

Thank you for purchasing our product.
Please read this User's Manual before
using the product.

Half-duplex audio supported

 **4 Channel Digital Video Multiplex Recorder**

User's Manual VER 1.0



Stand-alone DVMR

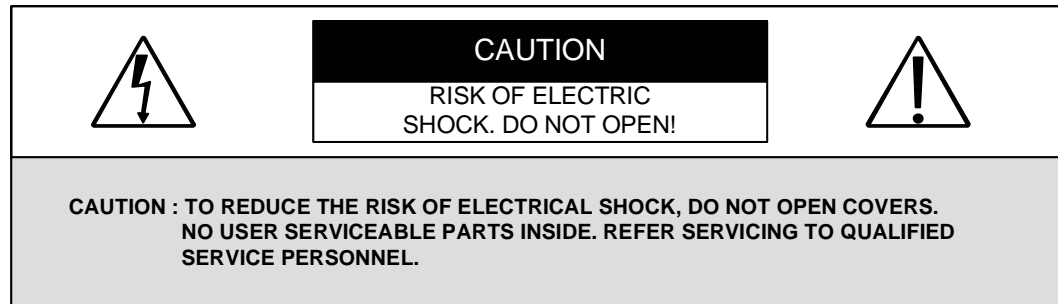
The most stable and reliable real stand-alone Digital Video Multiplex Recorder

4 CH STAND-ALONE DVMR

ALL ABOUT IMAGE RECOGNITION & PROCESSING

DIGITAL VIDEO RECORDER
DIGITAL VIDEO RECORDER

ALL ABOUT IMAGE RECOGNITION & PROCESSING

SAFETY PRECAUTIONS

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.

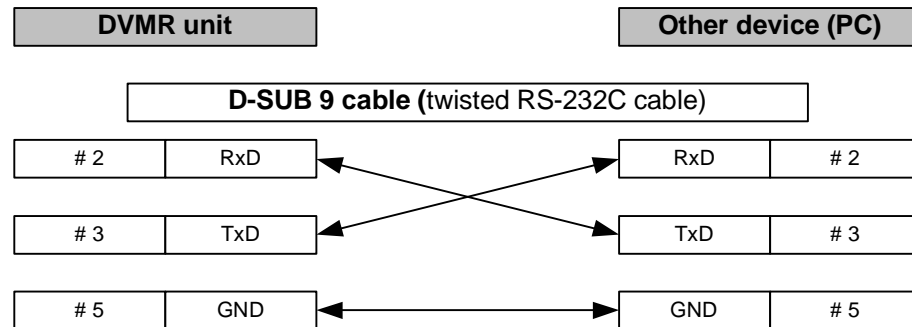
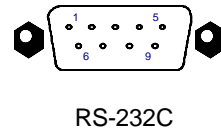


Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source ; however, the unit is operational only when the ON-OFF switch is in the ON position. The power cord is the main power disconnect for all unites.

4. Arrangement RS-232C pin

▷ RS-232C

Pin No.	Definition
1	NC
2	RxD
3	TxD
4	NC
5	GND
6	NC
7	NC
8	NC
9	NC



FCC INFORMATION

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

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

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

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

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

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

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

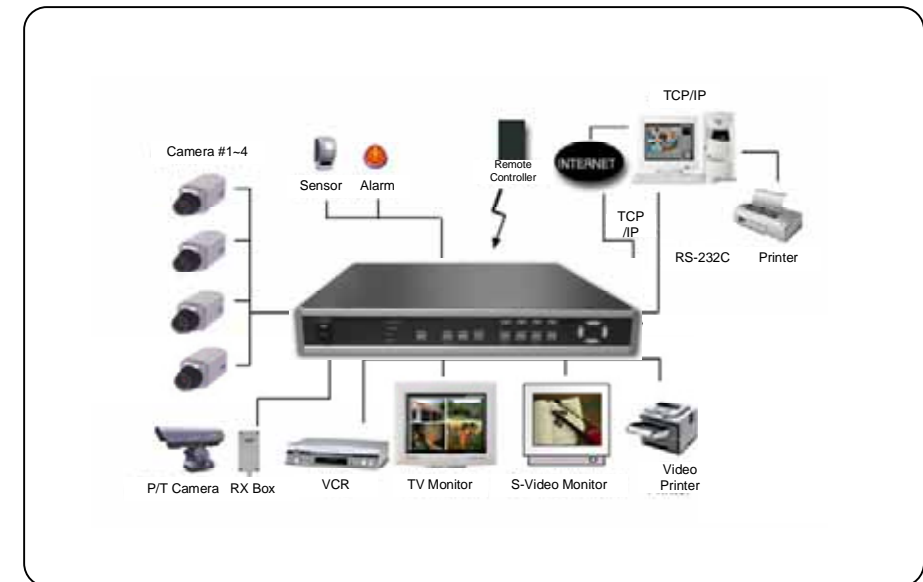
Note : This equipment has been tested and found to comply with the limits for a CLASS a digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of the this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Table of Contents

1.About this document	2
2. Before reading this document	2
3. Unit Description	3
1) Front Panel	3
2) Rear Panel	4
4. Installation	5
5. Operation	9
1) Log-in	9
2) Record	10
3) Play	13
4) Setting	15
① Basic Operation	15
② DISPLAY SETUP	16
③ CAMERA SETUP	17
④ TIME/DATE SETUP	19
⑤ ALARM/MOTION SETUP	20
⑥ RECORD SETUP	23
⑦ TCP/IP SETUP	24
⑧ MISCELLANEOUS SETUP	25
6. Specification & Configuration	29
1) SPECIFICATIONS	29
2) Stand alone DVMR	30
3) RS-232C Hex-codes table	30
4) Arrangement RS-232C pin	31

6. Specification and Configuration

2. Configuration



3. RS-232C Hex-codes table

Following ASCII-codes are for programmers who want to control the DVMR via RS-232C port.
RS-232C specification (baud rate/parity/data length/stop bit) : 19200, N, 8, 1

1 Byte ASCII-code.

MENU	'M'	PIP/ MARK	'I'	CH1	'1'	UP	'U'
PLAY	'P'	FRZ	'F'	CH2	'2'	DN	'J'
MODE	'D'	SEQ/ SPEED	'Q'	CH3	'3'	LEFT	'H'
PANTILT	'T'	ZOOM	'Z'	CH4	'4'	RIGHT	'K'

DEFAULT KEY '0' (Default setup: Displays and records on Quad mode)

6. Specification and configuration

1. SPECIFICATIONS

MODEL NO	Stand alone DVMR	
VIDEO I/F	INPUT	4 CH INPUT 1.0 VP-P, 75 OHM UNBALANCED (BNC TYPE)
	OUTPUT	3 OUTPUT VBS : 1.0VP~P.75 OHM UNBALANCED (BNC TYPE)
	HORIZONTAL RESOLUTION	480TV LINES
	S/N RATIO	MORE THAN 4dB
	COLOR	16.7 MILLION
MONITORING METHOD	SPLIT SCREEN	FULL, QUAD DISPLAY
	ZOOM	LIVE & PB AVAILABLE
	PIP	AVAILABLE
	SEQUENCE	AVAILABLE
	SCREEN QUALITY	FULL : 720(H)X480(V) ACTIVE PIXELS 1/4 SCREEN : 360(H)X240(V) ACTIVE PIXELS
RECORDING /PLAY FUNCTION	SPEED	0.1~30 FRAME/SEC (EACH CHANNEL)
	COMPRESSION	JPEG
	SIMPLEX/DUPLEX	DUPLEX(PLAYBACK/RECORDING)
	PICTURE RECORDING METHOD	QUAD SCREEN RECORDING FIELD SWITCHER METHOD FULL SCREEN RECORDING
	REC. MODE	REAL-TIME/ TIME-LAPSE / EVENT
	TRACK PLAY	SEARCH, STILL
OTHER FUNCTION	WEB INTERFACE	TCP/IP with client software
	POST ALARM FUNCTION	1~59SEC, CONTINUOUS TIMING ESTABLISHMENT POSSIBILITY
	BACK-UP	CONVENTIONAL VCR, TIME LAPS VCR (VCR OUTPUT PROVIDED) REMOTE BACK-UP USING TCP/IP INTERNAL BACK-UP(MARK IMAGE)
	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
AUDIO	Input	4CH INPUT 1.7VP-P, 47K OHM UNBALANCED (MONO PHONE JACK)
	Output	1 OUTPUT, 3.4VP-P, 600 OHM UNBALANCED (MONO PHONE JACK)
MECHANICAL	OPERATION TEMPERATURE	41F~ 104F (5C~ +40C)
	OPERATION HUMIDITY	LESS THAN 90%
	IR REMOTE CONTROLLER	BUILT-IN
	DIMENSION	13 INCHES IN WIDTH 445 mm x 415 mm x 130 mm
	WEIGHT	APPROX. 5KG (HDD 1EA)
	POWER SUPPLY	DC ADAPTER (12V DC 4.5A)

1. About this document

Before installing stand alone DVMR, be sure to thoroughly review and follow the instructions in this

User's Manual. Pay particular attention to the parts that are marked **NOTICE**.

Also, when connecting with external application, first turn the power OFF and follow manual instruction for appropriate installation.

2. Before reading this document

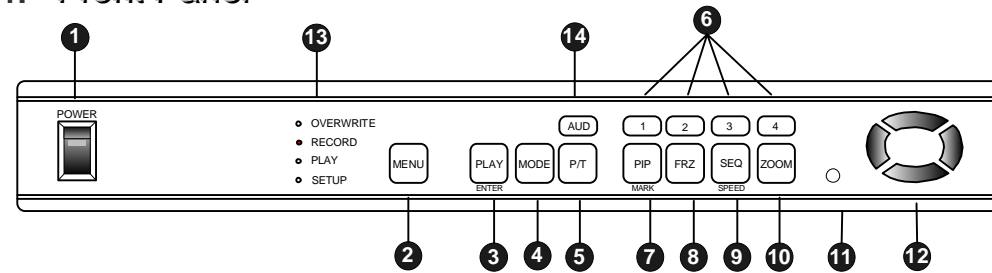
1. This document is intended for both the administrator and users of stand alone DVMR Model.
2. This manual contains information for configuring, managing and using stand alone DVMR Model.
3. To prevent fire or electrical shock, do not expose the product to heat or moisture
4. Be sure to read this manual before using stand alone DVMR Model.
5. For questions and technical assistance of this product, contact your local dealer.

