

Thank you for purchasing our product.  
Please read this user manual before  
using the product.

STAND-ALONE DVR



Single Channel Digital Video Recorder

Comply with Multiplexers

## User manual VER 1.0





Single channel  
stand-alone DVR

Best solution to replace Time Lapse VCR in use with Multiplexer

DIGITAL VIDEO RECORDER

ALL ABOUT IMAGE RECOGNITION & PROCESSING

## SAFETY PRECAUTIONS

	<b>CAUTION</b> RISK OF ELECTRIC SHOCK. DO NOT OPEN!	
<b>CAUTION : TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT OPEN COVERS. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</b>		

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



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



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


**WARNING : TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE UNITS NOT SPECIFICALLY DESIGNED FOR OUTDOOR USE TO RAIN OR MOISTURE.**



Attention: installation should be performed by qualified service Personnel only in accordance with the National Electrical Code or applicable local codes.



Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source ; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all unites.



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## 1. About user manual.

Before installing stand-alone DVR, be sure to carefully read and follow instructions in this

User manual. Pay particular attention to the parts that are marked **NOTICE**.

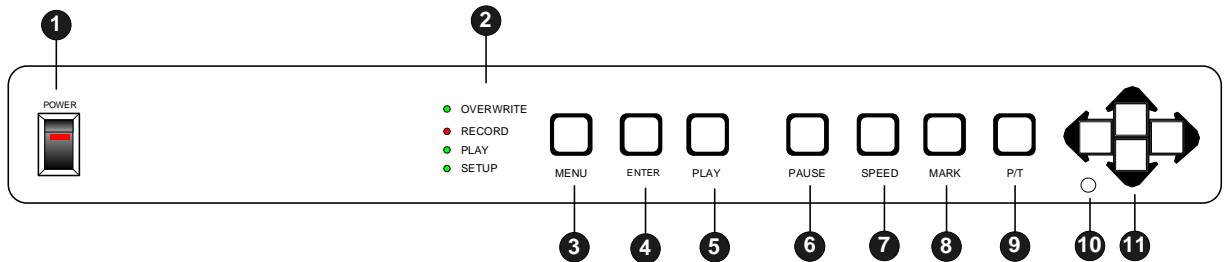
Also, when connecting with external devices, first turn off the power **OFF** and follow manual instruction for proper installation

## 2. Before reading this document

1. This document is intended for both the administrator and users of stand-alone DVR unit.
  2. This manual contains information for configuring, managing and using stand alone DVR unit.
  3. To prevent fire or electrical shock, do not expose the product to heat or moisture.
  4. Be sure to read this manual before using stand alone DVR unit.
  5. For question and technical assistance of this product, contact your local dealer.
- ▷ Strong recommendation on installation of the DVR unit
1. Check electricity at the place you want to install the DVR unit if it is stable and meets our electricity requirements.  
Unstable electricity will cause malfunction of the unit or give critical damage to the unit.
  2. Several chips on the main board of the DVR unit and hard disk drive inside the unit generate heat, and it must be properly discharged.  
Do not put any objects just beside exhaust port(fan) on the right side of the unit and do not close up an opening (fresh air in-take) on the left side of the unit..
  3. Put the DVR unit at well-ventilated place and do not put heat-generating objects on the unit.  
When it is installed inside 19 inch mounting rack together with other devices, please check built-in ventilation fan of the rack is properly running.

### 3. Unit description

#### 1) Front panel



1. **POWER SWITCH WITH LED** : DC power switch with LED

2. **LED** : Represents status of operation

3. **MENU** : Used when changing the menu of SYSTEM SETUP

4. **ENTER** : Selects items in the menu

5. **PLAY** : Starts playback

6. **PAUSE** : Pauses display screen in playback

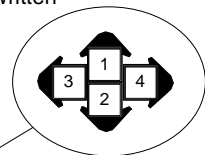
7. **SPEED** : Assigns playback speed

8. **MARK** : Mark images in playback mode to protect marked images from being overwritten

9. **P/T** : Control PAN/TILT/ZOOM camera

10. **Remote controller sensor input window**

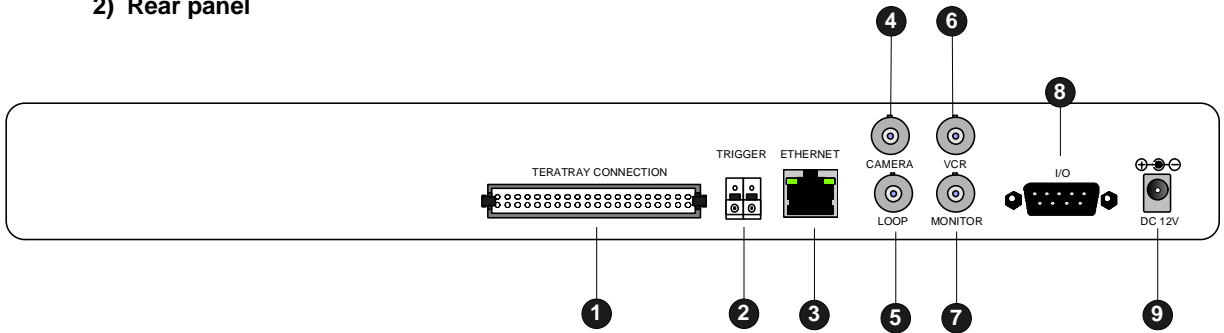
11. **Direction buttons** : To move in the **SETUP** menu selection, change direction of playback or play a role of number keys from 1 to 4 when entering **password**



**Notice** : If input window is covered by some object, the remote controller may not work.

**Notice** : If several buttons are simultaneously or incorrectly pressed, the system may not function correctly.

## 2) Rear panel



1. TERATRAY CONNECTION : Connects to HDD Bay(Tera-Tray)
2. TRIGGER : Connects to trigger output of multiplexer(recording synchronize)
3. ETHERNET : Connects to LAN, WAN, or Internet to access DVR unit via IP network
4. CAMERA : Connects to camera
5. LOOP : Loop out
6. VCR : Connects to VCR for backup
7. MONITOR : Connects to monitor
8. I/O : RS-232C, Sensor input/Relay output
9. DC 12V : DC 12V connection port

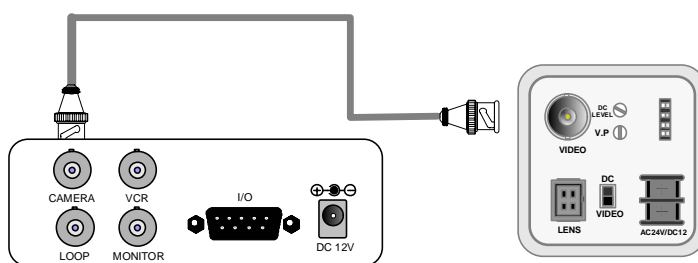
**Notice :** Improper power connection to DVR unit will damage the system.

**Notice :** When connecting with other applications, be sure to turn off the system.

## 4. Installation

### 1) Camera connection

Connect camera to the CAMERA INPUT on the rear panel of the system.

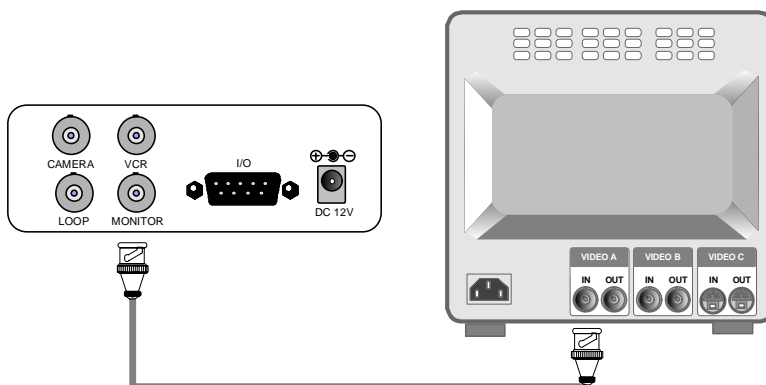


Rear view of camera

Notice : This DVR system automatically detects video system of camera you connected to the unit when you boot DVR system first. It is not necessary to set video system separately, and DVR system set at NTSC or PAL system automatically when you boot the system.

### 2) Monitor connection(Composite type)

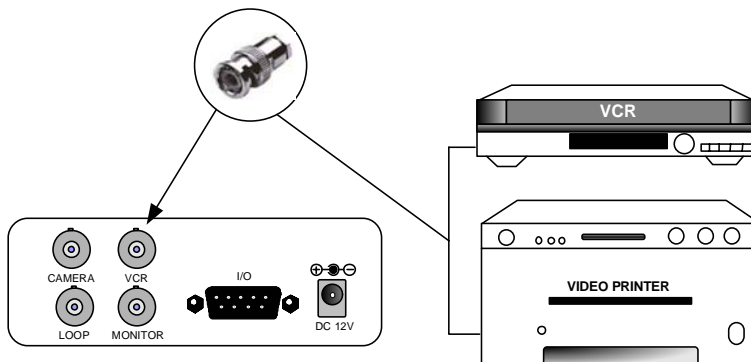
Connect the monitor to the MONITOR OUT on the rear panel of the system.



