


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

STAND-ALONE DVMR

 16 Channel Digital Video Multiplex Recorder

User's Manual VER 2.0



16 channel Stand-alone DVMR

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

16 CHANNEL STAND-ALONE DVMR

ALL ABOUT IMAGE RECOGNITION & PROCESSING

DIGITAL VIDEO RECORDER
DIGITAL VIDEO RECORDER

ALL ABOUT IMAGE RECOGNITION & PROCESSING

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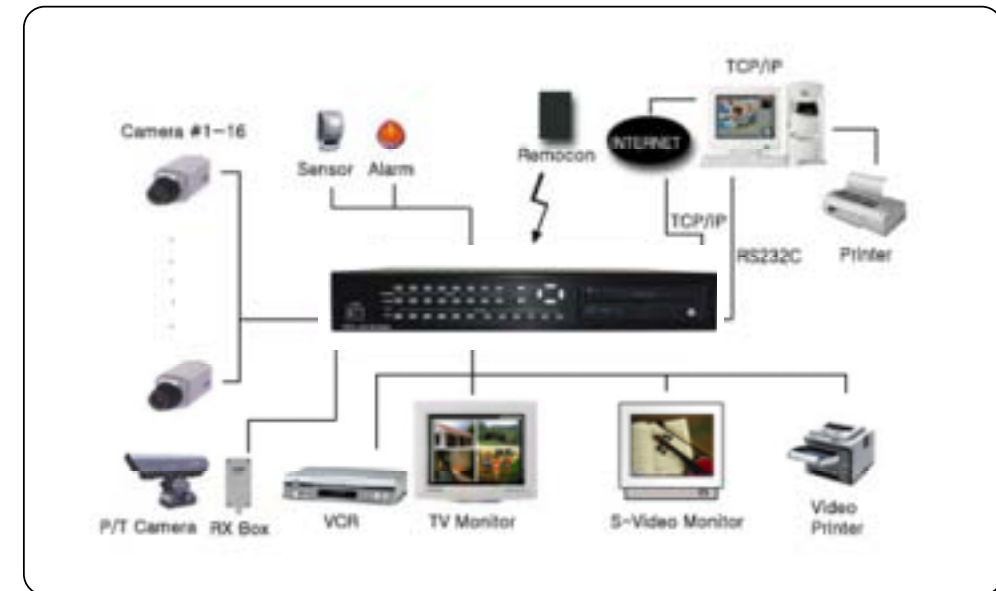
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2. Configuration of Stand-alone DVMR



3. RS-232C ASCII-code table

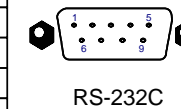
Following ASCII-code are for programmers who want to control DVMR unit via RS-232C port.
 RS-232C specification (baud rate/parity/data length/stop bit) : 57600, N, 8, 1

1 Byte ASCII-code

MODE	'D'	PIP	'I'	◀◀	'<'	CH1	'1'	CH5	'5'	CH9	'9'	CH13	'#'	MENU	'M'	UP	U
FRZ	'F'	P/T	'T'	▶	'P'	CH2	'2'	CH6	'6'	CH10	'0'	CH14	'\$'	ENTER	↵	DN	J
SEQ	'Q'	●	'R'	▶▶	'>'	CH3	'3'	CH7	'7'	CH11	'!	CH15	'%'	LEFT	H		
ZOOM	'Z'	■	'S'		'A'	CH4	'4'	CH8	'8'	CH12	'@'	CH16	'^'	RIGHT	K		

4. Arrangement of RS 485 and RS-232C pin

Pin No.	Definition
1	NC
2	RxD
3	TxD
4	SD-(RS 485)
5	GND
6	SD+(RS 485)
7	NC
8	NC
9	NC