▶ Strong recommendation on installation of the DVMR unit

1. Check electricity at the place you want to install the DVMR unit 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 DVMR 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 left side of the unit and do not close up an opening (fresh air in-take) on the right side of the unit..
3. Put the DVMR 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

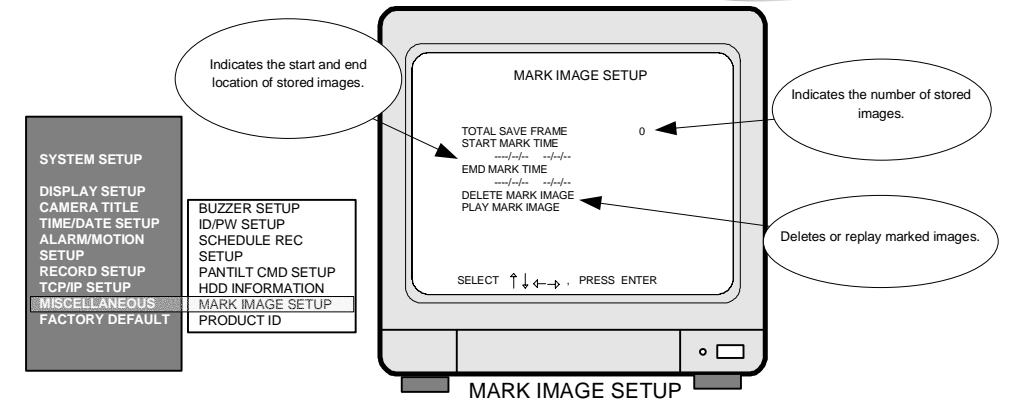
1. Front Panel



- 1. POWER SWITCH WITH LED :** DC power switch with LED
Before you turn off DC power switch off, we strongly recommend you to press [MENU] button first to make HDD not in writing process. Generally speaking, cutting power to system may cause trouble in DVMR system or damage to HDD if HDD is in writing process, and we ask you to press [MENU] button first to protect HDD from being damaged or system failure before you press DC power switch off in practical operation.
 - 2. MENU :** Used when changing the menu of SYSTEM SETUP. If you press [MENU] button, recording stopped.
 - 3. PLAY/ENTER :** Starts playback, and in some functions, it is used as the SELECT key.
 - 4. MODE :** Changes to quarterly split screen or Full display screen.
 - 5. P/T :** Select built-in protocol for PTZ camera and control PTZ camera connected to DVMR unit
 - 6. 1,2,3,4 :** Chooses each indicated channel or camera.
 - 7. PIP/MARK :** Assigns PIP (Picture in picture) or MARK IMAGE to protect selected image from being overwritten.
 - 8. FRZ :** : Display screen is paused. By pressing [LEFT] or [RIGHT] button, it moves to previous or next image field by field.
 - 9. SEQ/SPEED :** The display screen automatically rotates, or assigns playback speed and direction.
 - 10. ZOOM :** Enlarges the display screen by 200%
 - 11. Remote Controller Sensor Input Window**
 - 12. Direction button**
 - 13. LED Lamps :** Represent status of operation
 - 14. AUDIO :** Select channel for audio playback
Press [AUDIO] button and then channel number, any one of 4, to hear audio
- NOTICE :** If the Input window (IR receiver) is covered, the remote controller may not work.
NOTICE : If several buttons are simultaneously or incorrectly pressed, the system may not function properly.

5. Operation

6 MARK IMAGE SETUP (Internal backup)



MARK IMAGE is very useful function, because it protects marked images from being overwritten. During playback, you can mark images to store them on HDD separately from normal pictures. Those marked pictures are not deleted even though you clear data on HDD or even after HDD starts to overwrite.

- 1) While replaying, press [MARK] button to select images.
Then "PAUSE", "SPEED" and "MARK" are displayed on top of the screen.
- 2) In this mode (paused mode), press [LEFT] or [RIGHT] button to select frames you want to mark as many as wanted.
- 3) Press [MARK] button once more to complete MARK IMAGE SETUP for images you selected.
- 4) Therefore all images between first [MARK] button and second [MARK] button remain not deleted unless you delete marked image on purpose in MARK IMAGE SETUP.
- 5) When you want to mark large amount of images, cancel PAUSE by pressing [FRZ] button.
That is, press [FRZ] button, and search images replayed in actual speed.
Then press [MARK] again to complete MARK IMAGE SETUP.
All images between first [MARK] button and second [MARK] button remain not deleted unless you delete marked image on purpose in MARK IMAGE SETUP.
- 6) If the MARK IMAGE space given in the HDD gets to be full, "FULL" message appears and [MARK] button does not work any more.

(HDD space for MARK IMAGE : stores about 10 minutes in normal picture taking-condition.)
- 7) To replay marked image, select PLAY MARK IMAGE, and to delete select DELETE MARK IMAGE.

NOTICE : Marked images stored on dedicated part of HDD, allocated just for MARK IMAGE, is not deleted unless "HDD CLEAR" is activated. It can be erased only by DELETE MARK IMAGE, in MARK IMAGE SETUP.

- 7 PRODUCT ID**
Serial number of products. Necessary for manufacturer to know manufacturing date, program version number, and others for after sales service.

5. Operation

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 hours.

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

Not record from 1 to 3 and from 4 to 5, and records for the rest hours.

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

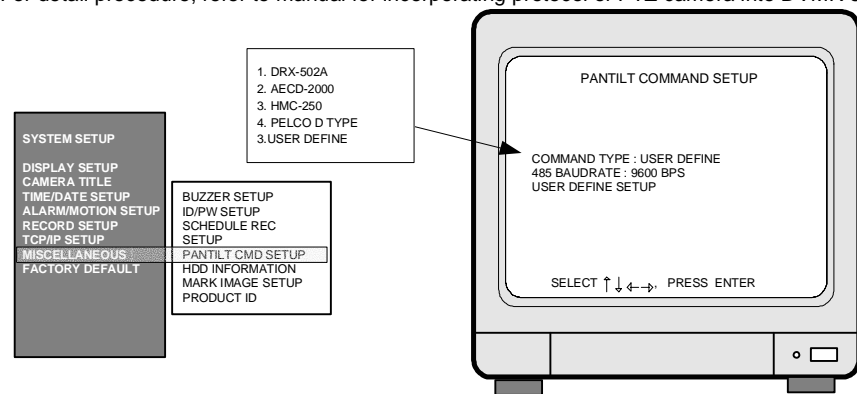
Just record from 1 to 3 (When both ON and OFF are set, priority is on ON.)

3. NOTE for scheduled recording :

When scheduled recording is set, DVMR unit does not record before the set time. It only starts recording at START time and ends at END time.

- 4 PANTILT COMMAND SETUP : When PTZ camera whose protocol is already incorporated into this DVMR system (Default PTZ camera) is connected to this DVMR, just select model of PTZ camera in PANTILT COMMAND SETUP. If user want to connect PTZ camera which is not one of Default PTZ camera, users must input protocols of PTZ camera or speed dome camera by themselves in USER DEFINE SETUP.

For detail procedure, refer to manual for incorporating protocol of PTZ camera into DVMR system.



Procedure to control PTZ camera while you see live picture

1. Default PTZ camera : First select PTZ camera model connected to DVMR unit in the PANTILT COMMAND SETUP menu. In live view mode, press [P/T] button and set CAM (Starts from 000) at camera ID which is set on PTZ camera (DIP switch on PTZ camera) before you connect it to DVMR unit. Then select command you want to execute using [LEFT] and [RIGHT] buttons. While you press [PLAY] button, command you selected is executed.
2. USER DEFINE : In case you input protocols of PTZ camera which is not one of Default cameras, select USER DEFINE in PANTILT COMMAND SETUP. Then press [P/T] button and set CAM (Ranges from 001 to 004) at any one from 001 to 004. CAM number must be the same as CH number which you set when you input protocol of PTZ camera in USER DEFINE. Using [LEFT] and [RIGHT] button, select command you want to execute and press [PLAY] button to execute selected command. While you press [PLAY] button, command you selected is executed.

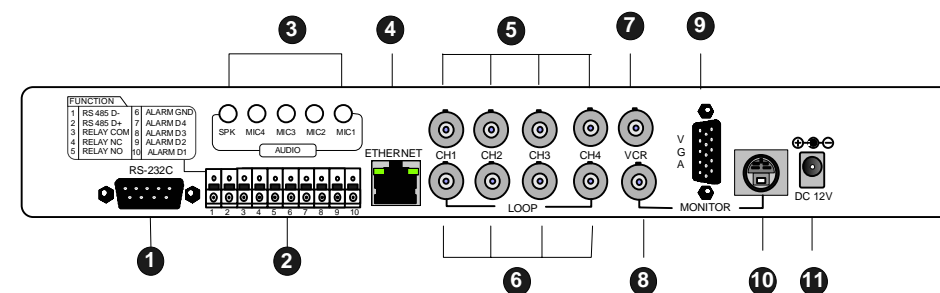
5 HDD INFORMATION

HDD DATA LIST : Shows general information of HDD.

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

3. Unit Description

2. Rear Panel



1. RS-232C Port Connection

2. PAN/TILT Controller, Sensor Input/Output

3. AUDIO : 4 Input and 1 output

4. LAN (TCP/IP)

5. Camera Connection

6. LOOP Output

7. VCR Connection

8. MONITOR Connection

9. VGA Connection

10. S-VHS Connection

11. D/C Power Connection

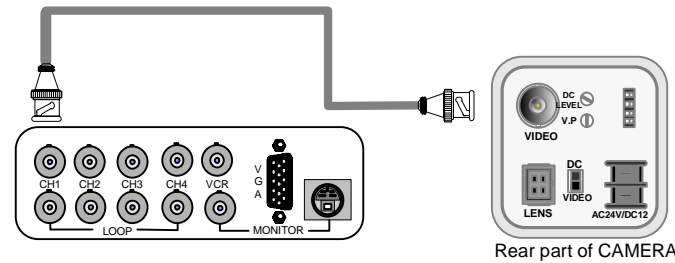
NOTICE : When connecting with other applications, be sure to turn off the system.

4. Installation

Procedure

1) Camera Connection

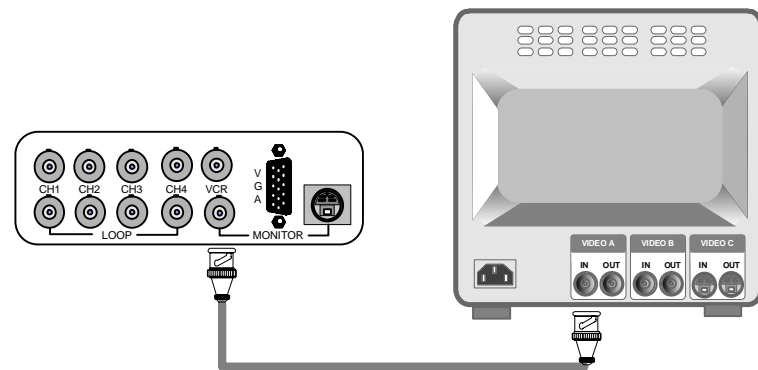
Connect the camera to the CAMERA INPUT on the Rear Panel of the system.