Notice : Connect cameras and monitor to DVR unit while DC power switch on the front panel is off.

### 3) Monitor(S-VHS) connection

Connect S-VHS monitor to MONITOR OUT(S-VHS) on the rear panel of the system.



### 4) TRIGGER connection

Connects to TRIGGER port of MULTIPLEXER if your multiplexer has TRIGGER OUT, in case you replace time lapse VCR used in connection with multiplexer.

#### \*\*\*\*\* Replacing Time Lapse VCR in use with Multiplexer \*\*\*\*\*

This DVR unit can replace time lapse VCR used in connection with multiplexer.

If you want to use this DVR unit in connection with multiplexer, set followings in RECORD SETUP in SETUP of DVR unit.

**MUX/REC** : Select MUX/REC when you want to use this DVR in connection with multiplexer, to replace time lapse VCR.

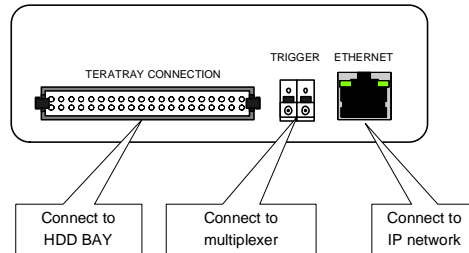
**RECORD SPEED** : From 002Hr to 960Hr

Set speed	:	002Hr	004Hr	006Hr-----	072Hr-----	960Hr
Tape recording hour	:	2	4	8 -----	72 -----	960
(with 2 hrs tape)		real time			72 hrs mode	960 hrs mode

**MUX CH NUMS** : numbers of cameras connected to multiplexer(from 1 to 16)

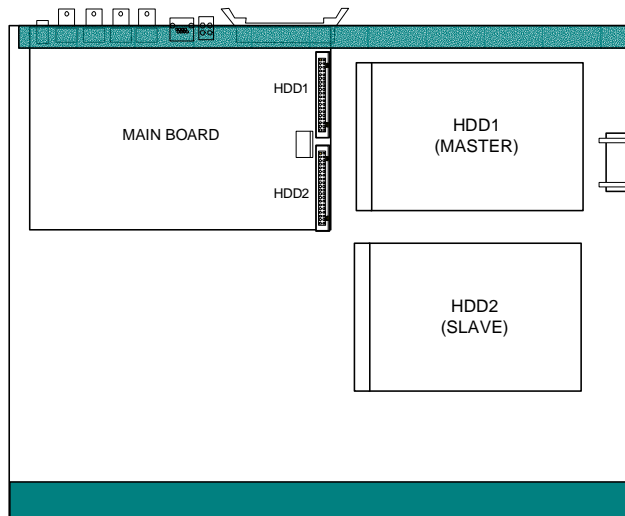
### 5) Network connection

Connects to HDD Bay(Tera-Tray), Multiplexer, or Network



Notice : TERATRAY CONNECTION is only for HDD Bay, Tera-Tray. It can not be connected with any other devices. Also, when electric contact is applied while power is on, it may damage the system.

### 6) HDD connection

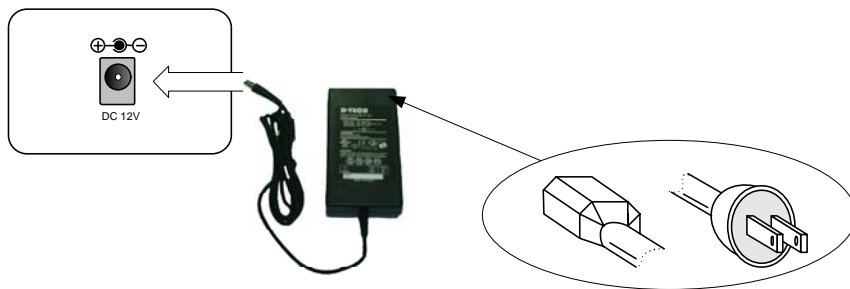


Be sure to set jumper setting for each HDD as per HDD manufacturer's specification. If you install single HDD, it must be at Master, and HDD1 is at Master and HDD2 is at Slave in case you install 2 HDDs in a unit of DVR.

In case you replace HDD, you have to clear all data on HDD and set at FACTORY DEFAULT once. It is not necessary to format HDD before installation, and DVR system automatically detects HDDs and format before recording.

### 7) Power connection

Connect the power to the POWER CONNECTION on the rear panel of the system, and turn on the switch.



### 8) Turn on the POWER and Log-in the the system

Follow direction in the Log-in part of this manual to input the PASSWORD and start the system.

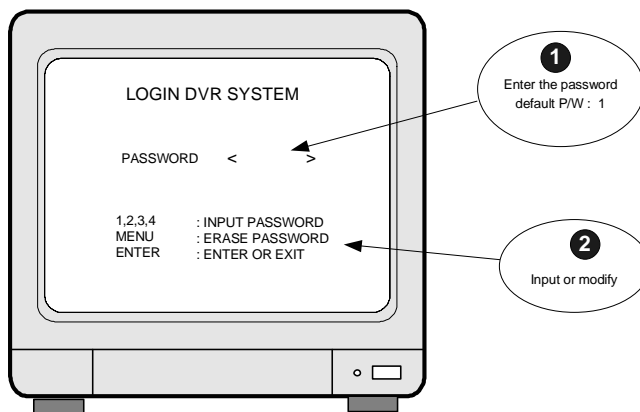
Factory default password for account manager is "1" , and "2" for user.


### 9) Detail setup in SYSTEM SETUP

For detail setup, refer to the instruction of SYSTEM SETUP.

## 5-1. Log-in

## 1. Log-in



- 1) Press [MENU] button to enter the system menu after starting the system.
  - 2) LOGIN DVR SYSTEM window appears as shown above.
  - 3) Use  button to enter password that has 1 to 8 digits with numbers from 1 to 4.
  - 4) Use [MENU] button to change.
  - 5) After entering the password, press [ENTER] button to go back to the system menu.
- If password entered matches previously set number, "ADMIN GRADE LOGIN OK" message appears. If password entered does not match previously set number "CURENT PW INPUT ERROR" message displayed.
  - Factory default password is as below.

ADMIN(Administrator mode) :  "1" USER (User mode) :  "2"

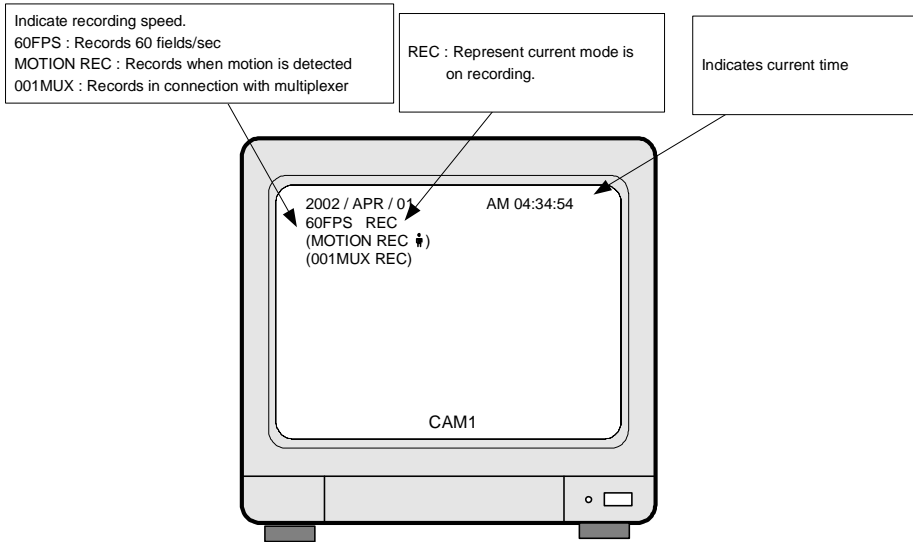
**NOTICE** : To protect hard drive from damaged, turn off the power switch of DVR unit after you first press [MENU] button. If you press [MENU] button, DVR unit stops recording, and HDD head is not in the process of writing.

