with each channel 1~8 as below.**
- To surf the other 8 channel live display and playback with each channel 9~16, press Up/Down button in the remote controller.
- If you press channel button in this mode, you can see the full channel video of playback mode in the screen.
- To exit to live display mode, press MULTI button or TRI button again.

[ Triplex Mode -1]



Date/Time in white means current real-time.

Date/Time in green means playback date/time.

[ Triplex Mode -2]



[ 16CH Live Display ]



- Press TRI button on the front panel in live display mode and you will see 8 channel live display and 8 channel playback with no video as below. Because the DVR has no playback videos at that time.
- To surf the other 8 channel live display and playback with each channel 9~16, press Up/Down button in the remote controller.
- To return to live display mode, press Multi button or TRI button again.

[ Triplex Mode - 1 ]



[ Triplex Mode - 2 ]



### 5.2.5 DVR INFORMATION

It shows all information about the DVR system like HDD, CD-burner and software version. You can access system information easily just by pressing INFO (Information) button.



#### 1) MASTER

- Model : It shows the model no. of Master HDD.
- Size : It shows the size of Master HDD.
- Rec. : It means the capacity of used HDD.
- Over : It means how many times the HDD is overwritten.

#### 2) SLAVE

- Model : It shows the model no. of Master HDD.
- Size : It shows the size of Master HDD.
- Rec. : It means the capacity of used HDD.
- Over : It means how many times the HDD is overwritten.

#### 3) CD-RW

- It shows the model no. of CD-RW installed in the DVR.

#### 4) Version

- It shows current software version of the DVR.

- To exit from this menu, press INFO (Information) button again.

## 5.2.6 RECORD



1. If you press REC button on the front panel of the DVR, you will see REC in green on the right bottom of screen. It means the DVR is in the recording process.

- **M-REC** : It records videos in Master HDD.
- **S-REC** : It records videos in Slave HDD.

- To release REC function, press REC button again.

2. It indicates that playback function is on in live display mode, which is one of our main features, that is simultaneous multi-function operation in one screen.

- **M-PLAY** : It plays videos that have been stored in Master HDD.
- **S-PLAY** : It plays videos that have been stored in Slave HDD.

3. It means that audio function is set to channel 1.

### Note

#### \* Schedule Record Mode

When Schedule Record Mode is selected, the recording will be automatically executed according to the recording schedule set by users.

(Please refer to Schedule Setup in Record Setup, page 54.)



## 5.2.7 SEARCH & PLAYBACK



With Triplex function, you can enter search menu while the DVR is in recording mode. So you don't need to press "STOP" button on the front panel to stop recording.

Now you press SEARCH button on the front panel. You can scroll through recordings using "Up/Down" button and navigate among pages of the recordings using "Right/ Left" button.

To view a desired recording on the list, press "ENTER" button where the recording is highlighted. The DVR will playback the recording. You can stop the video at any time by pressing "STOP" button.

### 5.2.7.1 DATE / TIME LIST SEARCH



- 1) Press SER button on the front panel.
- 2) Select "Date/Time List Search" by using Up/Down button and press ENTER button.
- 3) Select one between MASTER and SLAVE by pressing SER button.
- 4) Select your desired one in the recording lists and press ENTER button.
- 5) Type in your desired date/time in the list if you want and press ENTER button.
- 6) It plays the list.

\* To be out of this menu, press MENU button repeatedly.

### 5.2.7.2 EVENT LIST SEARCH



- 1) Press SER button on the front panel.
- 2) Select "Event List Search" by using Up/Down button and press ENTER button.
- 3) Select one between MASTER and SLAVE by pressing SER button.
- 4) Select your desired one in the recording lists and press ENTER button.
- 5) Type in your desired date/time in the list if you want and press ENTER button.
- 6) It plays the list.

\* To be out of this menu, press MENU button repeatedly.

### 5.2.7.3 DATE/TIME SEARCH



- 1) Press SER button on the front panel.
- 2) Select "Date / Time Search" by using Up/Down button and press ENTER button.
- 3) Select one between MASTER and SLAVE by pressing SER button.
- 4) Type in specific date/time upon your desired list by pressing direction button and press ENTER button.
- 5) It plays the list.

\* To be out of this menu, press MENU button repeatedly.

## 5.3 REMOTE CONTROLLER

### 5.3.1 REMOTE CONTROLLER FUNCTIONS



1. REC (Record)
2. Mute
3. CH1~CH10 (Channel selection)
4. Zoom (2x2 digital zoom)
5. INFO (Information)
6. MENU
7. Multi
8. PIP
9. Auto (Sequence)
10. ◀ Left
11. ▲ Up
12. ▶ Right
13. ▼ Down
14. ENTER
15. All (Search menu)
16. Time (Search by date/time)
17. List (Search by date/time list)
18. ■ Stop
19. REW (x5, x10, x 20 rewind)
20. FF (x5, x10, x 20 fast forward)
21. ▶ Play
22. || Pause
23. P.B (Playback)
24. TRI (Triplex)
25. Panorama
26. P/T (Pan/Tilt)
27. Z/F (Zoom/Focus)
28. CD-RW Backup
29. USB Backup

### 5.3.2 MUTE



When you'd like to make the video with audio silent, you can select MUTE function in the remote controller.

- 1) Press MUTE button in the remote controller when monitoring the video with audio.
- 2) The activated icon in green in the upper right of screen is changed to one in gray with this function.
- 3) The DVR makes it silent.

\* To release this function, press MUTE button again.



### 5.3.3 DIGITAL ZOOM

You can magnify a certain part of the full size screen two times digitally when you use this function as described below. This function can be applied to all display and search modes.

You can operate this function with only remote controller.



1) Select the desired channel among 16 channels.

2) Press Zoom button in the remote controller.



3) Select the area by pressing Left/Right/Up/Down button in the remote controller .  
And then press Zoom button again.



4) You can see the video that is magnified two times digitally.

Indicates Digital Zoom function.



5) To exit this mode, push Zoom button again in the remote controller.

### 5.3.4 PANORAMA

This function enables you to monitor each channel with 16 split-channel panorama mode in the screen. It is available only in playback mode.



- 1) Select and play your desired video in the recording lists first.
- 2) Press PANORAMA button in the remote controller.
- 3) Select your desired channel by pressing PANORAMA button repeatedly.
- 4) To exit this function, press MULTI button.

#### Note

\* Press PANORAMA button again in PANORAMA mode and return to playback mode. To be out of playback mode, press STOP button.