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

2) Monitor Connection (Composite Connection Method)

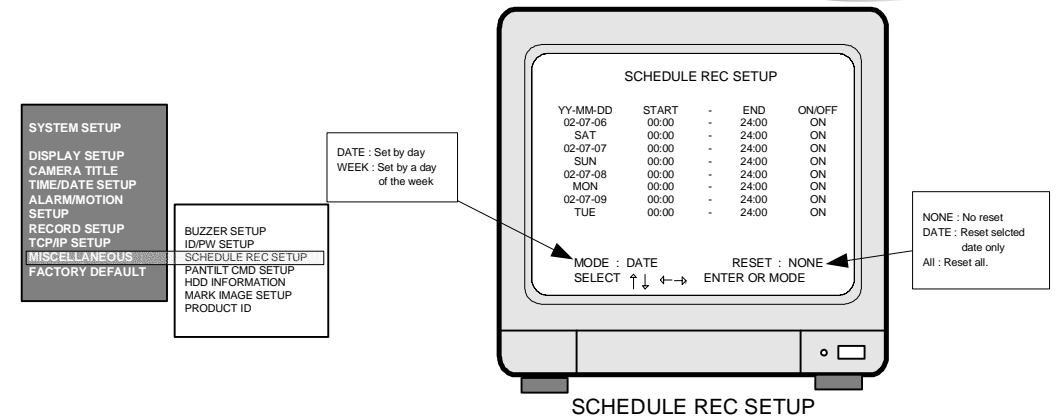
Connect the monitor to the MONITOR OUT on the Rear Panel of the system



Notice : Connect camera or monitor to DVMR unit while DC power switch on the front panel is off.

5. Operation

3 SCHEDULE REC SETUP :



Records according to schedule by day or a day of the week. Two recording time spans can be set for a day and a day of the week respectively. In total, 4 recording time spans can be set in a day. DVMR system records just as you set if you set SCHEDULE REC SETUP, and DVMR system records 24 hours a day if you do not set SCHEDULE REC SETUP.

1. Scheduled Recording for a day:

- 1) Press ENTER button to enter into SCHEDULE REC SETUP menu. In the sub-menu, you are requested to select MODE or RESET. To first set up, select DATE or WEEK by pressing [ENTER] button.
- 2) Press [MODE] button to be ready for editing. Then move to the location for change using direction button.
- 3) Set recording time for START and END with [ENTER] button. Recording time increases by 30 minutes whenever [ENTER] button is pressed.
- 4) After set START and END time for a day and set ON/OFF using [ENTER] button. If you set ON, it means DVMR system records in time span you set. If you set OFF, DVMR system stop recording in the time span you set.

5) After set all data, press [MODE] button once more to memorize settings you set in the system.

6) RESET is used to delete previously set recording schedule.

Select DATE, and move to the date by pressing [MODE] button, and press [ENTER] button to delete.

ALL deletes all recording schedule.

(NONE : Does not reset DATE : deletes only selected date ALL : deletes all)

7) When all input is ended, press [MENU] button to come back to SCHEDULE REC SETUP.

NOTICE : To move the cursor in SCHEDULE RECORD SETUP menu , RESET should be set at NONE.

2. Scheduled recording by a day of the week :

Recording is activated on a day of the week at the time set in advance. To set schedule for a day of the week, first select WEEK in MODE of SCHEDULE REC SETUP by pressing [ENTER] button.

Set recording time for each day of the week as the procedure for Scheduled Recording for a day.

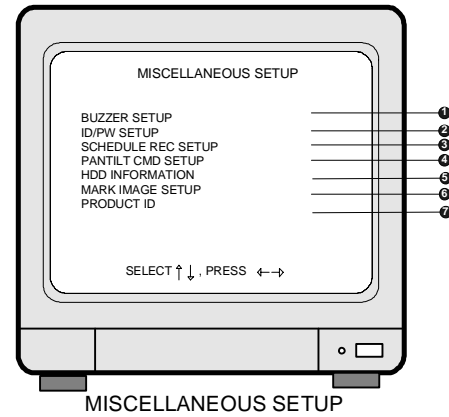
5. Operation

8. MISCELLANEOUS SETUP

1) BUZZER SETUP : Sets different kinds of BUZZER ON/OFF.

BUZZER SETUP is available for each group as follows.
 SYSTEM BUZZER : All of followings
 BUTTON BUZZER : Buzz when button is pressed
 ALARM BUZZER : Buzz when alarm is activated
 MOTION BUZZER : Buzz when motion is detected
 LOSS BUZZER : Buss when video is lost

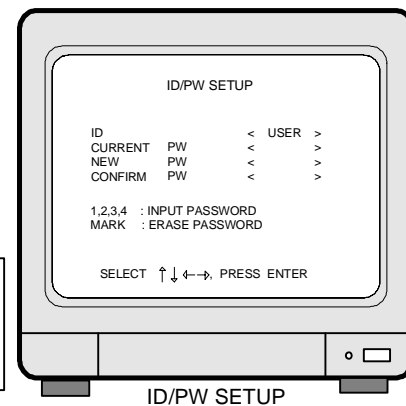
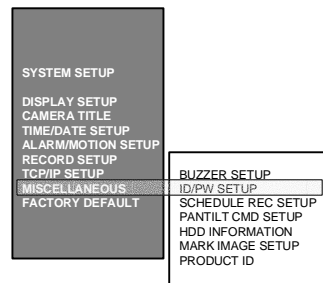
You can set all buzzer at ON or OFF at once by setting SYSTEM BUZZER or each group of BUZZER independently by setting from BUTTON BUZZER to LOSS BUZZER one by one. Any way, BUZZER is activated just in case you set at ON in corresponding group of BUZZER SETUP.



2) ID/PW SETUP : Sets User ID and PASSWORD.

If you enter into SETUP menu with USER ID, you have a certain limitation in parameter setting. You can not change setting fro recording or other important parameters with USER ID.

Only in case you entered into SETUP menu with ADMIN ID, you can change all settings including recording parameters.



- 1) In ID/PW SETUP, first select kind of ID, that are, USER or ADMIN, by pressing [ENTER] button.
- 2) With [UP] and [DOWN] button, move to CURRENT PW and press [ENTER] button and then input current password. After input password, press [ENTER] button again. Then move to NEW PW by pressing [DOWN] button. And press [ENTER] to input new password to which you want to change. Then press [ENTER] button. Then move to CONFIRM PW and input new password again to confirm it.
- 3) Password you will input must consist of 1 to 8 digits number and each digit is from 1 to 4. You can not use other buttons on the front panel for password.

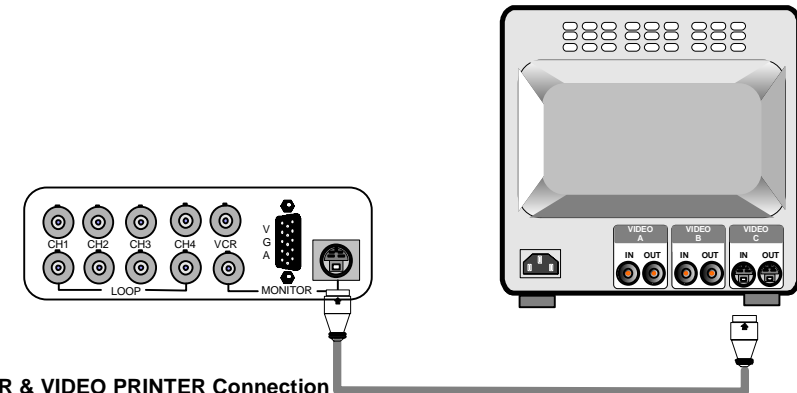
Notice : In the very first setup stage, the ADMIN PASSWORD is "1", and USER PASSWORD is "2".

Change PASSWORD as soon as this product is purchased.

4. Installation

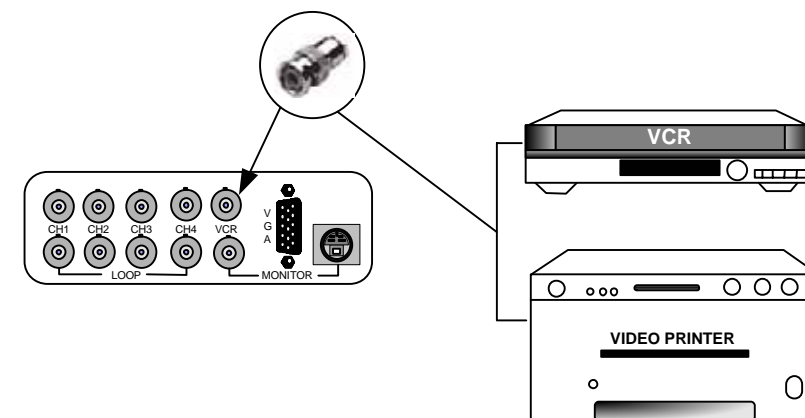
3) Monitor (S-VHS) Connection

Connect S-VIDEO Monitor to MONITOR OUT(S-VHS) on the Rear Panel of the system.



4) VCR & VIDEO PRINTER Connection

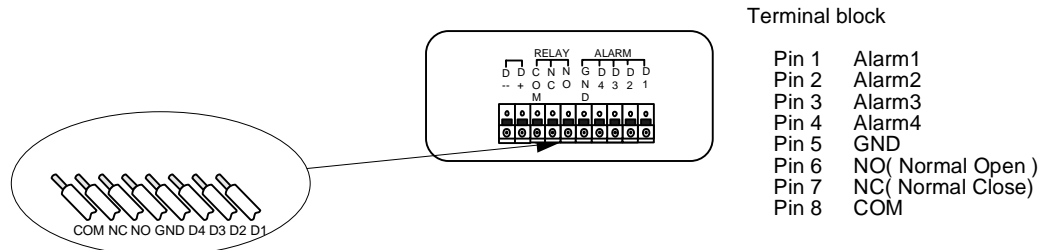
Connect VCR or VIDEO PRINTER to VCR OUT on the Rear Panel of the system.