**NOTICE** : We recommend you to enter your own password as per procedure in 5-4)- ⑧ - ② (page.23)

**NOTICE** : Be sure to memorize the changed password.

**NOTICE** : When logged into USER MODE, only DISPLAY SETUP and TIME/DATE TYPE SETUP is possible.

5-2. Recording



Recording basic screen(TIMER recording)

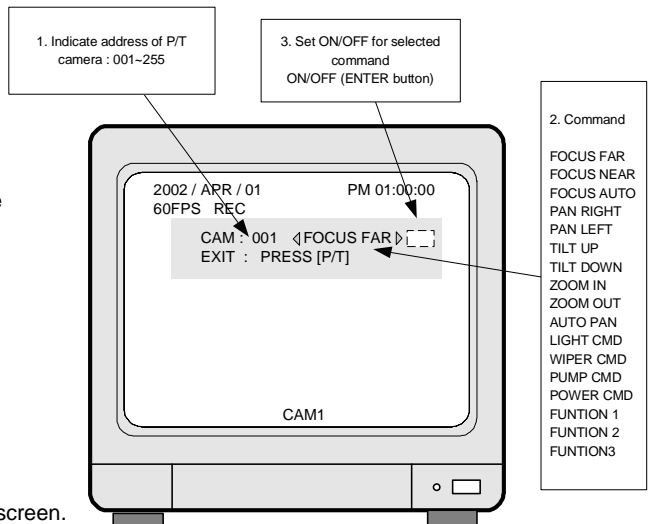
1. PLAY

Changes to Playback Mode from Recording mode.

Refer to Playback part(PAGE.13)of this manual

2. P/T

- 1) Press [P/T] button.
- 2) Use button to choose the ADDRESS of the P/T camera.
- 3) Use button to select the command for P/T camera.
- 4) With [ENTER] button, select ON/OFF.
- 5) Press [P/T] button to come back to recording screen.

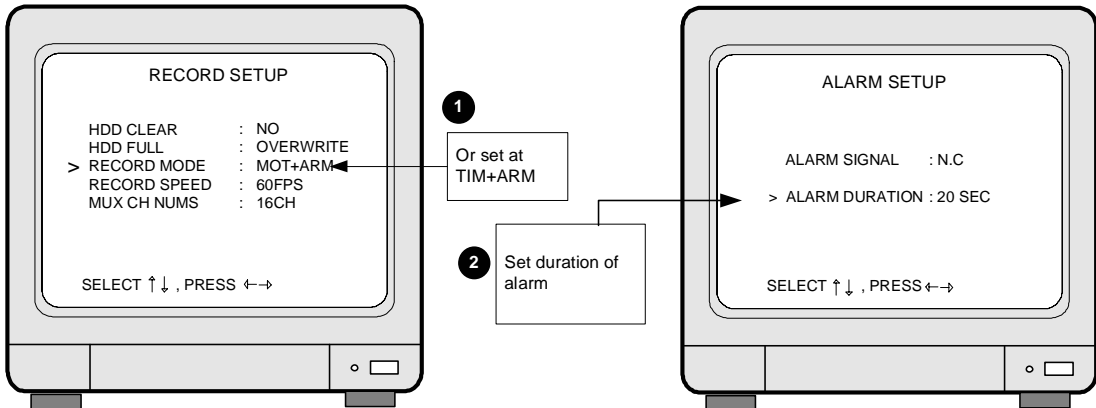


Display of PAN/TILT Control (Example : DRX-502A)

- For details, refer to manual for incorporating protocols for PAN/TILT camera.

### 3. Sensor recording

1) When there is sensor input, recording starts. 2) It records for preset period of time.



MOT+ALARM : Records when motion detected or when alarm is activated for preset duration time in above example.

Refer to REC MODE SETUP in 5 - 4 - 5 - **3** (RECORD SETUP) in page 21 for more detail of TIME+ALARM OR MOTION+ALARM and ALARM SETUP 5- 4 - 5 - **1** in page18(alarm setup) for more detail of ALARM DURATION.

### 4. Scheduled recording

Records as scheduled, and setting can be done by date or by day of the week.

For each day, 2 different time intervals can be set at ON or OFF in the unit of 30 minutes, and same for each day of the week. Therefore users can set 4 recording time intervals of recording or not recording for every day.

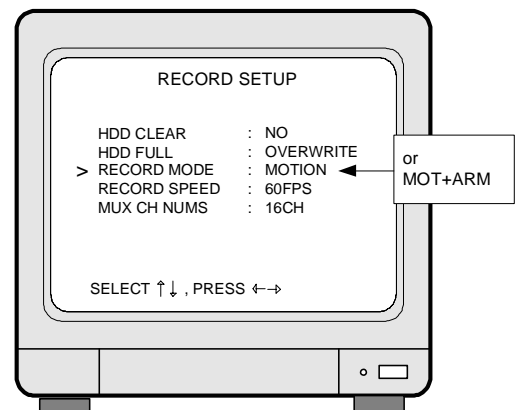
For more details, refer to SCHEDULE REC SETUP in MISCELLANEOUS SETUP in 5- 4 - 8 - **3** in page 24

### 5. Recording by MOTION DETECTION

Refer to ALARM/MOTION SETUP in 5- 4 - 5 from page 18 to 20. It must be set at MOTION or MOT+ALM to record whenever motion is detected.

### 6. Attention

- 1) Recording is stopped during SYSTEM SETUP.
- 2) Recording is stopped during playback or when in SEPUP menu.
- 3) Recording is not possible if no camera is connected.



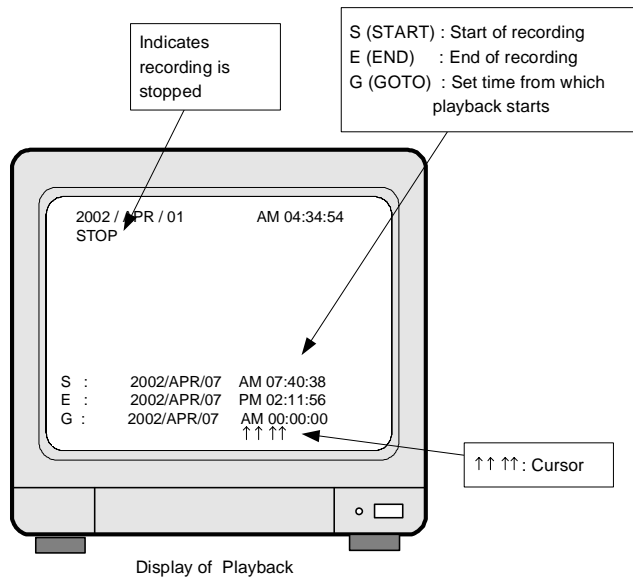
Display of RECORD MODE

## 5-3. Play



## 1. How to replay

- 1) Press [PLAY] button to begin playback.
- 2) Screen on the right will appear.
- 3) Press [PLAY] button to start playback from the first of recorded data.

(To start from a specific time, first set the GO TO time before press [PLAY] button)



## 2. GOTO time settings


- 1) Select G(GOTO) submenu and move cursor using  key to set.
- 2) Using  key, set year, month, date, time at which you want to to start.
- 3) Press [PLAY] button to start playback.

**NOTICE** : During playback or settings in SETUP menu, recording is stopped.



**NOTICE** : When value out of range of start and end of data entered, it starts from START time.

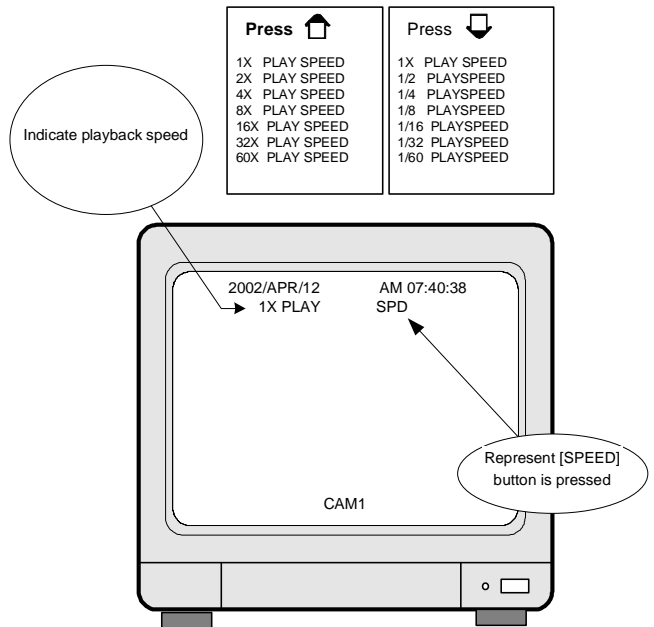
**NOTICE** : When value is in the range of START and END, but there is no recorded picture at the set time, it moves to the closest time of the recorded picture.

## 3. Pausing and advancing picture by picture

- 1) During playback, press [PAUSE] button to pause. Press once more to play again.
- 2) After [PAUSE] button, press  button to advance picture by picture in both direction. It is useful to check one after the other carefully.