### 5.3.5 PTZ CONTROL

To control an external Pan/ Tilt/ Zoom/Focus camera,

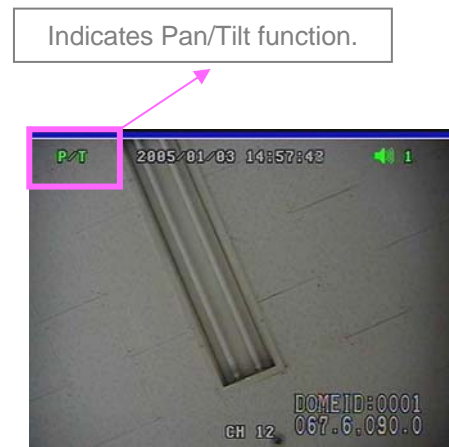
#### 5.3.5.1 Pan/ Tilt Function

##### 1) 16 channel display mode



1. First press P/ T button in the remote controller.
2. Select your desired channel by pressing P/T button repeatedly.
3. Control the camera with the direction buttons (Up/ Down/ Right/ Left).
4. To release this function, press P/T button repeatedly until "P/T" disappears on the screen.

##### 2) One channel Mode



1. First select your desired channel installed Pan/Tilt camera by pressing channel selection button.
2. And then you will see a full-size screen.
3. Press P/T button in the remote controller.
4. Control the camera with the direction buttons (Up/ Down/ Right/ Left).
5. To release this function, press P/T button again in the remote controller.

### 5.3.5.2 Zoom/ Focus Function

#### 1) 16 channel display mode



1. First press Z/ F button in the remote controller.
2. Select your desired channel by pressing Z/F button repeatedly.
3. Control the camera with the direction buttons (Up/ Down/ Right/ Left).
4. To release this function, press Z/F button repeatedly until "Z/F" disappears on the screen.

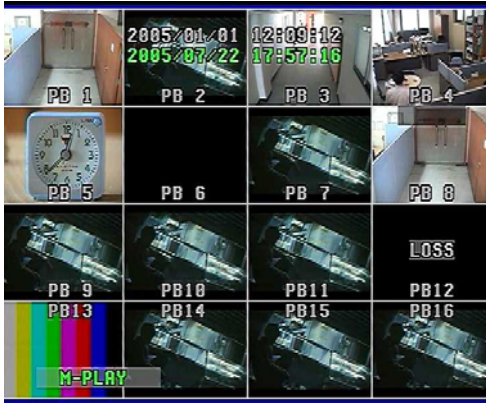
#### 2) One channel mode



1. First select your desired channel installed Zoom/Focus camera by pressing channel selection button.
2. And then you will see a the full-size screen.
3. Press Z/F button in the remote controller.
4. Control the camera with the direction buttons (Up/ Down/ Right/ Left).
5. To release this function, press Z/F button again in the remote controller.

## 5.3.6 BACKUP

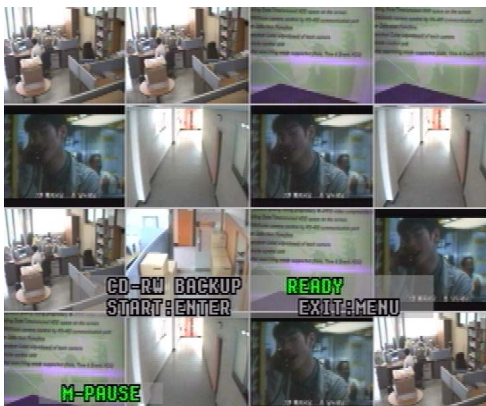
### 5.3.6.1 CD-RW BACKUP



1. Insert empty CD into CD-RW of DVR.  
Select your desired list and play it.  
It shows current time and recording time on the screen.

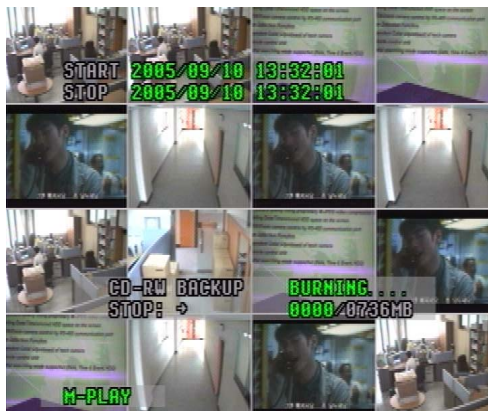


2. To operate CD-RW function, press CD Backup button in the remote controller.  
It pauses playback mode and shows “CD-RW backup checking” on the screen, which may takes about 1 minute to complete “checking”.



3. It indicates that it is ready for CD-RW backup mode showing “Ready” on the screen to users.  
Press Enter button and then it starts CD-RW backup showing “Setting” on the screen.





4. It burns CD showing **"Burning"** on the screen.  
It updates stop time and recorded CD capacity as it burns CD with data.  
Users can stop the burning by pressing Right button at any time as they want.



5. It stops burning CD showing **"Closing"** on the screen after completing it.

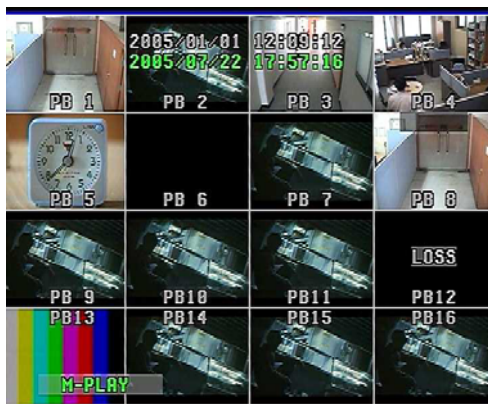
For your reference, it usually takes max. 30 minutes to burn 700M empty CD.



6. The burned CD comes out automatically from CD-RW.  
It pauses the video showing **"Close"** on the screen.

**Note** In case that the list size is bigger than empty CD capacity, users can continue to backup the remained size with another empty CD.

➔ Insert new one into DVR and press Enter button.  
It continues to backup the remained size of the list.



7. To get out of this mode, press Menu button.  
And press Enter button and then it plays the list continuously right from the pause point.

To return to live display mode, press "Stop" button.

### 5.3.6.2 USB BACKUP

To be added in final version

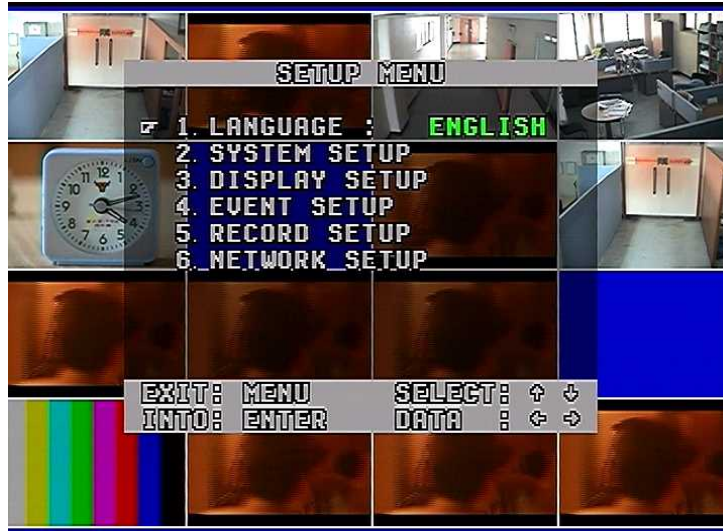
### 5.3.6.2 USB BACKUP

To be added in final version



## CHAPTER 6. SETUP MENU

### 6.1 Language



- When you first call the main menu via the MENU button, you'll see that the current language is highlighted (see screen shot above).
- To exit main menu, press MENU button.