4. Installation

5) Sensor Connection

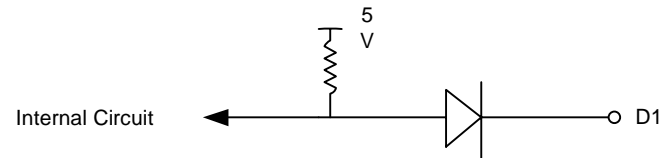
Connect the Sensor to the SENSOR INPUT/OUTPUT on the Rear Panel of the system



Relay output : COM+NC, COM+NO OR COM+NC+NO

Alarm input : Short-circuit between Alarm1, Alarm2, Alarm3 or Alarm4 and GND is recognized as alarm.

NOTICE : Sensor input is RECOGNIZED as LOW when alarm signal is on a level with GND, and it is recognized as HIGH when alarm signal is FLOATING or 5V. Following is internal circuit.



Thus, there is a danger of damage, when the sensor input goes to a Negative level or voltage higher than 5V.

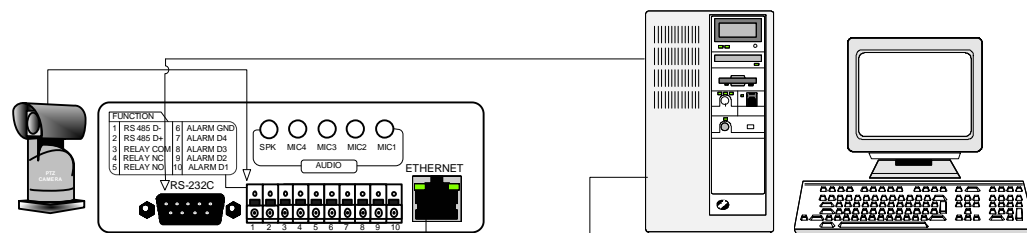
6) Network Connection

RS-232C : Connect to PC to operate DVMR

RS 485 : Connect to PTZ camera

AUDIO : 1 audio input/channel, 1 audio output from selected channel.

RJ-45 (ETHERNET) : Connect to LAN, WAN or Internet



For more details, refer to arrangements RS-232c pins in page 32.

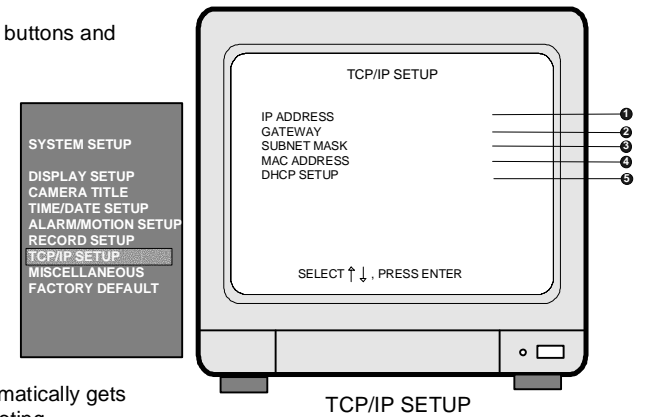
5. Operation

7. TCP/IP SETUP

TCP/IP option of this DVMR system enables user to see live pictures and recorded pictures via internet line, far apart from DVMR unit. To see live pictures or recorded pictures of DVMR, users must assign IP address into DVMR together with Gateway and Subnet mask first, and then install Remote Viewer Program included in the package on client PC.

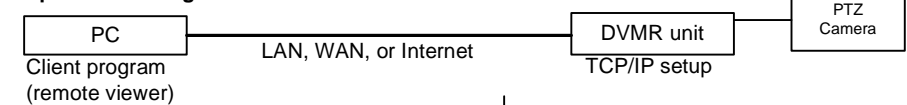
For detail procedure for installing Remote Viewer Program and setting up, refer to manual for Remote Viewer program included in the package.

- 1 IP ADDRESS : Enter numbers using direction buttons and press [MENU] button.
- 2 GATEWAY : Enter numbers using direction buttons and press [MENU] button.
- 3 SUBNET MASK : Enter numbers using direction buttons and press [MENU] button.
- 4 MAC ADDRESS : It is unique ID number provided by the manufacturer, and the user should not change under any condition.
- 5 DHCP SETUP : In case you connect DVMR unit to LAN network under router/Gateway/IP sharer which has DHCP server function, set DHCP SETUP at DHCP, and DVMR unit automatically gets IP data automatically during the process of booting.

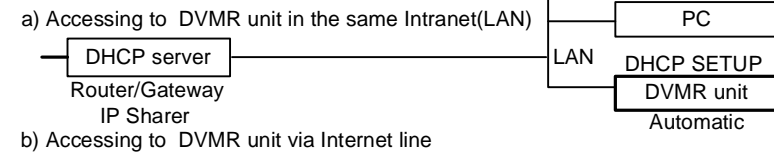


In case you connect DVMR unit to leased line with static IP, Router/Gateway connected ADSL(with static IP or dynamic IP), you are requested to set DHCP at MANUAL and input IP data manually. For details, refer to Remote Viewer manual.

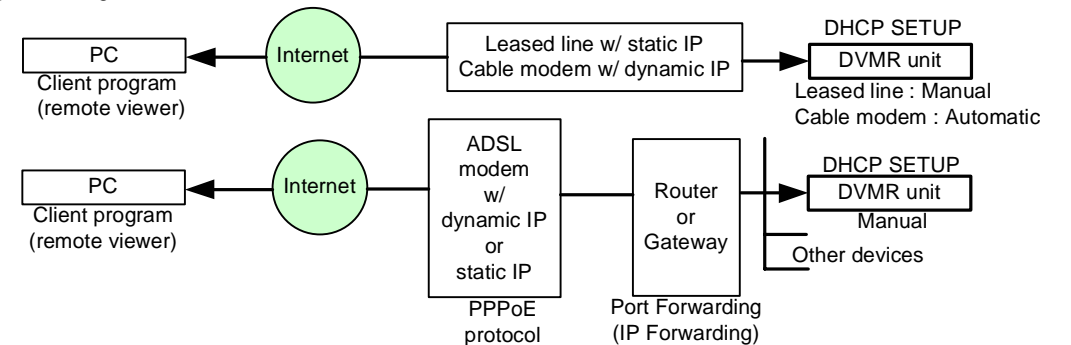
1) Concept of accessing to DVMR unit via IP network



2) Conditions of IP network



b) Accessing to DVMR unit via Internet line



For details of TCP/IP setting in DVMR unit and PC, refer to "Remote Viewer manual" included in the package.

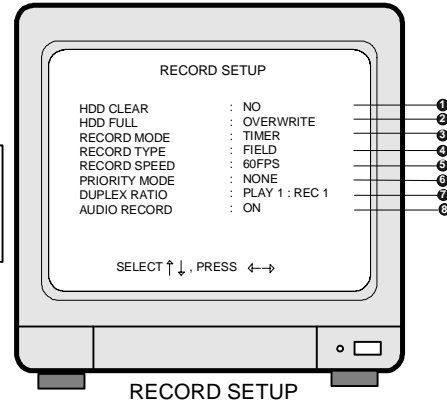
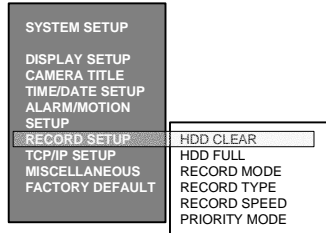
6. RECORD SETUP

RECORD SETUP is one of the most important settings in DVMR system. In this menu, you can select simplex operation or semi-duplex operation with a certain ratio between playback and recording.

The difference between SIMPLEX and SEMI-DUPLEX (selected with a certain ratio between playback and recording) operation is as follows.

Simplex : recording stopped in playback

Semi-duplex : Minimum numbers of images from each channel as per selected ratio recorded while it is in playback mode, even though both playback speed is lower than simplex operation or recording speed in playback is 10 to 20 fields/ sec in total. It is very important that DVMR system records several images from each channel during playback mode, if we set it at Semi-duplex mode(set DUPLEX RATIO).

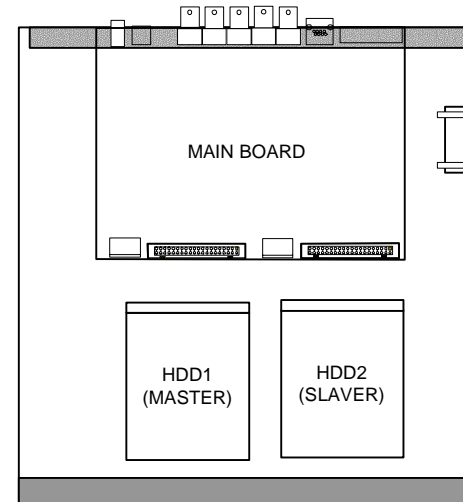


5. Operation

- 1) **HDD CLEAR** : To delete all data on HDD, select YES and press [MENU] button and [ENTER] button.
Notice : All contents of the HDD is deleted and cannot be restored.
 As times go by, HDDs in a DVMR unit will have bad sectors one after the other. Pictures to be recorded in bad sectors shall be damaged, and you will see incomplete pictures whenever you replay. However, our DVMR unit operates normally even though there is some bad sectors in hard disk drives.
- 2) **HDD FULL** : Select OVERWRITE or STOP RECORD. If OVERWRITE is selected, it delete previous contents on HDD to overwrite when HDD is full, from old data.
- 3) **RECORD MODE**
 TIMER : Records by time. Simply say, it is continuous recording as set recording speed.
 TIMER+ALARM : Records by time or when the ALARM comes in. (POST-ALARM Functionality)
 MOTION : Records only when MOTION is detected.
 MOTION+ALARM : Records when MOTION is detected or when the ALARM comes in.
- 4) **RECORD TYPE**
 FIELD : Records images from each camera in rotation, that is multiplex recording.
 60 fields/sec at 720X240 resolution. Selected for higher resolution recording.
 QUAD : Records 4 images of 360X120 resolution from each camera simultaneously at 720X240 resolution. In total 60 fields/sec. Recommended to selected to record each channel at moving picture level.
- 5) **RECORD SPEED** : Adjusts recording frame rate : 0.1 indicates 1 field per 10 seconds. Available in various steps (60/30/15/10/5/2/1/0.5/0.2/0.1fields/sec).
- 6) **PRIORITY MODE** : Assigns recording priority of a specific channel.
 NONE : Each of 1,2,3,4 does not have priority.
 1 : Gives priority to #1 camera, and records in the sequence of 1-2-1-3-1-4-1-2....
 1,2 : Gives priority to #1 and #2 cameras, and records in the sequence of 1-2-3-1-2-4-1-2-3.
- 7) **DUPLEX RATIO** : Select SIMPLEX or DUPLEX operation. If you select SIMPLEX, recording is not done while DVMR system is in playback mode. However, it records minimum numbers of images even in playback mode, in case you select DUPLEX mode. For DUPLEX operation, select PLAY : REC ratio from 1:1 to 6:1. If you select duplex operation, DVMR system records minimum numbers of images even when it is in playback mode. If PLAY 1 : RECORD 1 is selected : Playback speed is 20 fields/sec, and recording in playback is 20 fields/sec, in total. If PLAY 6 : REOCDR 1 is selected : Playback speed is 30 fields/sec, and recording in playback is10 fields/sec, in total.
- 8) **AUDIO RECORD** : Set at "ON" to record audio from each channel (4 ch) at the same time. You can listen to one of those 4 ch in playback. You can select channel by pressing [AUD] button first and any one of [1], [2], [3], and [4] to listen in playback. Audio is not recorded when DVMR system is in playback mode. To hear audio, DUPLEX RATIO must be set at SIMPLEX, and playback speed must be in normal speed(1x). Regardless what was recording speed. Total memory space increase by audio recording in all of 4 ch is less than 5 % of memory space for recording without audio. To record audio, set recording mode at TIMER recording (continuous recording) or TIMER + ALARM recording mode with recording rate of 5 fields/sec or higher.
Audio Synch : Audio synchronizes with video just when recording speed is 5 fields/sec or more than that.