#### 4. Playback speed setup

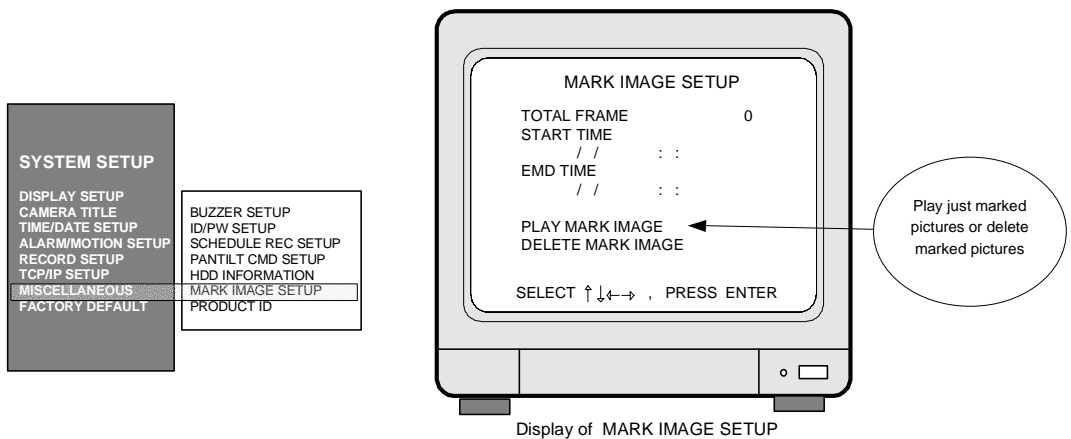
- 1) During playback, press [speed] button.
  - 2) Screen on the right will appear.
  - 3) Set direction of playback using  key.
  - 4) Set speed of playback using  key.
- (High speed up to x60 and slow speed up to 1 field/60 sec are available)



#### 5. MARK IMAGE SETUP

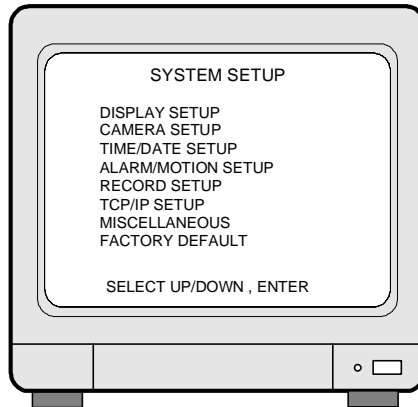
You can store some pictures very specially if you press [MARK] button during palyback. Pictures between you first press [MARK] button and you press [MARK] button again shall be protected from being overwritten when HDD is full. And it is very useful feature to utilize some important pictures to be safe from being deleted by mistake.

Refer to MARK IMAGE SETUP in MISCELLANEOUS SETUP in 5-4)-**8** - **6** in page 28






## 5-4. SETUP

## 1. Start of SETUP



Display of SYSTEM SETUP

- 1) Press [MENU] button.
- 2) Log into the system by entering password.
- 3) Select SEPUP item using  button
- 4) Press [ENTER] button to enter submenu of selected SETUP item.
- 5) Select SEPUP item in submenu using  button, and change value using  button
- 6) Press [ENTER] button to select SEPUP item, and press [MENU] button to go back to previous menu.
- 7) If you choose FACTORY DEFAULT, all settings shall be changed to settings done by manufacturer, and we recommend you to set at FACTORY DEFAULT in the first operation, or when you replaced EPROM for upgrading DVR program or replaced HDD.

You can set all group of settings at FACTORY DEFAULT as a whole or group by group.

If you want it as a whole, set ALL SET at ON by pressing [ENTER] button, and set ALL SET at OFF and set each group of FACTORY DEFAULT at ON or OFF independently by pressing [ENTER] button. After you decide ALL SET or group by group set, move to RESET NOW and press [ENTER].

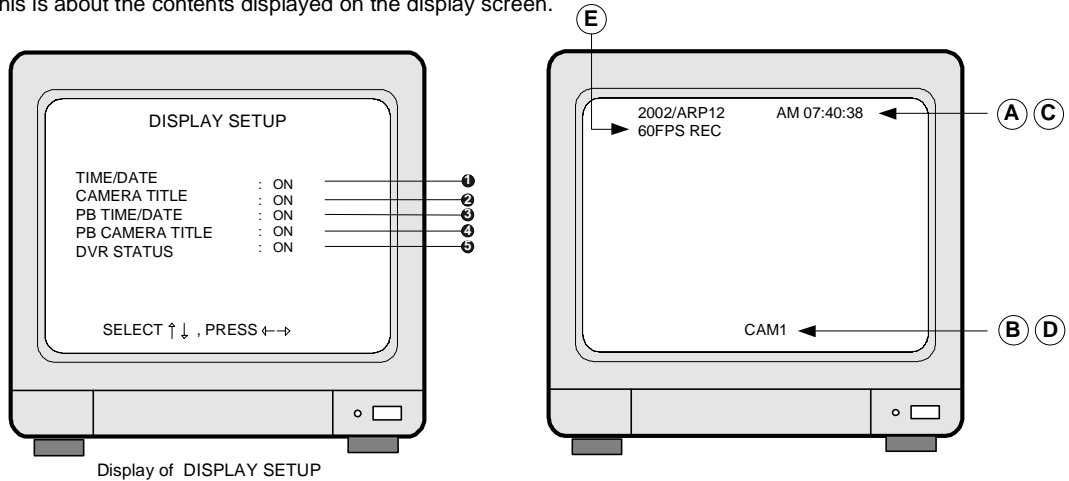
▷ SETUP items remain unchanged even though you choose FACTORY DEFAULT

- |                                     |                             |
|-------------------------------------|-----------------------------|
| 1. Time and date of TIME/DATE SETUP | 2. All recorded data on HDD |
| 3. Marked data                      | 4. ADMIN password           |
| 5. ALARM LIST SETUP                 |                             |

**NOTICE** : In the first operation of this DVR, we recommend users to set at FACTORY DEFAULT before you select various parameters of operation.



## 2. DISPLAY SETUP

This is about the contents displayed on the display screen.

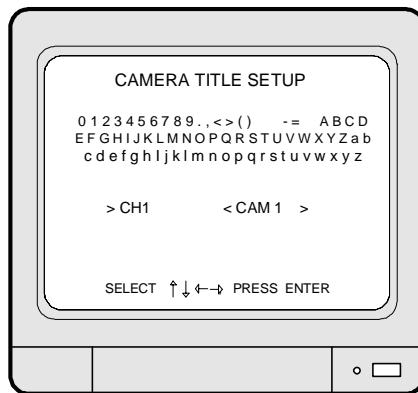


- ① (A) : If TIME/DATE is on, time and date is indicated on live screen.
- ② (B) : If CAMERA TITLE is on, camera title is displayed on live screen.
- ③ (C) : If TIME and DATE is on, time and date of recorded pictures is displayed in playback.
- ④ (D) : If PB CAMERA TITLE is on, camera title is displayed in playback.
- ⑤ (E) : If DVR STATUS is on, operation status of DVR like REC/PLAY is displayed.

**1** TITLE SETUP : Input title of camera.

Press [ENTER] button then move to any location you want using  button, and then select letters using  button.

After complete to change, press [MENU] button to return to main menu.



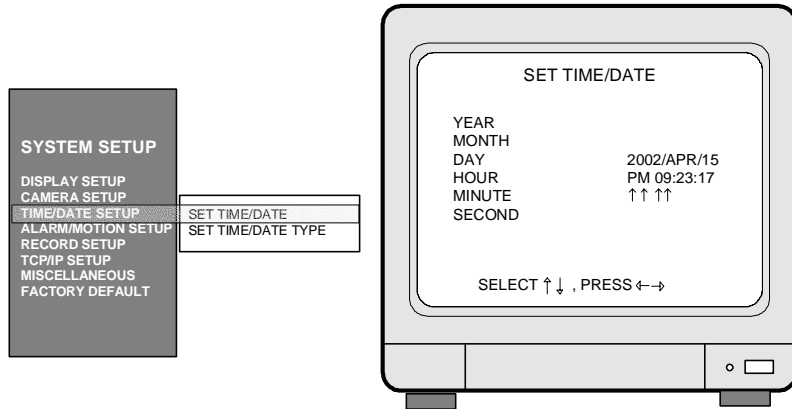
Display of CAMERA TITLE SETUP

**2** COLOR BAR TEST : Displays COLOR BAR CHART.



Use to adjust colors of monitor.

#### 4. TIME/DATE SETUP

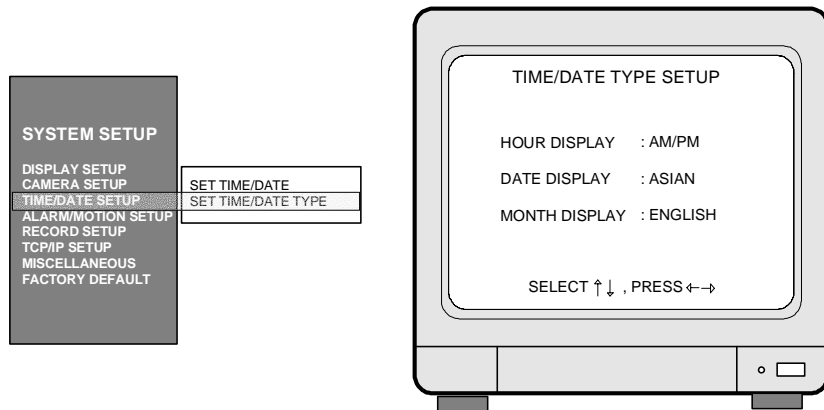
- ① SET TIME/DATE : Sets year/month/day/hour/minute/second



Display of SET TIME/DATE

With  button, move to year/month/day/hour/minute/second, and change value using  button.