## 6.2 System Setup

### 6.2.1 HDD Setup

This menu enables HDD setup.



#### 1) Overwrite **ON/OFF**

To enable (ON) or disable (OFF) to overwrite HDD.

#### 2) Record OSD **ON/OFF**

To show "REC" in green in the right bottom of screen during recording mode.

#### Note

- "M-REC" shows videos are recorded in master hard disk.
- "S-REC" shows videos are recorded in slave hard disk.

#### 3) Format

To format the HDD, press ENTER button and then select YES.



You have to make sure of it before HDD format.  
Once HDD formatted, you will not be able to retrieve any video that had been recorded previously

- To return to main menu, press MENU button.

### 6.2.2 Password Setup

This menu allows to choose system password.



#### 1) Select ON/OFF

To enable (ON) or disable (OFF) a password.

#### 2) Input \*\*\*\*

To type in your desired 4 letter password among 0~9 by pressing ENTER & direction button.  
To return to the sub menu, press MENU button after completing password input.

**Note**

Remember that the password was set to 0000 in factory mode.

- To return to main menu, press MENU button.

### 6.2.3 Channel Name Setup

To make camera names easy to remember, you can assign names to individual channels up to 8 characters per channel. For example, if your one external camera is located in a factory, you can name it as "factory". You can see videos with this name on the screen during operation.



1) Live            ON/OFF

2) PB            ON/OFF

- When turned ON, it enables display of camera names.
- When turned OFF, it disables display of camera names.

3) CH 1 ~ CH 16    ■ ■ CH ■ 1/2/.../16 ■ ■

- When the pointer is located next to CAMERA1/2/3/4.../14/15/16,
  1. Press ENTER button
  2. See the active cursor on the first letter of ■ which means a blank.
  3. Surf along letters by pressing Up/Down button.
  4. When you find your desired letter, press Right/Left button to move the active cursor to the next letter.
  5. After the naming process is complete, press ENTER button and then press Up/Down button to move to other cameras.

To return to main menu, press MENU button.

#### 6.2.4 Date/ Time Setup

Everybody agrees that surveillance digital video recorders must indicate the exact date and time information in which an event took place in order to be used as evidence. Therefore, configuring the DVR to correct time and date is very important.



**1) Live      ON/OFF**

**2) PB      ON/OFF**

- When turned ON, it enables Display of camera names.
- When turned OFF, it disables Display of camera names.

**3) Type      YY/MM/DD, DD/MM/YY, MM/DD/YY**

**4) Date      2005/05/11**

**5) Time      20:51:49**

- When the pointer is located next to Date or Time,
  1. Press ENTER button
  2. Set Date or Time
    - To Select it by pressing Up/Down button
    - To Move to the next by pressing Left/Right button
  3. When you finish setting Date/ Time, press MENU button and then press Up/Down button to move other sub menu.

To return to main menu, press MENU button.

### 6.2.5 Beep & PTZ Setup

This menu enables recording beep and external Pan/ Tilt & Zoom/ Focus cameras setup to communicate with.



#### 1) PAN / TILT                      Hitron / LG / Dongyang / PELCO-P / PELCO-D

To select a desired protocol which is used for communication between the external Pan/ Tilt camera and the DVR set.

##### Note

Compatible Pan/ Tilt camera list

- All cameras using LG, Hitron, Dongyang protocol.
- PELCO-D, PELCO-P

#### 2) PTZ Speed                      1 ~ 5

To select PTZ camera speed among 5 levels.  
Lower level makes the camera speed slower.

#### 3) Baud Rate                      2400 BPS ~ 12400 BPS

Users can select Baud rate to be in accordance with one of installed cameras.

For example, if you install a camera with the protocol of "PELCO-P 4800", you have to select PTZ type as "PELCO-P" and baud rate as 4800 BPS (Bits Per Second).

#### 4) Record Beep                      ON/OFF

To enable recording beep when pressing REC button to start and release the function.

### 5) HDD Fail **ON/OFF**

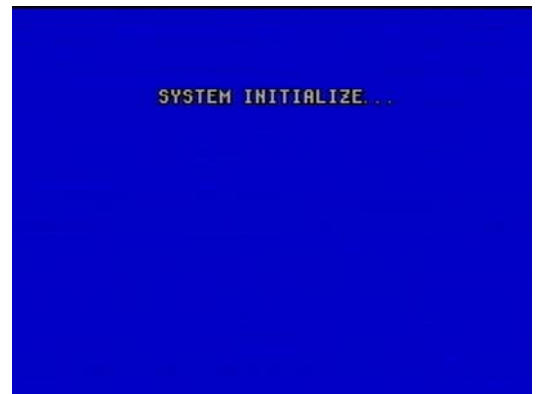
To enable to beep when the DVR detects a bad sector of HDD in recording mode or playback mode. It skips the bad sector that detected and records videos or plays recorded videos in the next sector of HDD automatically.

HDD is logically divided to a large amount of sectors. It may have some bad sectors out of a large amount of it. When this function is on, you are recommended to exchange with new one in order to preventing from any potential problems caused by the HDD with bad sectors.

- To return to main menu, press MENU button.

### 6.2.6 System Reset **ON/OFF**

To reset the system, press Enter button and select YES.



- To return to main menu, press MENU button.



You have to make sure of it before system reset.  
Once system reset, all data that you had selected previously are converted to factory mode like password.



## 6.3. Display Setup

### 6.3.1 Blank Channel Setup

To enable to make channels hidden on the screen during live display mode as below.



**CH 1 ~ CH 16      ON/OFF**

To return to main menu, press MENU button.

#### Note

Even though some channels are hidden in the screen during live display mode, the DVR has been recording them in HDD.

### 6.3.2 PIP Channel Setup

You can select PIP ( Picture In Picture ) options. PIP mode offers a convenient way of monitoring multiple channels while focusing more attention on a particular channel. It has a main video channel view and up to 3 small video channel views on the screen.



**Main**                **CH 1 ~ CH 16**

**Sub 1**              **CH 1 ~ CH 16**

**Sub 2**              **CH 1 ~ CH 16**

**Sub 3**              **CH 1 ~ CH 16**

To define which channel is the main channel for full screen or sub channel among 16 channels.