4. Installation

7) HDD connection



Connect main board and HDD using IDE HDD cable and power cable included in the package.If you install just a unit of HDD, jumper setting of HDD must be on Mater, as specified by HDD manufacturer, and you can install it at any location of HDD1 or HDD2.

In case you install 2 HDDs, one is master and the other is slave, and jumper setting must be done properly as specified by HDD manufacturer.

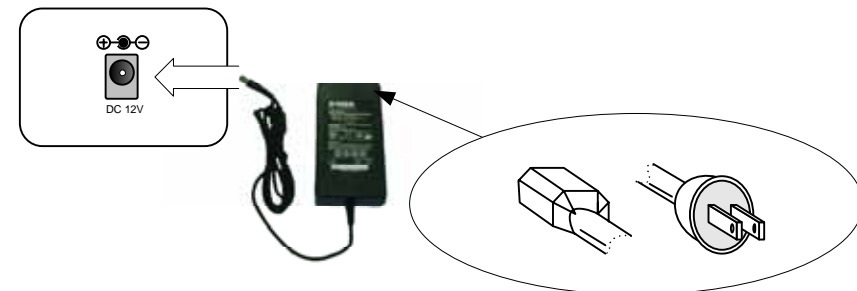
Fix HDD on the bottom of DVMR case using screws included in the package. Screws must be inserted from outside of the bottom.

Specification of HDD must be 7200 rpm one. Maxtor and IBM(Hitachi) are mostly recommended.

Notice : Formatting before installation is not required, because DVMR system automatically detects HDD and formats. In the first operation after installation of HDD, first clear all data on HDD and set at FACTORY DEFAULT in SETUP menu of DVMR system, whether it is brand new HDD or not.

8) Power Connection

Connect the power to the POWER CONNECTION on the Rear Panel of the system, and turn on the switch.



Notice : To turn off DC power switch on the front panel of DVMR case, be sure to press [MENU] button first. If you press [MENU] button, DVMR system stops recording, and you can cut power to DVMR unit while HDD head is not in writing mode. It is necessary to press [MENU] button first and turn DC power switch off to protect HDD head from being damaged and eliminate possibility of mal-function of DVMR unit.

9) Turn on the POWER and Log-in to the system

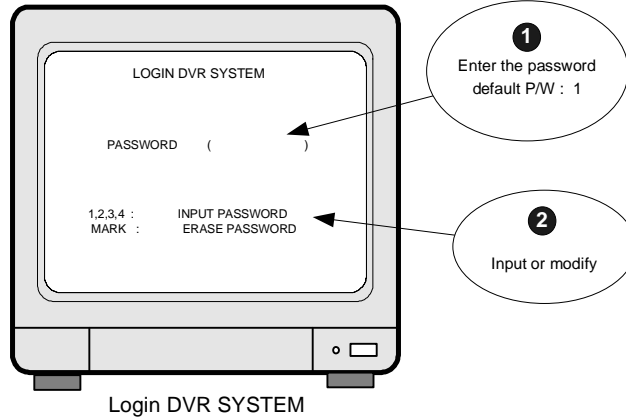
Follow direction in the Log-in part of this manual to input the PASSWORD and start the system. Factory default password for account manager is "1", for user "2"

10) Detail setup in SYSTEM SETUP

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

5. Operation

1. Log-in



- 1) Press [MENU] button to enter the system menu after starting the system.
- 2) LOGIN DVR SYSTEM window appears as shown on the left.
- 3) Use numbers button [1], [2], [3], and [4] button to enter password. Password consists with numbers from 1 to 8 digits.
- 4) Use [PIP] button to correct or delete you entered.

5) After input password, press [MENU] button again to enter into SYSTEM SETUP menu.

▷ If password entered matches previously set number, "ADMIN GRADE LOGIN OK" message appears. If password entered does not match previously set number "CURRENT PW INPUT ERROR" message appears.

▷ Factory default password set by manufacturer is as below.

The system is equipped with two passwords.

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

If you entered into SYSTEM SETUP menu with User password, you are allowed to change limited numbers of settings in SYSTEM SETUP menu, and you have to enter into SYSTEM SETUP menu after input Administrator password to change all settings like setting related to recording.

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

NOTICE : We recommend you to set your own password as per procedure ID/PW SETUP in page 25.

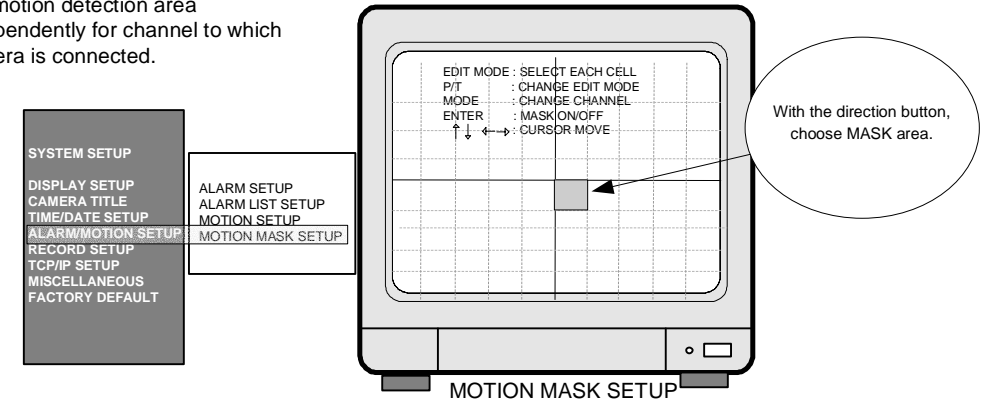
NOTICE : Be sure to memorize the changed password. In case you forgot own password, contact dealer to get master password which will allow you to enter into SYSTEM SETUP again for new password setting.

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

5. Operation

4 MOTION MASK SETUP

Set motion detection area independently for channel to which camera is connected.



1. Press [P/T] button to choose desired EDIT mode. You can select setting or clearing cell by cell, block by block, vertical line, horizontal line, or all cells.
2. Use [LEFT] or [RIGHT] button to select motion detection area, and press [ENTER] button to set. Cells displayed in green color represents they are motion detection area, and the rest is no detection area.
4. Detected area is indicated in green, and no detection area is indicated as colorless.
5. Press [MODE] button to select channel (1,2,3,4,quad) to select channel you want to set. Whenever [MODE] button is pressed, it changes channel (camera tile on the bottom of display) is changed in the sequence of 1, 2, 3, 4, Quad.

Setup is possible only in the full screen mode.

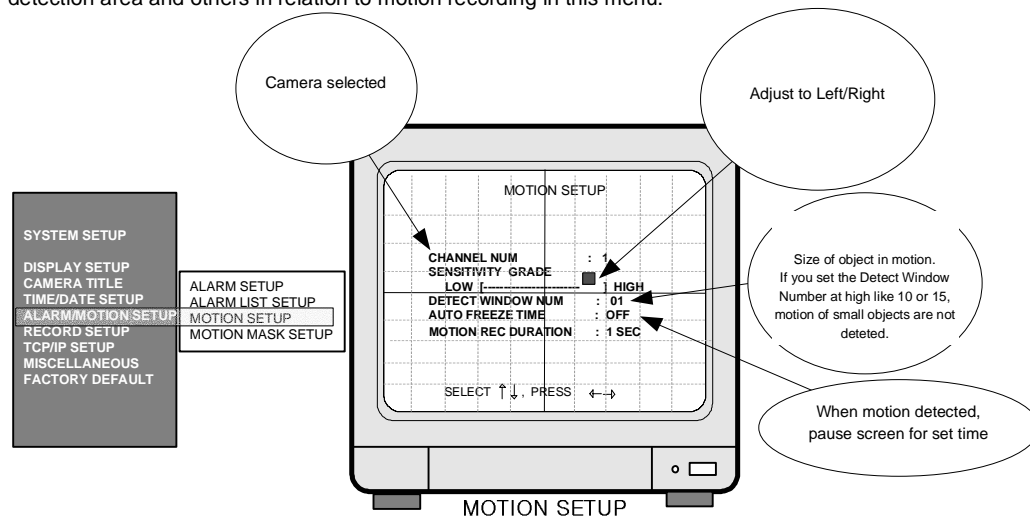
- ▷ SELECT VER LINE : Select all cells in a vertical line.
- ▷ CLEAR VER LINE : Clear all cells in a vertical line.
- ▷ SELECT HOR LINE : Select all cells in a horizontal line.
- ▷ CLEAR HOR LINE : Clear all cells in a horizontal line.
- ▷ SELECT BLOCK : Select by BLOCK. When [ENTER] button is pressed, "SELECT BLOCK START" is displayed on the top.
- ▷ CLEAR BLOCK : Clear the BLOCK. Then select blocks using direction buttons. and press [ENTER] button to set.
- ▷ SELECT ALL CELLS : Set all cells.
- ▷ CLEAR ALL CELLS : Clear all cells.

5. Operation

- ▶ Move to alarm number in the list using [UP] and [DOWN] button, and press [MODE] button to mark ^{**}.
- 2) PAGE : Deletes current PAGE.
- 3) ALL : Deletes ALL.
- 4. GOTO : Starts playback from the marked item in the list.
- ▶ Move to an item in the list using [UP] and [DOWN] button, and press [MODE] button to mark.

3 MOTION SETUP :

In MOTION SETUP, you can set Sensitive of motion in 10 steps, detection window number, motion detection area and others in relation to motion recording in this menu.