- ② SET TIME/DATE TYPE : Sets notation of TIME/DATE

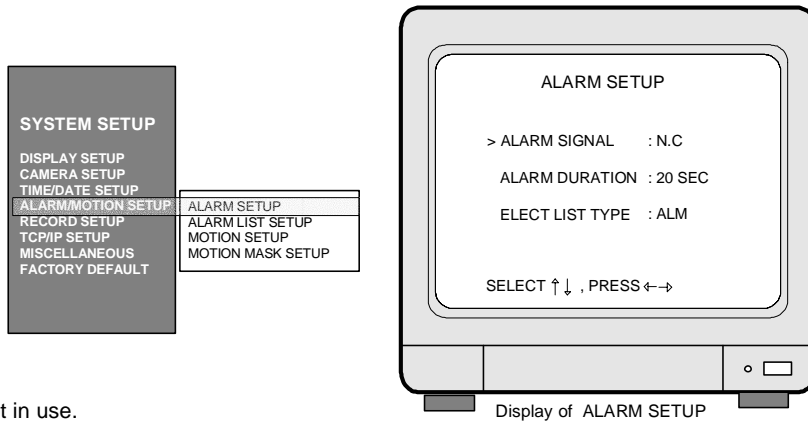


Display of TIME/DATE TYPE SETUP

1. HOUR DISPLAY : Choose AM/PM type or 24 hours time indication
2. DATE DISPLAY : Select Asian type, American type, or European type.
3. MONTH DISPLAY : Choose indication of MONTH in Alphabet or Number

### 5. ALARM/MOTION SETUP

- 1 ALARM SETUP : Sets type of sensors connected to DVR unit.



OFF : Not in use.

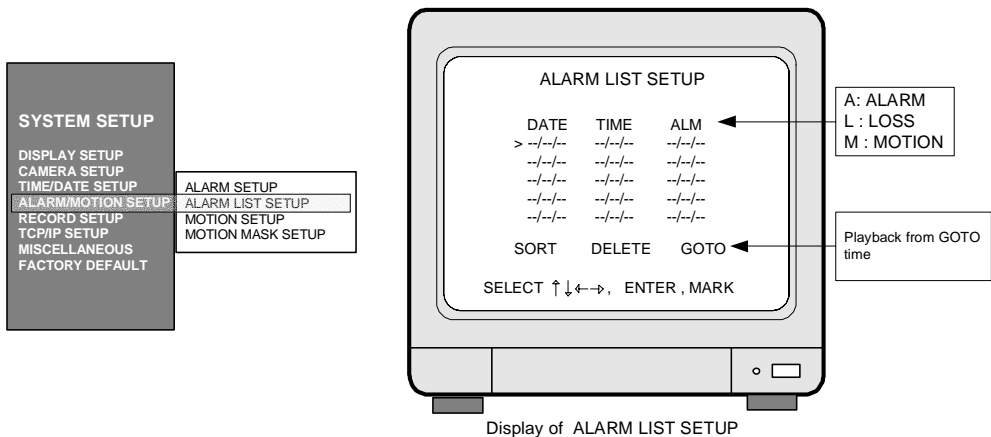
NC : Normal closed. When an event happens, contact is opened.

NO : Normal open. When an event happens, contact is closed.

ALARM DURATION : Duration of recording when an ALARM is activated.  
(set time : 10, 20, 30, 40, 50 sec, 1 MIN, 3 MIN, 5 MIN)

SELECT LIST TYPE : "A" indicates Alarm, "L" indicates Loss, and "M" indicates Motion.  
You can select group of events, NONE, A, L, and M, by pressing [left] and [RIGHT] buttons. If you select NONE, no event list shall be provided.

- 2 ALARM LIST SETUP : Shows list of alarms up to 400. If total alarm exceeds 400, it overwrites from the beginning. Alarm list is very useful to manage DVR system, in case it is in use in connection with alarm sensors.



Using button, move to any of SORT/DELETE/GOTO

1. SORT : Originally the list shown is arranged in the sequence of date and time. If you press [ENTER] button, list shall be rearranges in the sequence of ALARM, LOSS, and MOTION.

1) DATE/TIME : Order in data and time      2) ALM : Order in type (ALARM, LOSS, MOTION)


2. DELETE : When DELETE is selected, you can enter into any one of MARK, PAGE, ALL.

Move to any one of 3 using  button and press [ENTER] button to enter.

1) MARK : Delete selected item in the list.

2) PAGE : Delete all item in the current page.

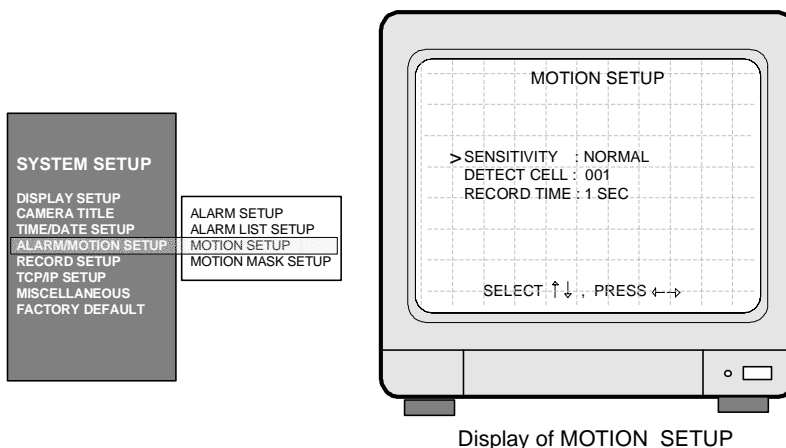
3) ALL : Delete all items in the list.

- Move using  button, and select using [MARK] button(\*).

3. GOTO : Starts playback from marked item in the list.

- Move to an item in the list using  button, and press [MARK] button.

### 3 MOTION SETUP :



**SENSITIVITY** : Adjust motion detection sensitivity in 5 steps.  
VERY LOW – LOW -- NORMAL -- HIGH — VERY HIGH

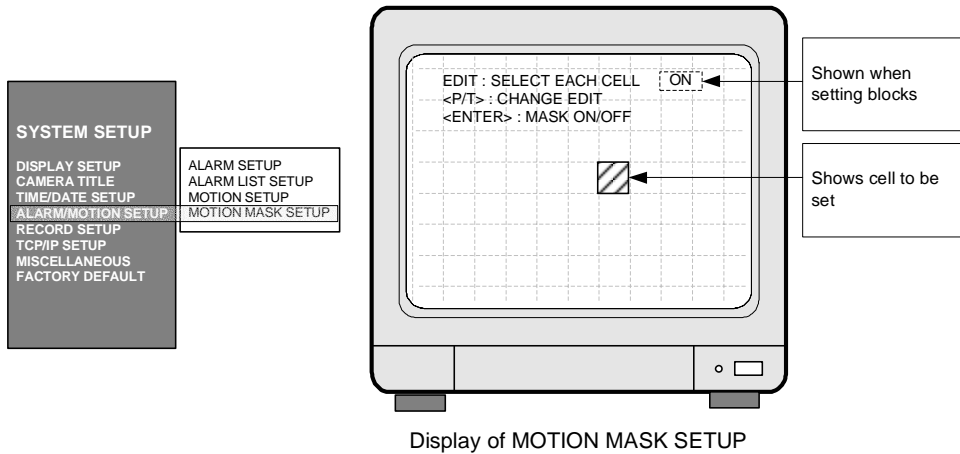
**DETECT CELL** : Defines size of objects to be detected. The smaller DETECT CELL, smaller object can be detected. Can choose from 1 to 20. If DETECT DELL is set at 5, motion detection is activated only in case 5 DETECT CELLS are simultaneously activated.

**MOTION REC DURATION** : Sets recording time when a motion is detected.

Set value from 1 sec to 3 minutes according to frequency of motion in picture taking area.

FACTORY DEFAULT value is 1 sec.

4 MOTION MASK SETUP : Sets detection area in picture taking area.



- 1) Press [P/T] button to choose desired EDIT mode.
- 2) Use direct buttons to assign BLOCK and [ENTER] button to set.
- 3) MASK area in green color is detection area and the rest is no detection area.
- 4) Detection area is indicated in green and no detection area is in colorless.

SELECT EACH CELL : Select cell by cell.

SELECT VER LINE : Select all cells in a vertical line.