- To return to main menu, press MENU button

### 6.3.3 Adjust Channel Setup

This menu allows color adjustment options for individual cameras.



**1) Channel CH1 ~ CH 16**

- To select your desired channel to adjust video display.

**2) CON (Contrast) 50**

- To control light and shade of video display.

**3) HUE 50**

- To control color tone of video display.

**4) BRI (Brightness) 50**

- To control brightness of video display.

**5) COL (Color) 50**

- To control saturation of color of video display.

- To return to main menu, press MENU button.

**Note**

Default factory mode was set to 50.  
Remember that the values range from 01 to 99.

### 6.3.4 Video Signal Type NTSC/PAL

To select your local video signal type between NTSC and PAL, press Enter button and select it. It reboots the system automatically after your selection.



It reboots the system automatically after your selection.  
Once it reboots, all data that you had selected previously is set to factory default.

### 6.3.5 Sequence 3 sec ~ 30 min

To select interval time of Auto Switch.

With the Auto Switch feature, a range of interval time among some different views can be selected.  
**"S"** letter in the left top of screen indicates **"Sequence (Auto Switch)"** in the mode.

- To return to menu, press MENU button.



### 6.3.6 Boundary White/Black/OFF

To select the boundary color that is divided into each channel.



### 6.3.7 Background Blue/Black

To select the background color of no video channels between two colors.



- To return to menu, press MENU button.

## 6.4. Event Setup

This screen enables simple set up of DVR motion detection, alarm and external sensor configurations



### 6.4.1 REC Time 30 sec ~ 30 min

Once event recording is triggered, the video will be recorded compulsorily during the time selected by the user or administrator.

### 6.4.2 Sensor In N.O/N.C

The Sensor-in terminals of the DVR are used to connect external motion sensors or door/window contacts.

There are two types of general sensors in the market. The one is "normal mode-open", N.O, which means two sensor lines are not connected (open) in the normal mode but the lines are to be connected (close) in the activation mode. The other is "normal mode-close", N.C, which means two sensor lines are connected (close) in the normal mode but the lines are to be disconnected (open) in the activation mode.

- To return to menu, press Menu button.



You have to make sure of sensor type between N.O and N.C before installation. Otherwise, it may not work properly.

- N.O : Normal Open type sensor
- N.C : Normal Close type sensor



### 6.4.3 Event Action

To select notice method in order to make users get more attention when event recording occurs.



#### 1) Alarm Out **ON/OFF**

You can set to enable (ON) or disable (OFF) the outbound signal from the DVR.

#### 2) Sensor **ON/OFF**

When DVR detects signals from external sensors, DVR will beep or OSD to get your attention.

- BEEP + OSD : Beeps and shows “**S**” letter together in the channel with video loss.
- OSD : On-Screen-Display only
- OFF : Disables to activate the alarm action

#### 3) Video Loss **BEEP+OSD/ OSD/ OFF**

If video signal from the cameras does not reach the DVR, a beep will sound to get your attention.

- BEEP+OSD : Beeps and shows “**L**” letter together in the channel with video loss.
- OSD : On-Screen-Display only
- OFF : Disables to activate the alarm action

#### 4) Motion **BEEP+OSD/ OSD/ OFF**

When DVR detects motion on certain part of the screen, DVR will beep or OSD to get your attention.

- BEEP + OSD : Beeps and shows “**M**” letter together in the channel with video loss.
- OSD : On-Screen-Display only
- OFF : Disables to activate the alarm action

- To return to main menu, press MENU button



#### 6.4.4 Motion Setup

This menu enables users to set motion functions.



##### 1) Channel CH1~CH16

You must manually set each channel for the motion detection area. Select a channel for this motion detection.

##### 2) Sensitivity 1~15

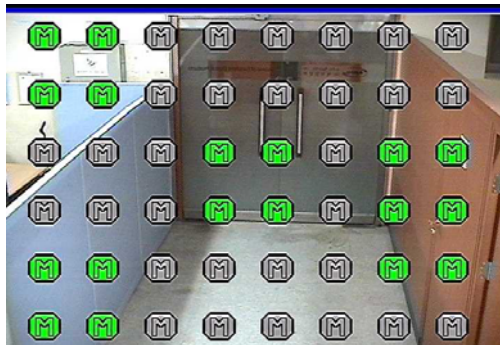
It offers 1 to 15 level of sensitivity. Remember that the higher level is more sensitive to detect motions.

##### 3) Area OFF/FULL/SET

- OFF : Disable to select motion areas.
- FULL : Select full area as motion area.
- SET : To select the area as you desire, move to POSITON menu.

##### 4) Position

- Press Enter button and surf areas in the desired channel by pressing direction button and then press ENTER button to select, press it again to release.
- **Once you select the areas, you don't need to select them again when you get back from other modes like OFF or FULL. It gives you easy-operation.**



- To return to main menu, press MENU button

## 6.5. Record Setup

Here you can set recording options.



### 6.5.1 Type                      Each/CIF

There are two recording modes: Each and CIF.

If you set it to Each mode, DVR records the full size videos of 16 different channels.

If you set it to CIF mode, DVR records 16 video channels in CIF resolution.

### 6.5.2 Rec. Speed              1~60 F/S (Each mode) / 120F/S (CIF mode, Default)

You can select various recording speed in field per second (F/S).

60 F/S in each mode means that it records 60 images per second.

**Rule of thumb is that higher field per second requires more HDD space.**

Depending on NTSC or PAL mode, range of fps available varies.

NTSC and PAL have the following fps available:

- NTSC : 1~60 F/S (Each Mode) / 120 F/S (CIF Mode)
- PAL : 1~50 F/S (Each Mode) / 100 F/S (CIF Mode)

### 6.5.3 Quality                      Level 1~6

It is to set video quality of level 1~6.

Higher the video quality, more HDD space needed.

### 6.5.4 PB Speed                  AUTO, 1~60 F/S (Each mode) / 120F/S (CIF mode, Default)

You can select various recording speed in field per second (F/S).

**“AUTO” (Default)** means that it plays videos at the same rate of recording speed.

60 F/S in each mode means that it plays 60 images per second.

Depending on NTSC or PAL mode, range of fps available varies.

NTSC and PAL have the following fps available:

- NTSC : 1~60 F/S (Each Mode) / 120 F/S (CIF Mode)
- PAL : 1~50 F/S (Each Mode) / 100 F/S (CIF Mode)

### 6.5.5 Channel Enables CH1 ~ CH16 (Each Mode) / Group 1~Group 4 (CIF Mode)

- ON : Enable to record the channels
- OFF : Disenable to record the channels
- Each group indicates each 4 channels. (For example, group 1 shows CH1 ~ CH4)  
(\* Note : 8CH - Group1~2 / 4CH - CH1~CH4)

### 6.5.6 Audio Setup

#### 1) Channel CH1~CH16

It is to select one audio channel among 16 channels.