CHANNEL NUM : Camera number for which you are going to change settings related to motion recording. Using [LEFT] or [RIGHT] button, choose channel.

SENSITIVITY : Adjusts motion Detection Sensitivity. (Low sensitive ← → High sensitive)

DETECT WINDOW NUM : DVMR system detects moving objects bigger than DETECT WINDOW NUM. In motion recording mode, cell with violet color represents motion detected cell. Can choose from 1 to 20. If DETECT WINDOW NUM value is set at 5, motions with 5 or more than 5 cells in numbers of cell detected (violet color) are detected. When you set DETECT WINDOW NUM, give careful attention to the size of object displayed on monitor, because it is practically depends on focal length of camera and how far moving object is apart from camera. If it is set at too big value, small object is not detected.

AUTO FREEZE TIME : When MOTION is detected, the screen freezes for set time automatically, buzz in case you set MOTION BUZZER/BUZZER SETUP at ON. Not to use this functionality, set at OFF. Setup Time : 1,2,3,5,10 SEC. Value you set at one of 4 channel is applied to all other channels.

MOTION REC DURATION : Sets duration of recording when a motion is detected. Set value from 1 sec to 3 minutes according to frequency of motion, and FACTORY DEFAULT value recommended by manufacturer is 1 sec. Motion duration starts from the time motion detected.

5. Operation

2. RECORD

1. PLAY

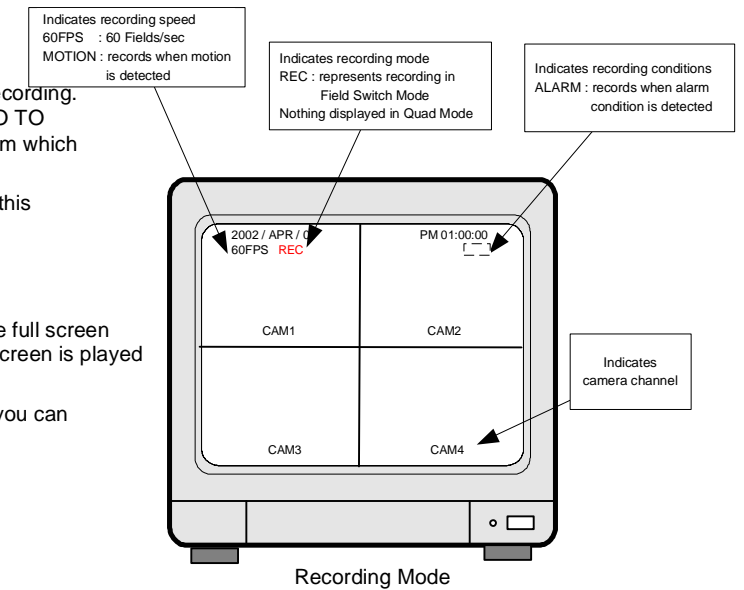
Changes to Playback Mode from Recording. Press [PLAY] button to enter into GO TO menu, and you can set time/date from which you can start playback.

Refer to Playback part (page.13) of this manual for details.

2. MODE

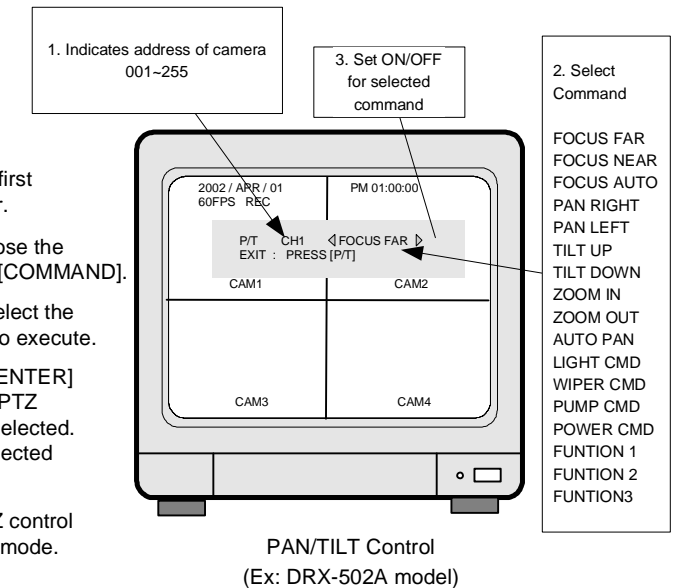
When [MODE] button is pressed, the full screen of each channel and quarterly split screen is played by turns.

With number button from [1] to [4], you can select channel of full screen.



3. P/T

1. Press [P/T] button, and you will see first command displayed on half-tone bar.
2. Use [UP] and [DOWN] button to choose the address of camera shown in front of [COMMAND].
3. Use [LEFT] and [RIGHT] button to select the command of PTZ camera you want to execute.
4. After you select a command, press [ENTER] button for a certain period time, and PTZ camera will move as per command selected. While you press [ENTER] button, selected command is executed.
5. Press [P/T] button again to exit PTZ control mode, and come back to recording mode.



PAN/TILT Control (Ex: DRX-502A model)

5. Operation

4. PICTURE IN PICTURE (PIP)

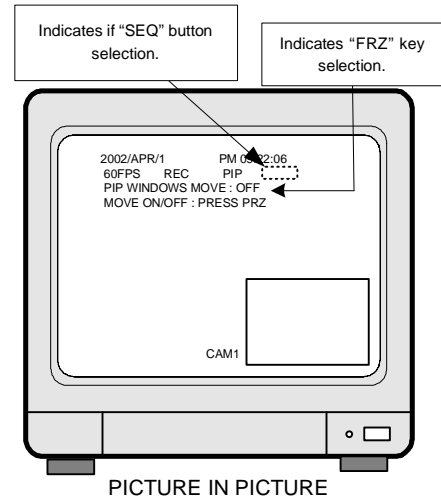
1. In live view, you can select full screen of each channel by pressing numbers button from [1] to [4]. button to select a camera

NOTICE : PIP is not available in quarterly split screen and playback mode.

2. Press [PIP] button to see small picture in picture in full screen.

3. With [UP] and [DOWN] button or numbers button from [1] to [4], select the camera channel displayed in full screen, and [LEFT] and [RIGHT] button to select the channel of small screen.

4. Press [SEQ] button to make the image in smaller screen rotate.



PICTURE IN PICTURE

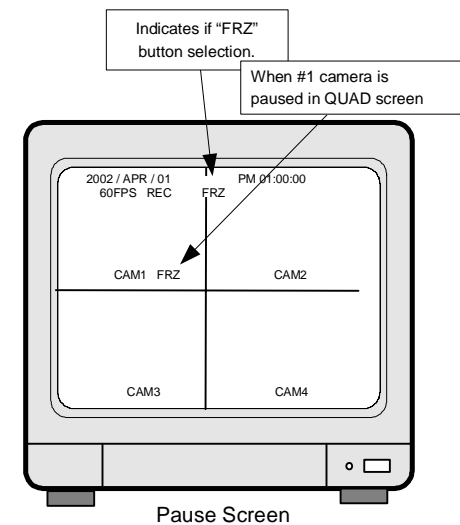
▶ To change the location of smaller screen, press [FRZ] button and use [UP], [DOWN], [LEFT] and [RIGHT] buttons to move to desired location. When you press [FRZ] button, "PIP WINDOW MOVE : ON" message is displayed on top of screen.

5. FRZ

1. Live full screen pauses when [FRZ] button is pressed.

2. To pause quarterly split screen one by one, press [FRZ] button, and press numbers button [1], [2], [3], or [4] button to select channel to be frozen. On the right of camera title, "FRZ" message is displayed in the channel you selected, and live screen of channel will pause until you press [FRZ] button again.

NOTICE : When [FRZ] is pressed, numbers button or [MODE] button do not work.

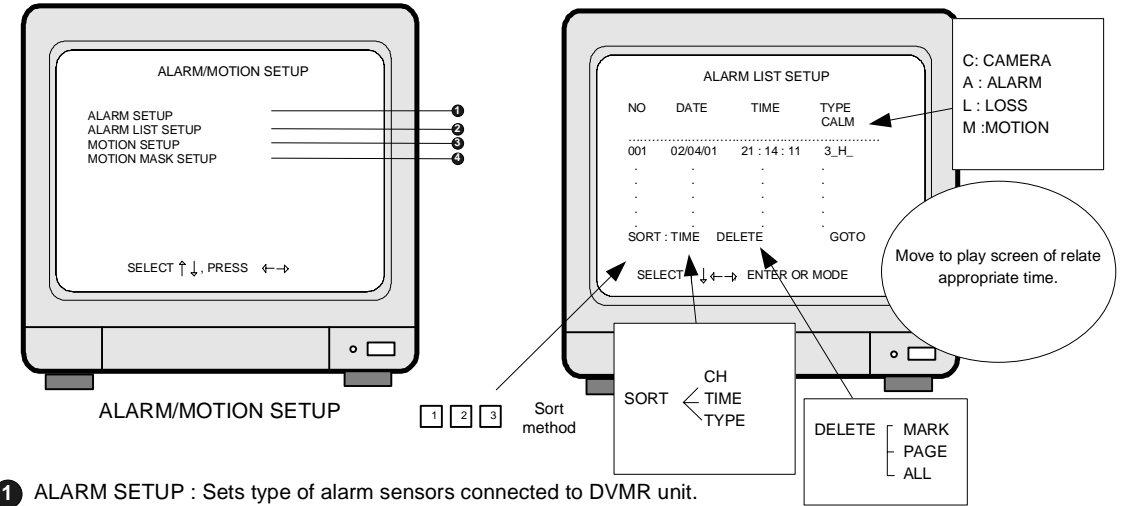


Pause Screen

To move to full screen of each camera, press [FRZ] button once more to end Freeze mode.

5. Operation

5. ALARM/MOTION SETUP



1 ALARM SETUP : Sets type of alarm sensors connected to DVMR unit.

OFF : No alarm sensor is connected.

NC : Normal Closed alarm sensor. When an event happens, Contact is opened.

NO : Normal Open alarm sensor. When an event happens, Contact is closed.

ALARM DURATION : Duration of recording, when an ALARM is activated. Counts from the point alarm activated.

SELECT LIST TYPE : Select type of event to be enlisted in the event list. "A" indicates Alarm, "L" indicates Loss, and "M" indicates Motion. You can select NONE if you do not want to have event list, and ALM if you want all of Alarm, Loss and Motion are enlisted in event list, by pressing [LEFT] and [RIGHT] button.

▶ ALARM POP-UP : When an alarm is activated, display screen is switch to full screen of image from channel activated alarm, and a color of camera number is changed to red. If an alarm is activated from 2 channels, display screen is changed to quarterly split screen (Quad screen), and a color of camera number of relevant channel is change to red.