SELECT HOR LINE : Selects all cells in a horizontal line.

SELECT AREA : Select areas.

SELECT BLOCK : Select BLOCK

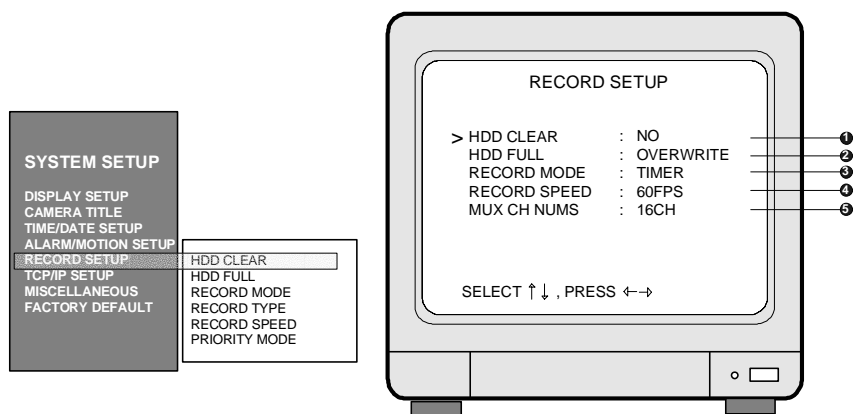
CLEAR BLOCK : Delete BLOCK

SELECT ALL CELLS : Select all cells in area shown.

CLEAR ALL CELLS : Delete all cells.

When [ENTER] button is pressed, "ON" is displayed in the first line(MODE) of the screen. Then move using direction buttons to set.

## 6. RECORD SETUP



Display of RECORD SETUP

- ① **HDD CLEAR** : If YES is selected, it deletes contents of the HDD.

Using **←→** button, set HDD CLEAR at YES and press [MENU] button.

You will see messages on the right, and then press [ENTER] button to delete all image data on HDD.

<CAUTION>

IF YOU WANT TO DELETE  
PRESS <ENTER> KEY

Notice : Be careful to delete data on HDD, because you can not recover deleted data.

- ② **HDD FULL** : You can select **OVERWRITE** or **STOP RECORDING** using **←→** button. When HDD is full, the system deletes old data to record current pictures, if you set at **OVRWRITE**. It stops and shows warning message when it is full, if set at **STOP RECORDING**.
- ③ **RECORD MODE**
- 1) **TIMER** : Records at a certain time interval set at **RECORD SPEED**.
  - 2) **TIMER+ALARM** : Combination of **TIMER** and **ALARM**. If alarm is activated, the system records at its maximum recording rate(60 FPS) for **ALARM DURATION**.
  - 3) **MOTION** : The system records just when motion is detected for **MOTION DURATION**.
  - 4) **MOTION+ALARM** : The system just records when motion is detected, and records when alarm is activated for **ALARM DURATION** at 60 FPS.
  - 5) **MUX/REC** : Select when you use this DVR in connection with multiplexer, replacing time lapse VCR.

- ④ **RECORD SPEED** : Adjust recording frame rate. 0.1 indicates 1 field per 10 second.  
(Select any one among 60/30/15/10/5/2/1/0.5/0.2/0.1 FPS)

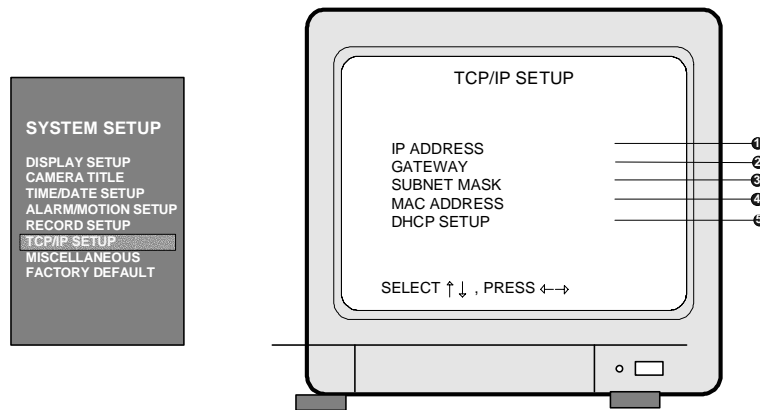
**If you selected MUX/REC in RECORD MODE, you are requested to select record speed from 001 to 480. This is to synchronize with switching time of multiplexer, that is, recording hour of tape in former time lapse VCR.**

Set speed	:	002	004	006	-----	072	-----	960
Tape recording hour :		2	4	8		72		960
(based on 2 hrs tape)								

- ⑤ **MUX CH NUMS** : When you use this DVR unit in connection with multiplexer, replacing time lapse VCR, set numbers of camera connected to multiplexer.

## 7. TCP/IP SETUP

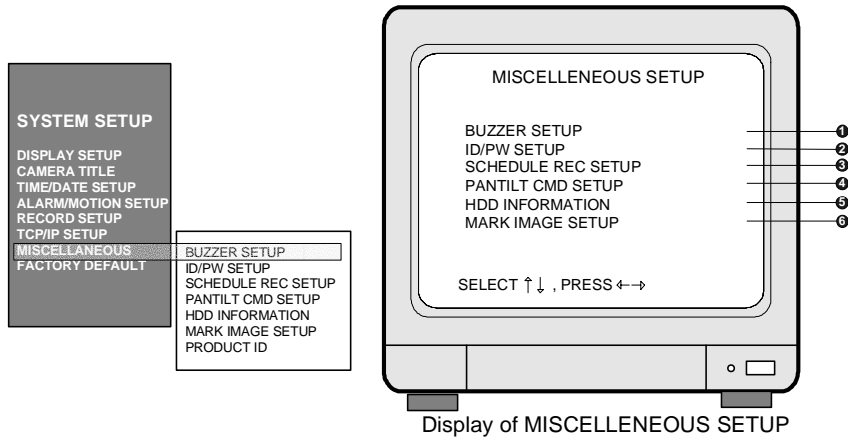
TCP/IP option of stand-alone DVR enables users to see live pictures and search recorded pictures via IP network, far apart from DVR unit. It is also possible to control PTZ camera while you see live pictures. To see live pictures or search recorded pictures, users must assign static IP address to DVR together with Gateway and Subnet mask, and install Remote Viewer program in client PC from which you are going to access to DVR unit. For detail procedure for installing Remote Viewer program and settings, refer to Remote Viewer Program manual on CD included in the package.



- 1** IP ADDRESS : Move using button and change numbers using button.  
(DEFAULT value : 192, 168, 001, 100 8000)

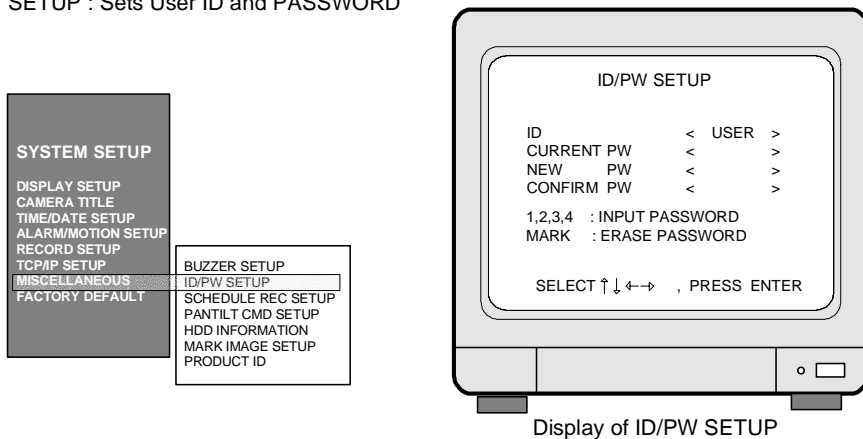
In case port number of 80 is protected by firewall, change port number to other one not protected by firewall.
- 2** GATEWAY : Move using button and change numbers using button.  
(DEFAULT value : 192, 168, 001, 001)
- 3** SUBNET MASK : Move using button and change numbers using button.  
(DEFAULT value : 255, 255, 255, 000)
- 4** MAC ADDRESS : It is unique ID number provided by DVR manufacturer, and the user must not change under any condition. When modified, it can cause collision with other systems in the Internet line and cause problem in operation. Make sure this number remains unchanged always.
- 5** DHCP SETUP : If you press ENTER button, you can enter into sub-menu of DHCP SETUP. In this menu, you can select DHCP or MANUAL by pressing ENTER button. If you set IP DETECT MODE at DHCP, DVR unit automatically connects to IP network during the process of booting and you see IP information if you enter REQUEST IP. You have to memorize this IP information and input this information into SETTING of Remote viewer program installed on your PC (client PC). If it fails to connect automatically or you set IP DETECT MODE at MANUAL, you have to get IP information by executing ipconfig or winipcfg in the client PC from which you want to access to DVR unit, to assign IP information for DVR unit.