Chapter 4 . Specification and configuration

1. SPECIFICATIONS

MODEL NO	16 channel stand-alone Digital Video Multiplex Recorder	
VIDEO I/F	INPUT	16 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, 9 SPLIT , 16 SPLIT DISPLAY
	ZOOM	LIVE & PB AVAILABLE
	PIP	AVAILABLE
	SEQUENCE	AVAILABLE
	DIAPLAY QUALITY	FULL : 720(H)X480(V) ACTIVE PIXELS/FULL MOVING PICTURE 1/16 SCREEN :180(H)X120(V) ACTIVE PIXELS
RECORDING /PLAY FUNCTION	SPEED	MAX 30 FRAME/SEC
	STORAGE MEDIA	HDD
	COMPRESSED PICTURE	JPEG
	PICTURE PRESERVATION METHOD	FIELD SWITCHER METHOD FULL SCREEN PRESERVATION
	REC. MODE	REAL-TIME/ TIME-LAPSE / EVENT/ MOTION
	TRACK PLAY	SEARCH, STILL
OTHER FUNCTION	BACK-UP	VCR, TIME LAPS VCR : VCR OUTPUT
	OTHERS	RS232C, RS485, 16 ALARM INPUT ,1 RELAY OUTPUT
	CAMERA CONTROL	PAN/TILT/ZOOM AND FOCUS REMOTE CONTROL : EXTERNAL EQUIPMENT, WIPER,PUMP,FAN AND HEATER
	CD-RW BACKUP	CD-RW DRIVE, CD-R MEDIA
	HDD EXPANSION	IN DVMR CASE : 1 HDD OPTIONAL HDD BAY SUPPORTED
MECHANICAL	OPERATION TEMPERATURE	41F~ 104F (5C~ +40C)
	OPERATION HUMIDITY	LESS THAN 90%
	IR REMOTE	BUILT-IN
	DIMENSION	19" RACK SIZE 1.5U , 66X434X360 mm
	WEIGHT	APPROX. 5KGs (WITHOUT HDD)
	POWER SUPPLY	DC ADAPTER (12V DC 5A)

About this manual

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 those are marked **NOTICE**.

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

Before reading this manual

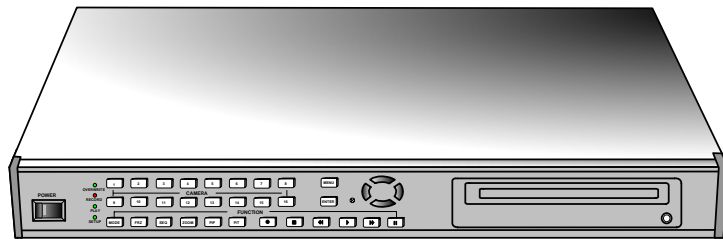
1. This document is intended for both the administrator and users of stand-alone DVMR model.
2. This manual contains information for configuring, managing and using stand-alone DVMR model.
3. Be sure to read through this manual before using this stand-alone DVMR model.
4. To prevent fire or electrical shock, do not expose the product to heat or moisture.
5. Check electricity at the place you want to install the DVMR 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.
6. 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.
7. 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.
8. For questions and technical assistance of this product, contact your local dealer.

Chapter 1 . Product Package

1-1. The contents of package

1. 16 ch stand-alone DVMR unit

Record data of pictures from camera on hard disk drive, after converting it into digital data.

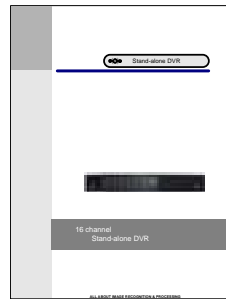


2. User manual for 16 ch DVMR

Describe how to install and operate this DVMR unit.

3. Remote controller

IR remote controller enables to operate DVMR unit apart from the unit.

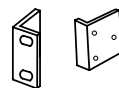


4. DC power adapter and power cable

Convert AC 110V or AC 220V into DC 12V to supply to DVMR unit.



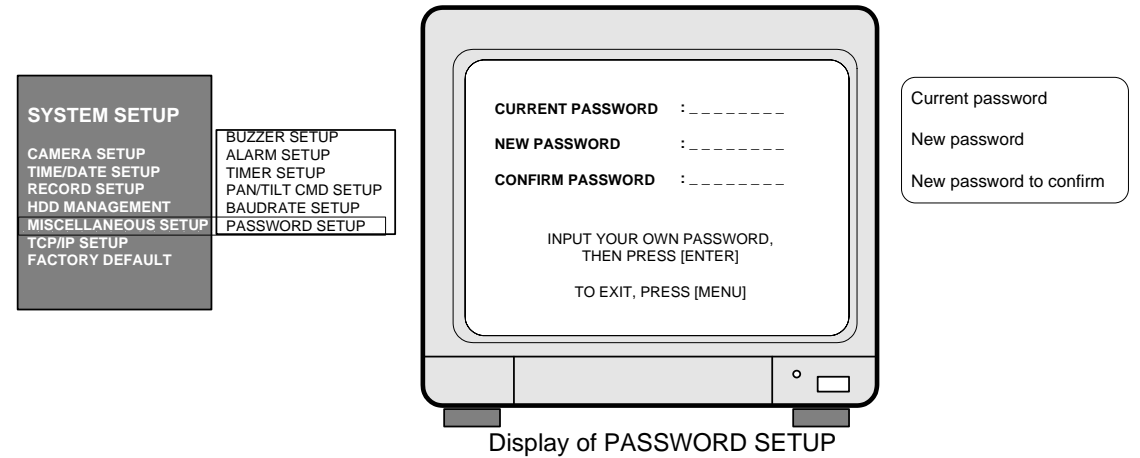
5. Accessories (Rack mount bracket and bolts)