#### 2) Icon Display ON/OFF

To enable icon of audio function in right top of screen as below.



### 6.5.7 Schedule Setup

#### 1) Schedule ON/OFF

To disable (OFF) or enable (ON) Schedule recording feature.

#### 2) Day Daily/ SUN~SAT

Select the desired day for schedule recording.

- Daily, Sun, Mon, Tue, Wed, Thu, Fri, Sat

#### 3) Time

When you finish to set Day, press ENTER button to go into the Timeline. Surf left or right in the timeline by pressing Left or Right button. If you find a desired time for schedule recording, press Up button to set or Down button to release.



To return to main menu, press MENU button.

## 6.6 Network Setup

To monitor and control videos remotely through internet, you need to have the right set up.



### 6.6.1 IP Address                   \*000.000.000.000

Type in the IP address of your DVR.

### 6.6.2 Subnet Mask               \*000.000.000.000

Type in the Subnet mask number.

### 6.6.3 Gateway                   \*000.000.000.000

Type in the Gateway number.

### 6.6.4 Bypass                    ON/OFF

- ON : It is recommended in Intranet connection.  
Its display speed faster than "Bypass-OFF".
- OFF : It is recommended in Internet connection.  
Its display speed slower than "Bypass ON".

### 6.6.5 Network ID               \*\*\*\*\* ( 8 letters)

### 6.6.6 Password                \*\*\*\*\* ( 8 letters)

**You must register your Network ID before using network viewer program first.**

Press Enter button and type in network ID & Password by pressing direction button.

To access network viewer program, you need to type in log-in ID & Password.

- To return to main menu, press MENU button



1. we would like to recommend you to check your local Firewall or personal network security programs. Sometimes they block certain ports for network security matter.
2. If you don't have right information about network, please contact your network administrator.

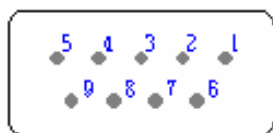
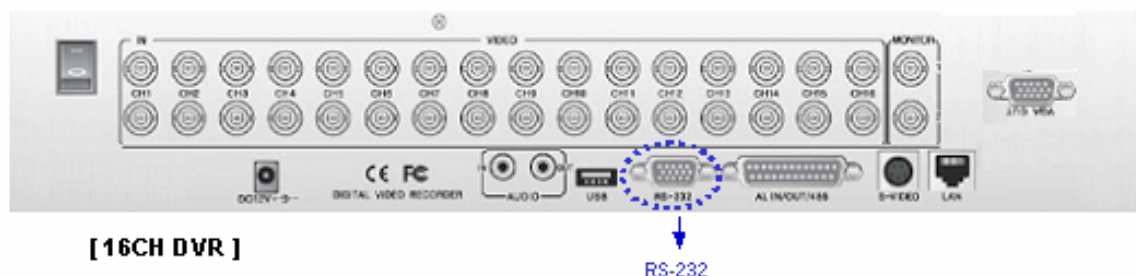
#### Note

**To check Mac. Address, Server IP Address & Port number (default : 5000), press CH6 button in network setup mode.**

The main reason of hidden Mac. address & DDNS server IP menu is just for security in order to prevent from changing it without user's approval.

## CHAPTER 7. EXTERNAL TERMINAL INFORMATION

### 7.1 RS-232



No	Description
1	N/C
2	TX 232C
3	RX 232C
4	N/C
5	GND
6 ~ 9	N/C

\* N/C : Connection Not Required

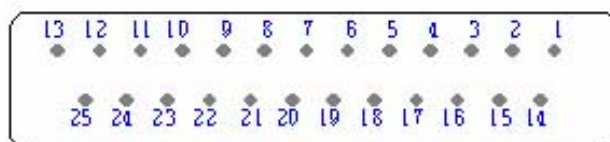


**[ 8CH DVR ]**

RS-232 & Alarm In/Out & RS-485



**[ 4CH DVR ]**



No	8CH DVR
1 ~ 8	Alarm In
9 ~ 14	GND
15	RX 232C
16	TX 232C
17 ~ 20	GND
21	Alarm Out COM
22	Alarm Out NC
23	Alarm Out NO
24	485B
25	485A

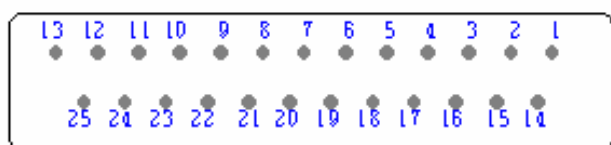
No	4CH DVR
1 ~ 4	Alarm In
5 ~ 14	GND
15	RX 232C
16	TX 232C
17 ~ 20	GND
21	Alarm Out COM
22	Alarm Out NC
23	Alarm Out NO
24	485B
25	485A

## 7.2 ALARM IN/OUT & RS-485



[ 16CH DVR ]

Alarm In/Out & RS-485



No	Description
1 ~ 16	Alarm In
17 ~ 20	GND
21	Alarm Out COM
22	Alarm Out NO
23	Alarm Out NC
24	485A
25	485B



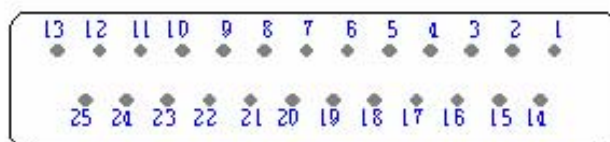


**[ 8CH DVR ]**

RS-232 & Alarm In/Out & RS-485



**[ 4CH DVR ]**

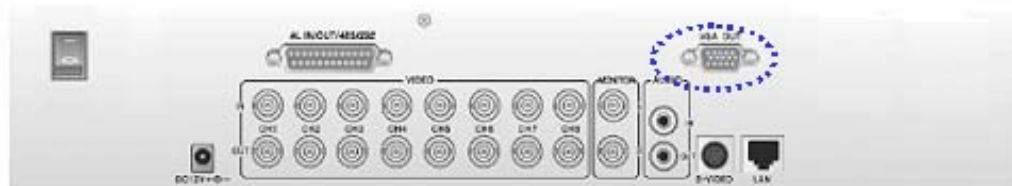


No	8CH DVR
1 ~ 8	Alarm In
9 ~ 14	GND
15	RX 232C
16	TX 232C
17 ~ 20	GND
21	Alarm Out COM
22	Alarm Out NC
23	Alarm Out NO
24	485B
25	485A

No	4CH DVR
1 ~ 4	Alarm In
5 ~ 14	GND
15	RX 232C
16	TX 232C
17 ~ 20	GND
21	Alarm Out COM
22	Alarm Out NC
23	Alarm Out NO
24	485B
25	485A