### 8. MISCELLANEOUS SETUP



**1** BUZZER SETUP : Sets buzzer ON/OFF.  
 You can set each group of BUZZER at ON or OFF independently.They are SYSTEM, BUTTON, ALARM, MOTION, and LOSS.

**2** ID/PW SETUP : Sets User ID and PASSWORD



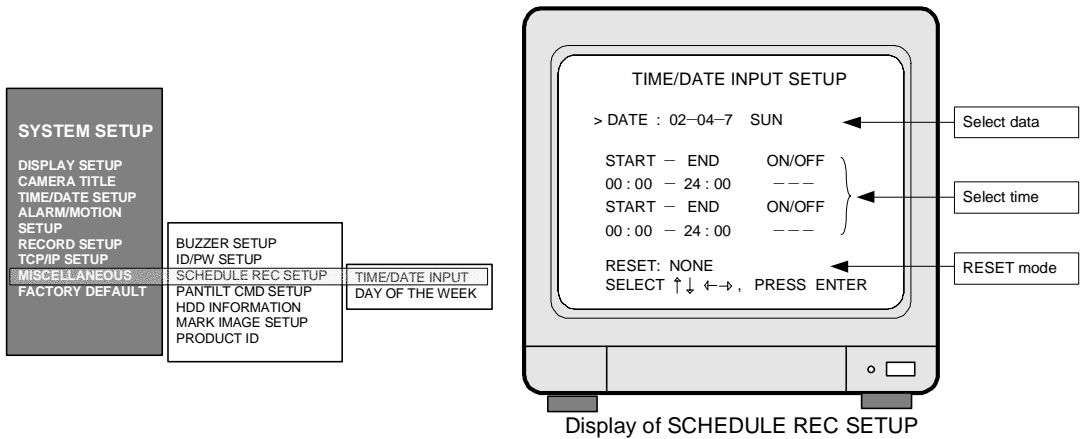
- 1) Using  button, select item to be changed and press [ENTER] button to be ready for changing
- 2) Using  button, enter current number first and enter new number. Numbers must be equal or less than 8 digits, and each digits must be from 1 to 4.

Default setting :

ADMIN  PASSWORD : 1 (  )  
 USER PASSWORD : 2 (  )

Change PASSWORD to your own one as soon as this product is installed

### 3 SCHEDULE REC SETUP



Records according to schedule by day or day of the week. Two time spans can be set for a day and a day of the week respectively. In total, 4 spans of recording or not recording can be set in a day.

#### 1) Recording schedule for a day : Record during set time in set day

(1) Select date : Select recording date using button.

(2) Select time : Enter into setting mode by pressing [MARK] button.

Using direction button, set time to start recording and time to end recording.

Setting of time/minutes is done by pressing [ENTER] button, and it increased in the unit of 30 minutes per pressing [ENTER] button.

(Notice) Changing is possible just "RESET : NONE" is displayed.

(3) ON/OFF selection : After completing input of schedule, choose ON or OFF using [ENTER] button.  
ON indicates to record and OFF means not to record.

(4) After completing to set schedule, press [MENU] button to leave.

(5) In RESET mode, you can delete recording schedule.

Using button, move to the date to delete, and press [ENTER] button to delete.

Press [ENTER] button to delete all recording schedule.

(NONE : Input time/date    DATE : Delete schdule of selected data    ALL: Delete all schedule)

(6) Press [MENU] button to leave SCHEDULE REC SETUP.

#### 2) Recording schedule for a day of the week : Set time for each day of the week as procedure for recording schedule for a day.

3. Example of schedule setting

1 01:00-03:00 ON  
04:00-05:00 ON

Just record from 1 to 3 and from 4 to 5, and does not record for the rest of hours.

2 01:00-03:00 OFF  
04:00-05:00 OFF

Just not record from 1 to 3 and from 4 to 5, and record for the rest of hours.

3 01:00-03:00 ON  
04:00-05:00 OFF

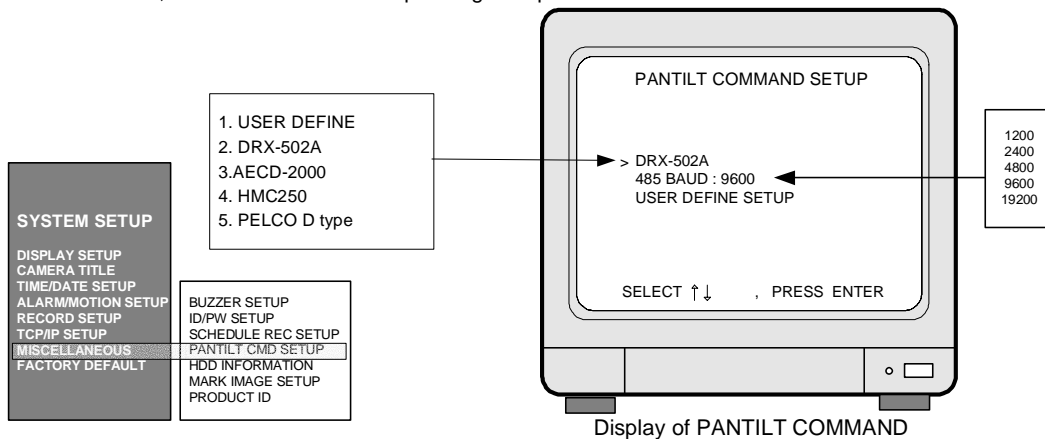
Just record from 1 to 3 and not record for the rest of hours(In case ON and OFF are exists, the system give priority to ON).

4. Note for schedule recording :

If you set scheduled recording, DVR unit does not record before the set time. It only starts recording at START time and ends at END time.

4 PANTILT CMD SETUP : If you want to connect PTZ camera which is not included in the list of PTZ camera, you have to input protocol of PTZ camera you are going to connect to DVR unit.

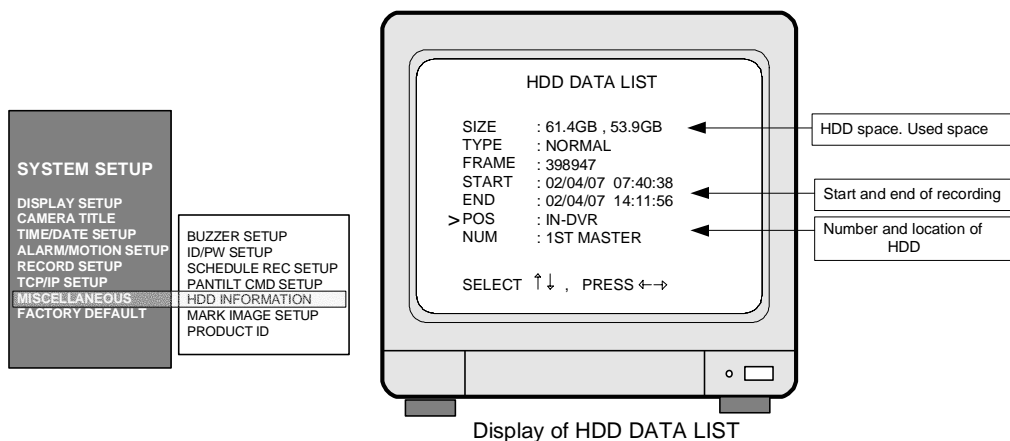
You can input protocol of PTZ camera you are going to connect in USER DEFINE SETUP  
For details, refer to Manual for incorporating PTZ protocols.



By pressing [ENTER] button, you can select type of PTZ camera and also baud rate of RS-485 communication

5 HDD INFORMATION

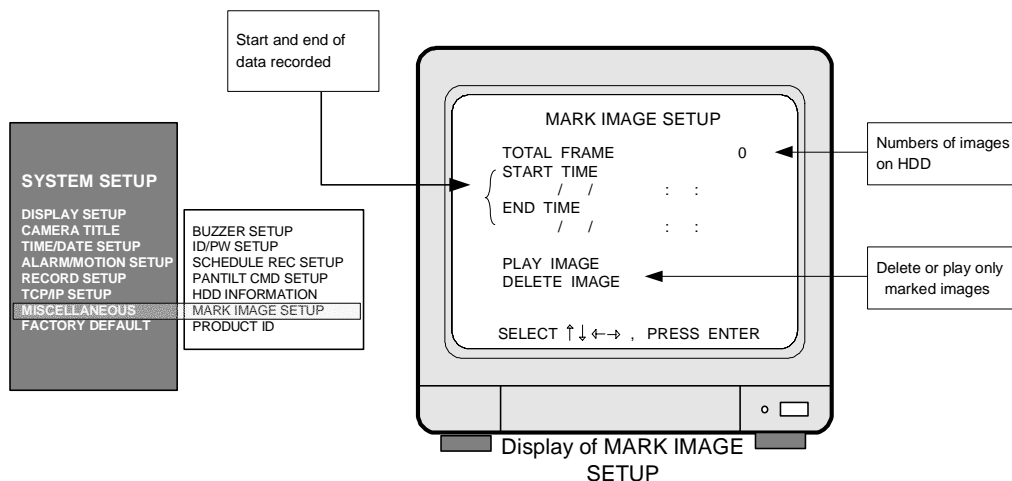
1) HDD DATA LIST : Show general information of HDD




2) HDD AUTO DETECT : Allows to detect HDD just in case first HDD search after purchase failed

### 6 MARK IMAGE SETUP

MARK IMAGE function is very useful, because it protects marked images from being overwritten. During palyback, you can mark images to store them on HDD safely free from being overwritten after HDD starts to overwrite.