Mounting bracket and bolts necessary for fixing DVMR unit into 19 inch rack, and batteries for remote controller.

f. PASSWORD SETUP.

To input user's own password in the first operation or to change password.



Move using [Up] and [Down] buttons and input your own password by pressing any buttons on the front of DVMR unit. Length of password is from 1 to 8. To change password, first input current password and then new password. You have to input new password again to confirm.

Notice : Password set by manufacturer before delivery(FACTORY DEFAULT) is null, and just press [MENU] and then press [ENTER] to enter into SETUP menu.

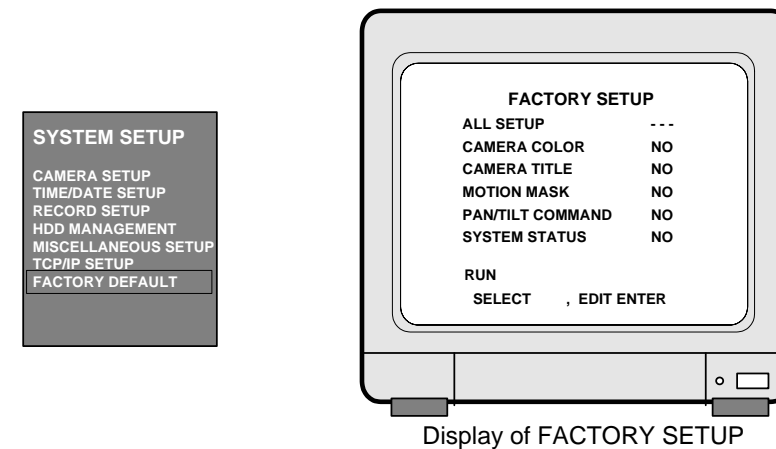
Notice : In the first operation, we recommend you to set own password. In case you forgot own password, contact dealer to know how to get into SETUP menu.

9. TCP/IP SETUP

In case TCP/IP option is included, you have to input IP address, Port number, Subnet Mask and Gateway into TCP/IP SETUP of DVMR unit. If DVMR Unit is connected to leased line with static IP, ADSL with static IP or dynamic IP, or cable modem with dynamic IP, you can access to DVMR unit via Internet line to see live pictures or search recorded pictures, far apart from DVMR unit. In case both DVMR unit and client PC are connected to the same LAN network(Intranet), you can access to DVMR unit from the client PC, but somebody outside Intranet can not access to DVMR unit via Internet line. In all cases, you have to install client program(Remote Viewer) on the client PC from which you want to access to DVMR unit. For more details, refer to Remote viewer manual for 16 ch DVMR included in the package.

10. FACTORY DEFAULT

Initialize system setup as settings recommended by manufacturer (FACTORY DEFAULT).

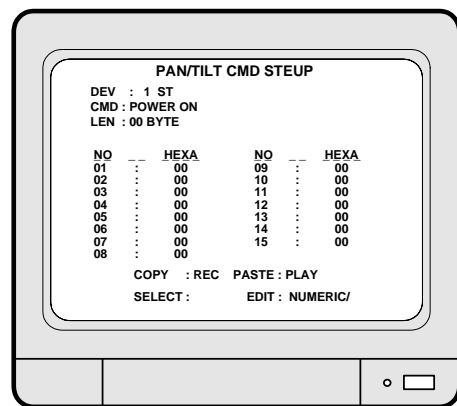
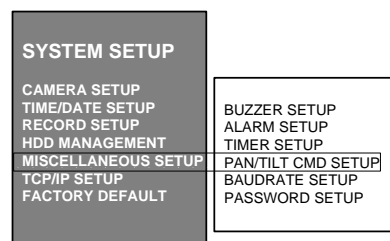


You can set all groups of settings as a whole or set them group by group. Move to menu items using [Up] and [Down] buttons and select "YES" or "NO", and then move to "RUN". Press [ENTER] button to set at FACTORY DEFAULT for selected group of settings.