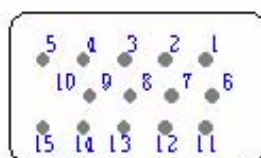
**[ 16CH DVR ]**



**[ 8CH DVR ]**



**[ 4CH DVR ]**



No	Description
1	RED (Red Video [75ohm, 0.7Vp-p])
2	GREEN (Green Video [75ohm, 0.7Vp-p])
3	BLUE (Blue Video [75ohm, 0.7Vp-p])
4 ~ 12	Reserved
13	HSYNC or CSYNC (Horizontal or Composite Sync.)
14	VSNC (Vertical Sync.)
15	Reserved

## 7.4 ETHERNET / USB



[ 16CH DVR ]

1) USB

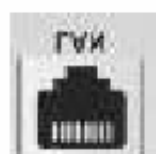
2) ETHERNET

### 1) USB



No	Description
1	VCC
2	USB DATA -
3	USB DATA +
4	GND

### 2) ETHERNET



No	Description
1	N/C (Not Connected)
2	N/C (Not Connected)
3	RX- (Receive Data-)
4	N/C (Not Connected)
5	N/C (Not Connected)
6	RX+ (Receive Data+)
7	TX- (Transmit Data-)
8	TX+ (Transmit Data+)

## CHAPTER 8. SPECIFICATIONS

### Specifications

Category		4CH DVR	8CH DVR	16CH DVR
Video Signal	Input	NTSC/PAL, 1V 75 Ohm, BNC (4, 8 and 16CH), Auto-loop throughout		
	Output	CVBS, S-Video, VGA		
Audio	Input / Output	2 X RCA (1CH Input , 1CH Output)		
	Recording Mode	Mono PCB 8KB / sec		
Display	Display FPS (NTSC/PAL)	120 / 100 FPS	240 / 200 FPS	480 / 400 FPS
	Display Resolution	720 X 480 (NTSC) / 720 X 576 (PAL)		
	Screen Split Mode	Full, Quad, Split and 3 PIPs		
	Zoom Mode	2 X 2 Digital Zoom		
Triplex Mode		Simultaneous Recording / Playback / Live / Network		
Recording	Video Compression	Real-time full duplex M-JPEG codec core		
	Video Resolution	720 (360) X 480 (NTSC) / 720 (360) X 576 (PAL)		
	Recording Ways	Continuous, Scheduled, Event (internal motion, external sensor)		
	Recording FPS	NTSC : 120 FPS / PAL : 100 FPS		
	Image File Size	NTSC : 3 ~ 25 KB / PAL : 4 ~ 27 KB		
	Internal Hard Drives	EIDE, ATA-100, MAX 2 HDs supported, Unlimited HDD Capacity		
Remote access through Internet		Remote monitoring via network viewer program		
Playback	Playback Mode	Live & Playback, Playback, Panorama		
	Playback Screen Mode	Full, Quad, PIP, Zoom, Split, Panorama		
	Searching Ways	Searching by Date / Time, Motion & Sensor		
	Zoom Mode	Digital 2 x Zoom ; Playback available in Zoom Mode		
Alarm Control	External Alarm Input	Alarm Input : NO, NC Type		
	Alarm Output	Internal Buzzer, OSD, Internal Relay (Combined with External Device)		
	Alarm Setup Period	30 sec ~ 30 min		
Network	Protocol	TCP / IP ; RJ-45		
	Resolution	720, 640, 360, 320 Mode		
	Remote Control	Functional remote client software		
	Browser	Own Application provided		
	Recording	Motion Picture, Event, Manual Recording		
Data Backup		Ethernet, CD-Burner		
Others	Auto Screen Switching	Switching Period : 1 ~ 60 sec		
	Signal Loss Detection	Automatic Alarm		
	Display Hidden Function	Display Hidden Function by Each Channel ; Recording Available		
	Remote Control	IR Remote Control, RS-485 / RS-232		
	Power Supply	12V 5.0 A DC Adaptor (AC 100V ~ 240V, AC 50~60Hz Input)		
	Dimension	17.0" X 14.1" X 3.0" (430 x 360 x 75 mm)		
	Weight	8.0 lbs (3.50 kg)	8.4 lbs (3.80 kg)	9.3 lbs (4.20 kg)
	Approval	FCC, CE		

## CHAPTER 9. NETWORK CLIENT VIEWER MANUAL

### 9.1 SYSTEM REQUIREMENT

- Pentium III or above recommended
- O/S : Microsoft Windows 2000 / XP
- 256MB RAM or above recommended
- Super VGA 16M or above recommended
- 10/100 Base T network card for LAN operation

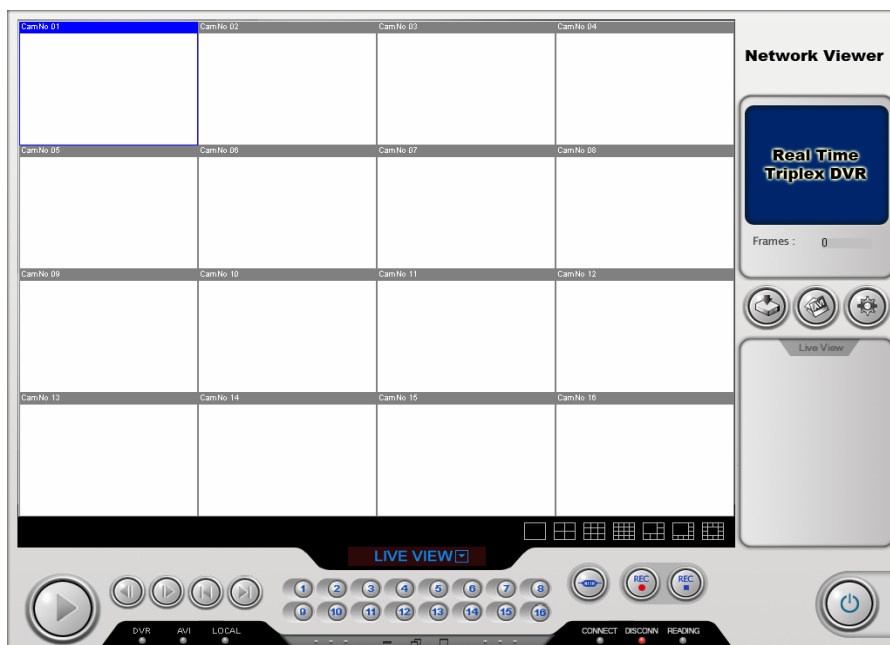
### 9.2 NETWORK ENVIRONMENT

	Client PC	DVR
Minimum	More than 1 Mbps	More than 0.5 Mbps
Recommend (16 Frames/sec)	More than 3 Mbps	More than 3 Mbps

\* Transfer rate of image varies with the number of client accessed to DVR.