- 1) While you see pictures replayed, press [MARK] button. You will see "PAUSE" and "SPD" displayed.
  - 2) Using  button, move as many as you want to mark, and then press [MARK] button.
  - 3) Pictures between 1st [MARK] button and 2nd [MARK] button are all marked and stored separately on HDD.
  - 4) If you mark many images, instead of choosing image by image, cancel PAUSE by pressing [PAUSE] button in step 1). Images are replayed in normal speed. Then press [MARK] button to end mark images. If HDD space assigned for marked image is full, "FULL" is displayed and [MARK] button doen not work. (HDD space for marked imaged : The system arranges automatically, and it corresponds to space for recording 10 minutes in maximum recording rate.)
  - 5) To play marked images, select PLAY IMAGE, and to delete marked images slect DELETE IMAGE.
- Notice** : HDD CLEAR command does not clear marked images, and DELETE MARK IMAGE command just delete marked images.

### 7 PRODUCT ID : Serial number of product. Necessary for manufacturer to know manufacturing date, program version number, and others.

## 6. HDD BAY

## 1. HDD EXTENSION

**Default HDD installed in DVR unit**

- 1) 1~2 HDDs as per customer requirements
- 2) EIDE, 3.5 inch, 7200 rpm, LBA mode type
- 3) HDD capacity : Up to 120GB/unit

Compatibility with up to 120GB confirmed

## 2. HDD BAY

**HDD Bay ( Tera-Tray™ )**

In case up to 2 HDDs installed in a DVR unit is not sufficient and needs to increase storage capacity, connect HDD Bay to DVR unit.

## ▷ Models of Tera-Tray™

TeraTray-04 : Includes up to 4 HDDs

TeraTray-10 : Includes up to 10 HDDs

TeraTray-20 : Includes up to 20 HDDs

- 1) Configuration of Bay connection to DVR unit



- 2) Very economical way to expand storage capacity

If each of 22 HDD is 120 GB in capacity, total HDD capacity connected to a unit of DVR unit is 2.6 TB. We can add huge capacity of HDD space to a unit of DVR just at the price level of normal EIDE HDD.

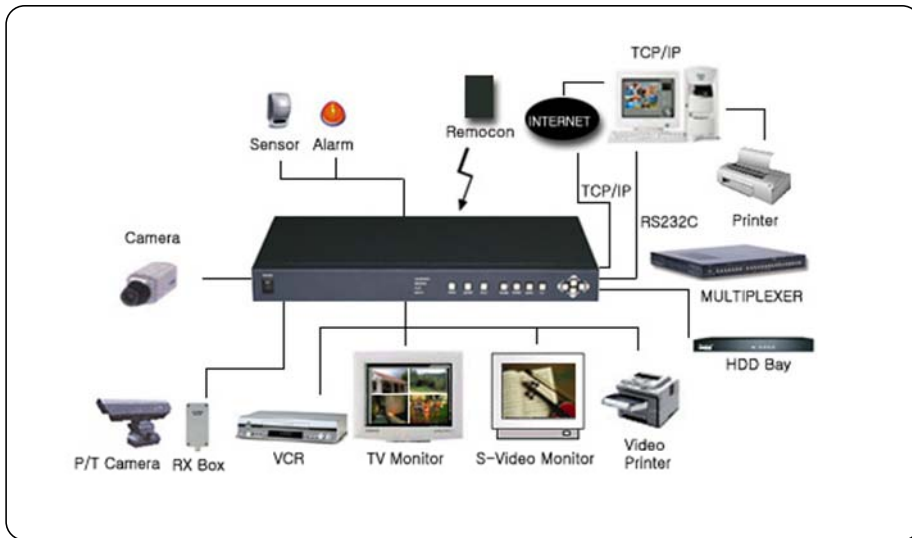
**Notice : To connect HDD Bay to DVR unit, first turn off power to both DVR unit and HDD Bay. Then turn on power to HDD Bay first and then DVR unit after more than 5 seconds.**


 7. Specification

## 1. SPECIFICATIONS

MODEL NO	Single channel stand-alone DVR	
VIDEO I/F	INPUT	1 CH INPUT 1.0 VP-P, 75 OHM UNBALANCED (BNC TYPE)
	OUTPUT	2 OUTPUT VBS : 1.0VP~P.75 OHM UNBALANCED (BNC TYPE)
	HORIZONTAL RESOLUTION	500TV LINES
	S/N RATIO	MORE THAN 4dB
	COLOR	16.7 MILLION
MONITORING METHOD	ZOOM	LIVE & PB AVAILABLE
	SCREEN QUALITY	FULL : 720(H)X480(V) ACTIVE PIXELS
RECORDING /PLAY FUNCTION	SPEED	0.1~30 FRAME/SEC
	MEDIA	HDD, EIDE, LBA MODE, UP TO 140 GB/UNIT, UP TO 2 HDDs
	COMPRESSED PICTURE	JPEG
	PICTURE PRESERVATION METHOD	FIELD SWITCHER METHOD FULL SCREEN PRESERVATION
	REC. MODE	REAL-TIME/ TIME-LAPSE / EVENT
	TRACK PLAY	SEARCH, STILL
OTHER FUNCTION	WEB INTERFACE	TCP/IP
	POST ALARM FUNCTION	1~59SEC, CONTINUOUS TIMING ESTABLISHMENT POSSIBILITY
	BACK-UP	PREVIOUS VCR, TIME LAPS VCR USAGE : VCR OUTPUT UTILIZATION REMOTE BACK-UP USING TCP/IP
	OTHERS	RS232C, RS485, MAX 4 ALARM INPUT
	CAMERA CONTROL	PAN/TILT/ZOOM AND FOCUS REMOTE CONTROL : EXTERNAL EQUIPMENT, WIPER,PUMP,FAN AND HEATER
	CONFIGURATION	PLUG&PLAY
	HDD	INTERNAL1 OR 2 HDD OPTIONAL HDD BAY SUPPORT 6HDD/1UNIT, MAX 22 UNITS/UNIT POSSIBLE HDD MIX USGE OF DIFFERENT MANUFACTURER
MECHANICAL	OPERATION TEMPERATURE	41F~ 104F (5C~ +40C)
	OPERATION HUMIDITY	LESS THAN 90%
	IR REMOTE CONTROLLER	BUILT-IN
	DIMENSION	19" RACK SIZE 1U , 44X434X360 mm
	WEIGHT	APPROX. 6.8KG (STANDARD EXPORT PACKAGE)
	POWER SUPPLY	DC ADAPTER (12V DC 4.5A)

## 2. Configuration of single channel stand-alone DVR



## 3. Arrangement of RS-484 and RS-232C pic and RS-232C Hex-codes table

Hex-code table :

Following ASCII codes are for programmers who want to control the DVR unit via RS-232C port. If you connect to RS-232C, you can operate DVR unit using key board of PC, in addition to operation using operation buttons on the front of DVR unit. Send [Carrage Return : (13)] after you input every code.

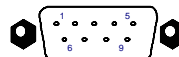
All ASCII-code are in 1 Byte format.

MENU	'M'	SPEED	'Q'	UP	'U'
ENTER	'E'	MARK	'I'	DN	'J'
PLAY	'P'	P/T	'T'	LEFT	'H'
PAUSE	'F'			RIGHT	'K'
DEFAULT KEY '0'					

RS-232C specification (baud rate/parity/data length/stop bit) : 19200, N, 8, 1

Pin arrangement (Alarm/Relay out/RS-232C/RS-485)

Pin No.	Division	Definition
1	Alarm	Input
2	RS-232	RxD
3	RS-232	TxD
4	RS-485	SD -
5	Common	GND
6	RS-485	SD +
7	Relay out	N.C.
8	Relay out	COM
9	Relay out	N.O.



Alarm input : Pin #1 & #5  
 RS-232 : Pin #2, #3, & #5  
 RS-485 : Pin #4 & #6  
 Relay out : Pin #8 & #9(N.O.)/Pin #8 & #7(N.C.)

**ACI srl Farfisa Intercoms**

Via E. Vanoni,3 - 60027 - OSIMO - AN - Italy  
Tel. (+39) 071 7202038 - Fax (+39) 071 7202037  
Email: [info@acifarfisa.it](mailto:info@acifarfisa.it)  
<http://www.acifarfisa.it>

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