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 helpful to manage DVMR system to its full performances.

1. With [LEFT] and [RIGHT] button, select SORT, DELETE or GO TO.

2. SORT

Press [ENTER] button to select submenu of SORT ,that are CH ,TIME and TYPE.

1) CH : Sort by CHANNEL 2) TIME : Sort by TIME 3) TYPE : Sort by TYPE

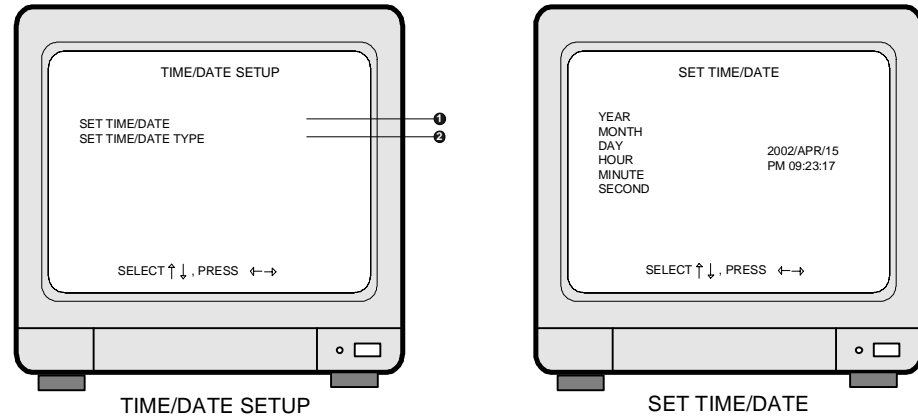
3. DELETE

Press [ENTER] button when DELETE is highlighted, and select MARK, PAGE or ALL using [LEFT] and [RIGHT] button and press [ENTER] button.

1) MARK : Deletes marked item in the list.

5. Operation

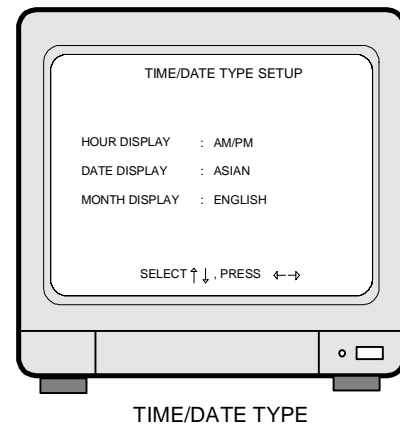
4. TIME/DATE SETUP



1 SET TIME/DATE : Can set year/month/time/minute/second.
Use [UP] and [DOWN] button to item among Year/Month/Time/Minute/Second and use [LEFT] and [RIGHT] button to change the value.

2 SET the notation of TIME/DATE :

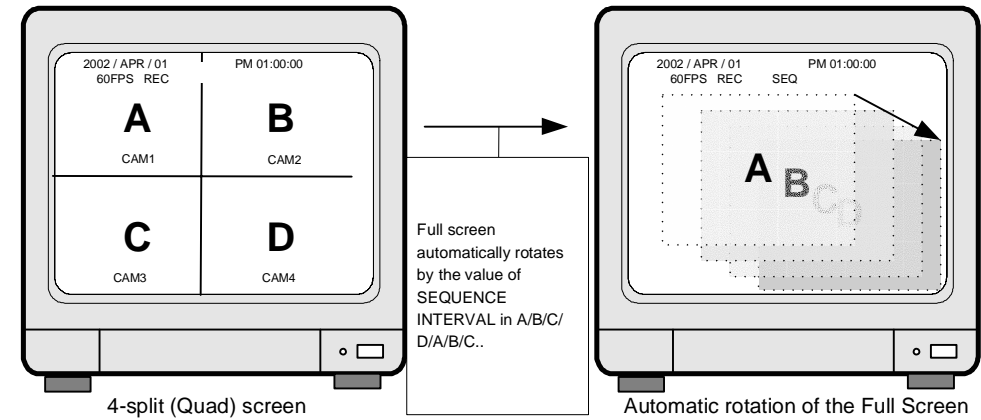
- 1. HOUR DISPLAY :
Changes to AM/PM or 24hour time indication
- 2. DATE DISPLAY :
Converts into Asian type/American type/European type
- 3. MONTH DISPLAY :
Month indication is changed to English or Number



5. Operation

6. SEQ

- 1. In live full screen, press [SEQ] button to make pictures from each channel rotate.
 - 2. It does not operate in quarterly split screen.
 - 3. During automatic rotation, press [SEQ] button again to stop automatic rotation.
 - 4. During automatic rotation, press [MODE] button to stop automatic rotation and move to quarterly split screen.
- ▷ To change the time interval of the automatic rotation, change the value of SEQUENCE INTERVAL as stated in page 16. It is possible to set at any value from 1 sec to 99 sec.



7. Sensor Recording(Alarm recording)

- 1) When there is sensor input, the recording starts.
- 2) It records for preset period of time, that is, for DURATION time.
For details, refer to RECORD MODE/RECORD SETUP in page 23 and ALARM/MOTION SETUP in page 20.

8. Scheduled Recording

Records by date and by day of the week.
For details, refer to SCHEDULE REC SETUP/MISCELLANEOUS SETUP in page 26.

9. Recording by MOTION DETECTION

Refer to ALARM/MOTION SETUP in page 20 to 22.

10. NOTICE

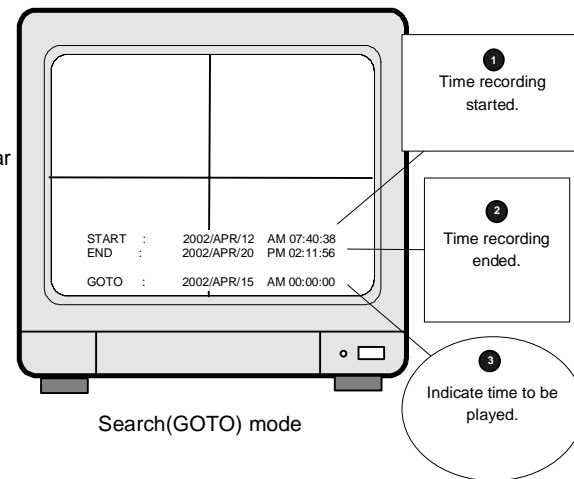
- 1) Recording is stopped when it is on SYSTEM SETUP mode.
- 2) Recording is stopped during playback, or search in playback mode.
- 3) Recording is not possible if no camera is connected.

5. Operation

3. Play

1. Playback setup

- 1) Press [PLAY] button to begin playback.
- 2) Display screen as shown on the right will appear
- 3) Press [PLAY] button again to start playback from start of recording.
(To start from a specific time, first set the GO TO time before press [PLAY] button.)
- 4) To come back to recording mode, press [PLAY] button again.



2. GOTO time setting

- 1) If you want to start playback from the point you want, set time and date.
- 2) Using [UP], [DOWN], [LEFT] and [RIGHT] button, set desired time from which you want to start playback.
- 3) Then press [PLAY] button to start playback.

NOTICE : During playback or setting GO TO time, recording is stopped

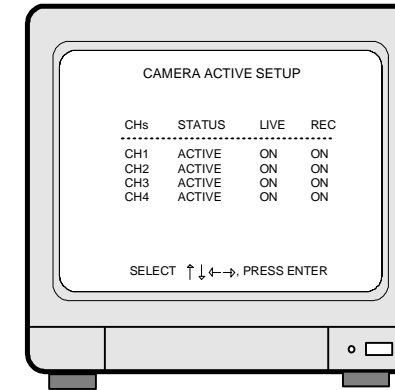
NOTICE : When value that is out of the range of start or end of data is entered, it starts from start of recording.

NOTICE : When value is in the range of START and END, but there is no recorded pictures at the set time, playback starts from the picture which is the nearest to set time.

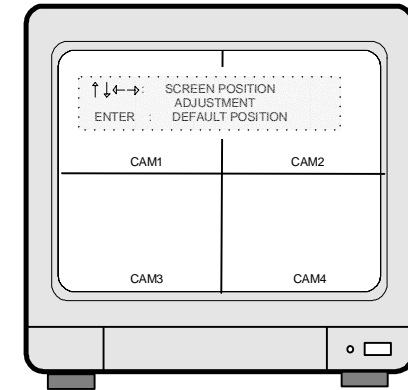
3. Pausing and single frame advanced

- 1) During playback, press [FRZ] button to pause. (Will replay when pressed once more)
After you press [FRZ] button, 'PAUSE' message is displayed on top of screen.
- 2) After you press [FRZ] button, press [SEQ] button to advance single field forward or backward. To move field by field forward or backward, press [LEFT] or [RIGHT] button.
- 3) It is available both in live view mode and playback mode. To exit PAUSE mode, press [SEQ] button and [FRZ] button.

5. Operation



CAMERA ACTIVE SETUP



SCREEN POSITION ADJUSTMENT

3 ACTIVE CH SETUP :

With direction button, move to item to be changed, and press [ENTER] button to select ON or OFF.

1. STATUS : In normal cable condition it is indicated as ACTIVE, and when the cable is disconnected or has problem, it is indicated as LOSS.
2. LIVE : Decides whether to show LIVE screen image or not.
3. REC : Decides whether to record relevant channel or not.

4 SCREEN POSITION SETUP

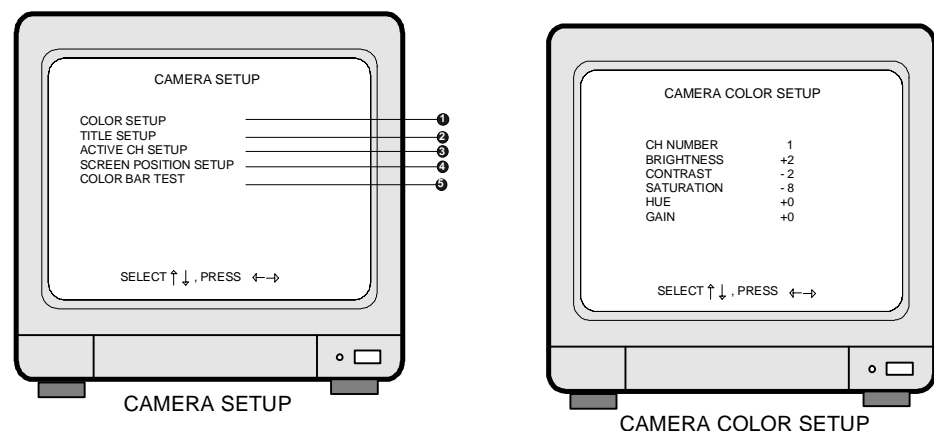
Use direction button to move the full screen according to the user's needs. Some monitors are used with wrong settings and show pictures not in the middle of display unit. In this case you need adjustment, and you can do it in SCREEN POSITION SETUP.