### 9.3 NETWORK VIEWER INSTALLATION

- To start network viewer installation,
  1. Start Windows 2000 or XP.
  2. Insert install CD into the CD-ROM drive.
  3. Install the network viewer and then the shortcut icon is located on your PC screen.
  4. Simply double-click the icon to start.
  5. The network viewer will appear on the screen as below.



## 9.4 NAMES & FUNCTIONS



No	Names	Description
1	Play / Pause	Play or Pause
2	Reverse Play	Play videos reversely
3	Fast Play	Fast play videos
4	Back File	Move to the start point of video
5	Next File	Move to the end point of video
6	Channel Selection	Select a channel
7	Operation Mode	Select operation mode
8	Connect (Log-in)	Connect (Log in) network viewer to the DVR server
9	Record	Make remote DVR start or stop recording
10	Display Mode	Select display mode

11	LED	DVR	Show that the DVR is remotely operated
		AVI	Show that storing the video by AVI file format is on
		Local	Show that storing the video by MJPEG format is on
		Connect	Show that network viewer is connected
		Disconnect	Show that network viewer is not connected
		Reading	Show that the network viewer is reading data from the DVR
12	Close		Close the network viewer
13	Local		Store the video by MJPEG format
14	AVI		Store the video by AVI format
15	Setup		Type in DVR IP address

**Note**

**How to record videos by AVI or Local (MJPEG) format.**

You can enjoy this function in all mode.

**1. Record by AVI format**

To start recording, press AVI button and to stop it, do the button again.

**2. Record by Local (MJPEG) format**

To start recording, press Local button and to stop it, do the button again.

Each LED (AVI or Local) is activated when the function is on.

**Note**

Default directory is as below.

**1. AVI file :** "C" drive > "dvr" folder

- Users can select a directory as they desire.

**2. Local (MJPEG) file :** "C" drive > "dvr" folder

- Users can select a directory in the setup menu.

**3. File Save :** "C" drive > "dvr" folder

**Note**

To play the files recorded by AVI or Local (M-JPEG) format,

**1. AVI file**

- Users can play AVI files either in any PC or the network viewer.

**2. Local (MJPEG) file**

- Users can play local (M-JPEG) file **only in the network viewer.**



## 9.5 Operation

This network viewer program has 5 types of operation modes.

**[ Live View / Playback / Drive Scan / File Play / CD Play ]**

Each operation mode is designed for its own purpose.

Please refer to the details for your use.

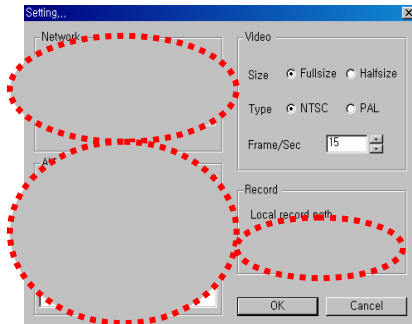
No	Mode	Description
1	Live View	To monitor live display remotely
2	Playback	To playback videos stored in the HDD of DVR remotely
3	Drive Scan	To play videos from the HDD that is connected to user's PC
4	File Play	To play video files stored in user's PC HDD through file transmission
5	CD Play	To play the burned CD with videos

### 9.5.1 Live View Mode

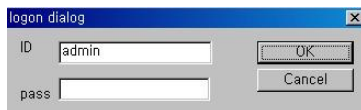


### 9.5.1.1 To connect to DVR server,

1. Click Setup button, type in your DVR IP address and select your desired codec type & change default directory.



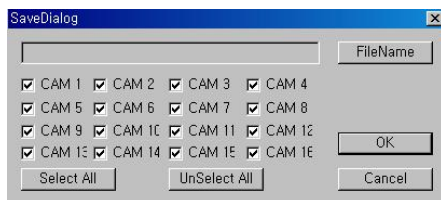
2. Press Connect (log-in) button and type in your ID and password.  
Please remember that factory default is as below.  
- ID : admin / - PW : PTPW0000



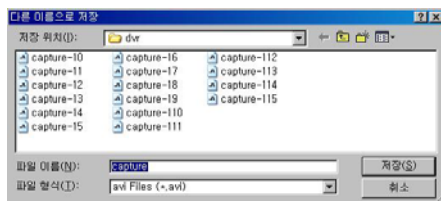
3. Finally press Play button and then you will monitor live display.

### 9.5.1.2 To record videos as AVI format,

1. Press AVI button.
2. First select channels that you want to record and type in the file name.



3. Click OK button and then select the file location as you want.  
It activates AVI LED when the function is on .



4. To stop, press AVI button again

### 9.5.1.3 To record videos as Local (MJPEG) format,

1. Press Local button.
2. It records videos in the directory that you select in the setup menu.  
It activates Local LED when the function is on.
3. To stop, press Local button again.

### 9.5.2 Playback Mode

This mode enables you to access all recording list in the remote DVR.

When this function is on, "DVR" LED below is activated.



No	Names	Description
1	HDD Selection	Select HDD between master and slave
2	Event List	Access event list in the remote DVR
3	Record List	Access all recording list in the remote DVR
4	Date/Time Search	Search the video upon your specific date/time in the remote DVR

- **To connect to Playback mode,**

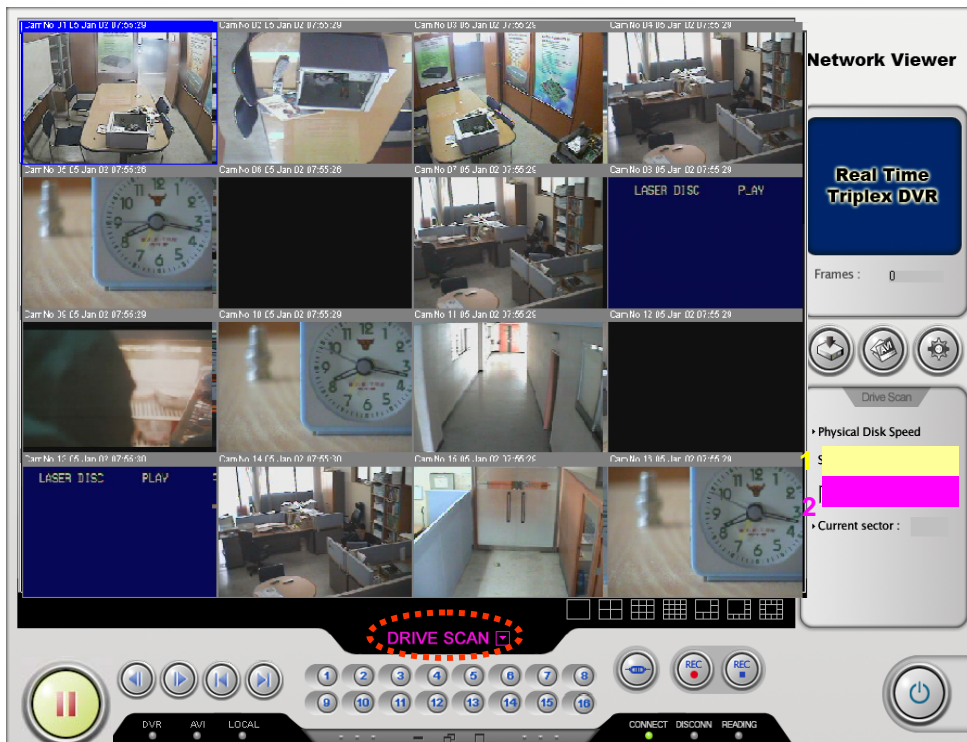
1. Press log-in button and type in your ID and password.  
Please remember that factory default is as below.  
- ID : admin / - PW : (leave it as blank)
2. Press Play button and then you will monitor live display.
3. Click operation mode and select playback mode.