Notice : When you connect or replace new HDD, set at FACTORY DEFAULT before starting to record.

d. PAN/TILT CMD SETUP.

Input protocol of PTZ camera or speed dome camera which shall be controlled by data communication via RS-485. Max. length of protocol for each command is 15 Byte, and Baud rate is settable from 1200 to 19200. Max. 4 PTZ cameras can be connected to DVMR unit.



- Setting sequence

1. DEV : From 1st to 4th.
DEV represents device(model of PTZ camera).
We can connect up to 4 cameras with different protocols. Display of PAN/TILT CMD SETUP
 2. Select command
 3. Set Byte of command : max. 15. Byte of commands not used for each device must be set at 0.
 4. Input protocol of selected command
 5. Repeat process from 1 to 4 until you complete to input protocol for all commands you need.
- * Use [Record] button to copy and [Playback] button to paste, in case there are many protocols similar to each other.

- How to input protocol

User must select commands needed for PTZ cameras (from 1st to 4th DEV), and input LEN and protocol(Hexa-code). For commands not used for your PTZ cameras, LEN value must be set at 0. Commands whose LEN are 0 are not shown when you practically control PTZ camera later.

Using [Up] and [Down] buttons, move to item you want to select or set, and use [Left] and [Right] buttons to set values.

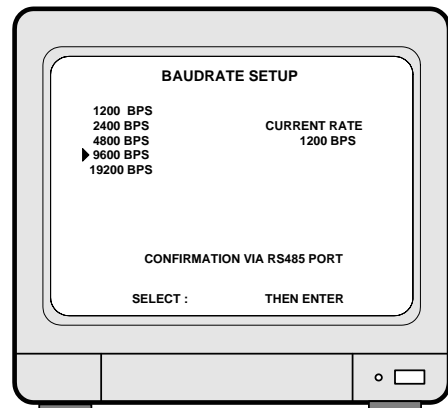
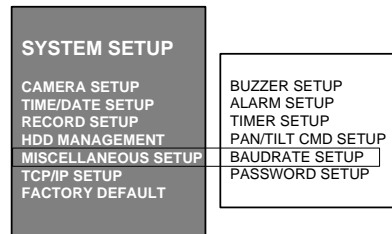
You can input protocol using numerical buttons on the front of DVMR unit or remote controller.

Following table shows buttons corresponding to each HEX-code for protocol.

HEX-code	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	0
Button on the front	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Button on remote controller	1	2	3	4	5	6	7	8	9	0,0	0,1	0,2	0,3	0,4	0,5	0,6

Note : For more details, refer to "How to incorporate PTZ protocol for 16 ch DVMR" included in the package.

e. BAUDRATE SETUP

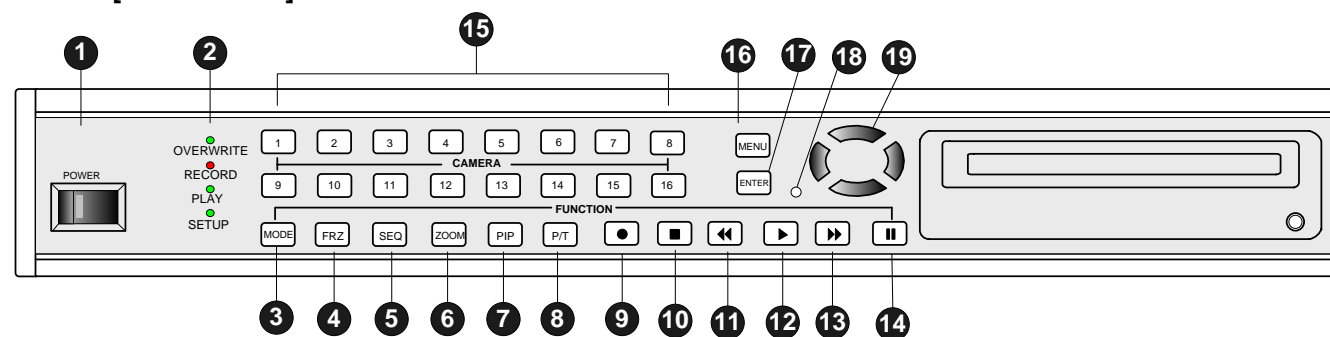


Set baudrate of PTZ camera to be connected.
(1200, 2400, 4800, 9600, and 19200 BPS)

If you connect DVMR unit to your PC by 485 to 232 converter, you can see data transmitted using program like Windows Hyper-terminal.