5 COLOR BAR TEST : COLOR BAR CHART is generated.

Used for adjusting the monitor

5. Operation

3. CAMERA SETUP



1 COLOR SETUP : Adjust Camera Image

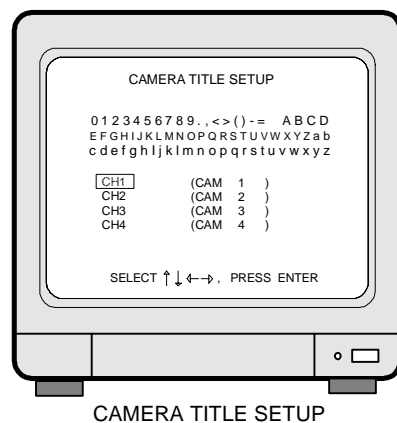
- CH NUMBER : Select camera
- BRIGHTNESS : Adjust screen brightness (-31~ +32)
- CONTRAST : Adjust color contrast (-31~ +32)
- SATURATION : Adjust color saturation (-20~ +32)
- HUE : Adjust color hue (-31~ +32)
- GAIN : Adjust image signal level (-31~ +32)

▶ Right adjustment of each element in COLOR setup will increase picture quality displayed.
We recommend you to adjust each element of COLOR SETUP for cameras and monitor to be connected to the DVMR unit for better appearance.

2 TITLE SETUP : Input TITLE of each camera

- 1) Use [LEFT] or [RIGHT] button to select CHANNEL and press [ENTER] button.
- 2) Go to channel you want to change using [LEFT] or [RIGHT] button. Then change title of selected channel using [UP] or [DOWN] button.

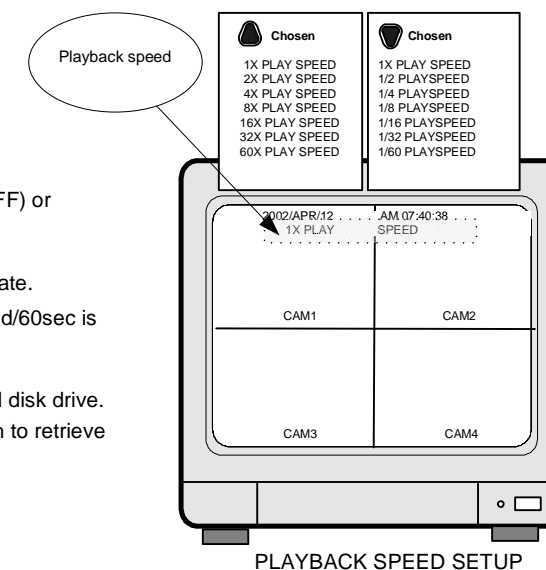
When modification is finished, press [MENU] button to come back to the MAIN MENU.



5. Operation

4. Playback Speed Setup

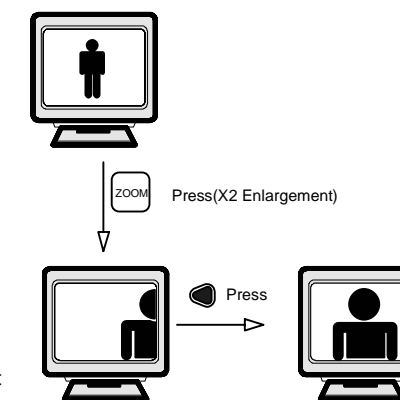
- 1) During playback , press [SPEED] button.
 - 2) Display screen as on the right will appear.
 - 3) Use [LEFT] or [RIGHT] button to move forward (FF) or backward (REW).
 - 4) Use [UP] or [DOWN] button to select the speed rate.
(High speed up to x60 and slow speed up to 1field/60sec is available.)
- ▶ We recommend you to install 7200rpm EIDE hard disk drive. 5400rpm EIDE hard disk drive is not good enough to retrieve recorded data in high speed playback mode.



5. Display Enlargement.

- 1) Choose camera by pressing numbers button.
- 2) Press [ZOOM] button, during Playback or PAUSE mode.
- 3) The display will enlarge by 200%
- 4) Use [up], [down], [left] AND [right] buttons to move the area enlarged.
- 5) Press [ZOOM] button again to go back to Playback or FRZ mode.

NOTICE : Execute when it is in FULL SCREEN of each channel.
When [SPEED] button is pressed, ZOOM does not work.



6. MARK IMAGE (Internal backup) SETUP

MARK IMAGE FUNCTION is very unique and useful function, because it enables you to store pictures you selected in playback mode separately and protect those pictures from being erased even though HDD is in the process of being overwritten.

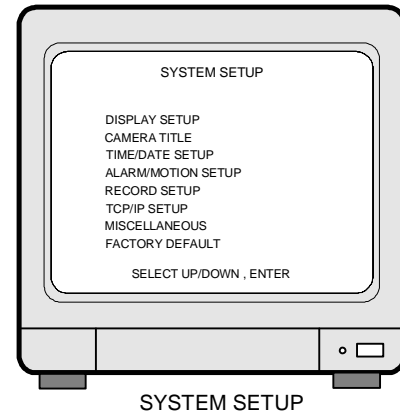
During Playback, press [MARK] button and choose pictures you want to store separately using [LEFT] and [RIGHT] button. Pictures you marked shall be protected from being overwritten.

For detail, refer to MARK IMAGE SETUP/MISCELLANEOUS SETUP in page 28.

4. System Setup

1. Basic Operation

- 1) In SYSTEM SETUP menu, you can set variety of parameters required for operation of DVMR unit to its best performance for your application.
- 2) To enter into SYSTEM SETUP, first press [MENU] button, and you are requested to enter password (administrator password).
- 3) Input password and press [MENU] button to enter into SYSTEM SETUP.
- 4) Press [UP] or [DOWN] button to select menu item and press [ENTER] to enter into submenu.
- 5) In submenu, move to item you want to set using [UP] or [DOWN] button and change value using [LEFT] or [RIGHT] button.
- 6) After you change value, you can move to next item and change as you want in the same way.
- 7) To go back to the very first SETUP condition recommended by manufacturer, set at FACTORY DEFAULT.



You can change setting as you like, but we do recommend you to use DVMR unit with setting done by manufacturer before delivery.

When you first install HDD after you purchase DVMR unit or add one more HDD after use for a certain period of time, first set clear all data on HDD whether it is brand new HDD or used one and then set at FACTORY DEFAULT.

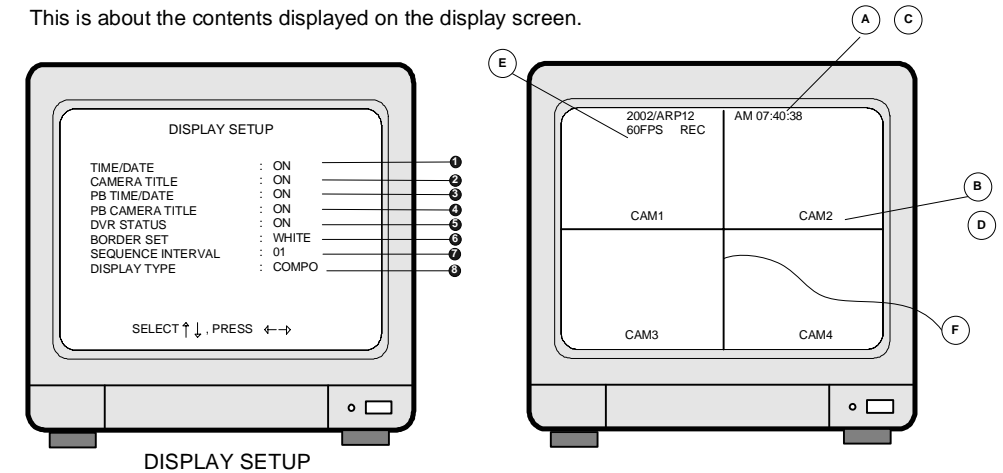
You can set at FACTORY DEFAULT all in one (as a whole) or group by group. When cursor is at ALL SETUP, you can set at ON or OFF by pressing [ENTER] button. If you set ALL SETUP at ON, all groups of settings are set as per FACTORY DEFAULT recommended by manufacturer. If you set ALL SETUP at OFF, then you are requested to set each group of settings separately one by one, ON or OFF, and groups of settings set at ON shall be reset whenever you set at FACTORY DEFAULT. To reset, you have to select ALL SET or each group of settings ON or OFF, and then move to RESET NOW and press [ENTER].

- Items remain unchanged when FACTORY DEFAULT is selected.
- | | |
|-----------------------------------|-----------------------|
| 1. value of TIME/DATE SETUP | 2. Date stored on HDD |
| 3. Marked image (Internal backup) | 4. ADMIN password |
| 5. ALARM LIST SETUP | |

▸ We recommend users to set at FACTORY DEFAULT in the first operation, and when you replaced EPROM for updating DVMR program or replaced HDD.

2. DISPLAY SETUP

This is about the contents displayed on the display screen.



- ① TIME/DATE : Date and time is indicated on LIVE screen(**A**) .
- ② CAMERA TITLE : Camera TITLE is indicated on LIVE screen(**B**).
- ③ PB TIME/DATE : On Playback screen, Date and Time is indicated(**C**).
- ④ PB CAMERA TITLE : Camera TITLE is indicated on the Replay SCREEN(**D**).
- ⑤ DVR STATUS : Indicates status of operation, such as REC/REPLAY(**E**).
- ⑥ BORDER SET : Changes the color of the border(**F**)
You can select white or black color. Default setting done by manufacturer is white color.
- ⑦ SEQUENCE INTERVAL : Sets rotating time interval of pictures . In full screen in live mode or playback mode, pictures are rotating in a certain time interval
when you press [SEQ] button, and SEQUENCE INTERVAL is for it.
(Time interval from 1 second to 99 seconds available)
- ⑧ DISPLAY TYPE : Set at COMPO if you connected Composite monitor to DVMR unit, and set at VGA if you connected VGA monitor (CRT type PC monitor) to DVMR unit, by pressing [LEFT] and [RIGHT] buttons. VGA option of DVMR unit enables users to connect CRT type PC monitor to DVMR unit, and it looks better in picture quality than TV and also we can save cost for monitor. PC monitor must support 800 x 600 resolution and multi-sink type. Our VGA option supports just part of TCT LCD monitor.