- **To access to event list or all recording list,**

1. Select a HDD between master and slave in the HDD selection menu.
2. Click Get button first and then do Select button.
3. Event or all recording list is shown in the screen.
4. Select your desired one in the list.
5. Finally press Play button and you will playback the video.

### 9.5.3 Drive Scan Mode

You can play videos from the HDD that is connected to your PC after uninstalling it from the DVR.



No	Names	Description
1	Playback Speed	Select playback speed
2	HDD Selection	Select the HDD that is installed in your PC.

- **To connect to Drive Scan mode,**

1. Press log-in button and type in your ID and password.  
Please remember that factory default is as below.  
- ID : admin / - PW : (leave it as blank)
2. Press Play button and then you will monitor live display.
3. Click operation mode and select Drive Scan mode.

- **To enable Drive Scan mode,**

1. Select playback speed and the HDD connected to your PC.
2. Press Play button.
3. You will see the videos from the HDD.



### 9.5.4 File Play Mode

This mode enables you to access all recording lists that is stored in the HDD of your PC through file transmission.



No	Names	Description
1	Open	Select your desired file in your PC.
2	Recording Time	Show start & end time of the file

- **To connect to File Play mode,**

1. Press log-in button and type in your ID and password.  
Please remember that factory default is as below.  
- ID : admin / - PW : PTPW0000
2. Press Play button and then you will monitor live display.
3. Click operation mode and select File Play mode.

- **To play the files stored in the HDD of your PC,**

1. Click Open button and select your desired file in the HDD of your PC.
2. Press Play button.  
(It may takes a few seconds to read the selected file in the HDD of your PC.)
3. You will see the videos in the HDD of your PC.

### 9.5.5 CD Play Mode

This mode enables you to play CD with data (videos).



No	Names	Description
1	Drive Selection	Select the drive that CD-ROM is installed.
2	File Save (Start)	Start saving CD data as "MJPEG" format in the default directory of user's PC.
	File Save (Stop)	Stop saving CD data as "MJPEG" format in the default directory of user's PC.

#### • To connect to CD Play mode,

1. Press log-in button and type in your ID and password.  
Please remember that factory default is as below.  
- ID : admin / - PW : (leave it as blank)
2. Press Play button and then you will monitor live display.
3. Click operation mode and select CD Play mode.

#### • To play CD with data (videos),

1. Select the drive that CD-ROM is installed in the Drive Selection menu.
2. To play, press Play button.
3. You will see the videos in the CD.

#### • To save the CD data as "MJPEG" format in the default directory of your PC,

1. Select the drive that CD-ROM is installed in the Drive Selection menu.
2. To save, press Start button and to stop, press Stop button.
3. You will find the files in the default directory of your PC, which is transferred from the CD.

## CHAPTER 10. Q & A

### 1 The system power does not turn on.

- ☞ Check if the power cable is connected correctly.
- ☞ Check if the input voltage is correct.
- ☞ If the system power does not turn on when the power cable is connected correctly, please contact the local distributor or manufacturer.

### 2 The system power is turned on, but no video is displayed on the monitor.

- ☞ Check if the monitor power cable is connected properly
- ☞ Check to make sure the monitor is turned on.
- ☞ Check if the video output cable of the DVR is properly connected to the monitor.
- ☞ Unplug the power cable and plug in again.

### 3 The camera numbers are displayed on the screen, but camera images are not displayed.

- ☞ Check if the camera video output is connected to the DVR system correctly.
- ☞ Check if the power cable on the camera is connected correctly.
- ☞ Check if the video cable connecting the camera to the DVR system has a problem.
- ☞ This problem can occur because of weak video signal if the video is coming through the video splitter when the video is connected to multiple systems. Connect the camera directly to the DVR.
- ☞ Turn off DVR system and turn it on again.

### 4 The camera video is shown on the screen, but the system doesn't record video.

- ☞ Check to make sure the recording mode in the recording setting mode is not set to "NONE".
- ☞ Turn off the DVR and turn it on again.

### 5 It is impossible to search through the recorded video.

- ☞ Check if there is a recorded video data at the time that you are trying to search on the table.
- ☞ If there is no recorded video data, check to make sure the recording mode in the recording setting mode is not set to "NONE".



**6****Audio data recorded with video data is not playing.**

- ☞ Check if the audio recording option is correctly set to the camera you wish to record audio.
- ☞ Check if the audio mute is enabled.
- ☞ Check if the microphone and speaker port on the rear of DVR system are connected correctly.
- ☞ Check if the connected microphone is working properly.
- ☞ Check if the connected speaker is working properly.

**7****Color of videos are strange or videos are shown abnormally.**

- ☞ Check if the camera connected to the system has a problem. Check to make sure the camera is not damaged by trying another camera into a working video output.
- ☞ Check if the video system setting is the same with your camera system. Depending on your region, the camera system can support either PAL, or NTSC. Depending on the camera system, the video process can differ greatly, therefore it can be difficult to recognize the video data if the video system setting is different from the camera system.

**8****There are a lot of (screen) noise on the image.**

- ☞ Check if the video signal output from the camera has a problem. Check to make sure the camera is not damaged by trying another camera into a working video output.
- ☞ Check if the video cable connecting the camera and the DVR is cut, cross-wired, or shorted.
- ☞ Check if there is a high voltage wire around the video cable connecting the camera to the DVR system. It can cause the noise problem to decrease video quality.
- ☞ Check if the video cable connecting the camera to the DVR system is the correct video cable. When a normal power-supplying cable is used instead of the video cable, screen noise can be generated.

**9****Sometimes the system restarts itself.**

- ☞ The system can restart itself due to watchdog function when any problem occurs to the DVR.

**10****The connected sensor is not operating.**

- ☞ Check if the type of sensor in Event Setup menu is the same with the connected sensor.
- ☞ Check if the system is set to use the sensor in recording schedule window in the recording setting menu.
- ☞ Check if the power cable of the sensor is properly connected.
- ☞ Check if the signal cable of the sensor is properly connected.