1-2. Name and function of each button

[Front Panel]

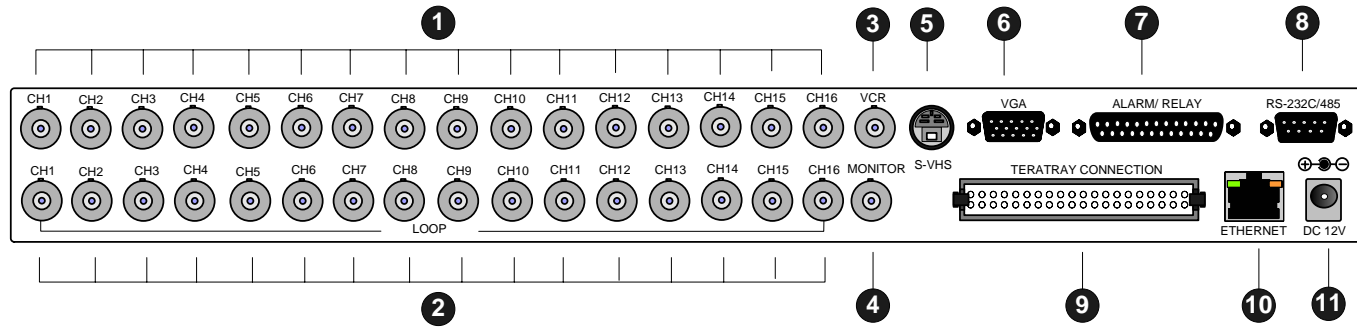


- 1. POWER SWITCH WITH LED :** DC power on-off switch with built-in LED
- 2. LED :** Indicates the status of system
- 3. MODE :** Press [MODE] button and [1], [2], or [3] to change to 4-split, 9-split, or 16-split screen, respectively.
If you press this button for a long time, it changes monitor type from(to) Composite to(from) VGA, in case DVMR unit supplied includes VGA option.
If you press this button 2 times consecutively, it changes to screen position adjustment mode. In case position of 16-split screen is not in the center of display unit, you can adjust screen position using [UP], [DOWN], [LEFT], and [RIGHT] button. After adjustment, press [MSD] button once more to exit.
- 4. FRZ :** On-off switch to freeze pictures in live mode
- 5. SEQ :** In full screen, this button shows pictures in rotation.
- 6. ZOOM :** In full screen, this button enlarges pictures two times (Possible to fix area to be enlarged using direction buttons.)
- 7. PIP :** In full screen, this button creates PIP(Picture In Picture) in rotation.
- 8. P/T :** Enter into or exit from PAN/TILT CONTROL mode
- 9. Record (●):** Records picture data on hard disk drive
- 10. Stop (■):** Stops recording or playback
- 11. Fast backward (◀◀) :** High speed playback in reverse direction in playback mode, or moving to the start of recorded data when it is in stop mode
- 12. Playback (▶▶) :** Playback when it is pressed shortly in stop mode, or playback in reverse direction when it is pressed in playback mode.
Enter into GO TO menu in case pressed in longer time in stop mode.
- 13. Fast Forward (▶▶):** High speed playback in forward direction in playback mode, or moving to the last of recorded data when it is in stop mode.
- 14. Pause (||):** Pauses when it is in palyback mode
- 15. Camera No :** Represents camera numbers. Used with MSD button or to enter numbers.
- 16. MENU :** Used to change menu in SYSTEM SETUP
- 17. ENTER :** Used as selection key in SYSTEM SETUP or changes contents displayed in live display.
By pressing this button repeatedly in live display mode, contents of display, that are, time and date, DVMR status, and camera title, is included or excluded, and you can select any one of 8 choices.
- 18. IR receiver :** If blocked up by any object, remote controller does not work.
- 19. Direction key :** Used to move in SETUP menu, or to change values

Notice : If several keys are pressed at the same time, or improper sequence in pressing buttons may cause malfunction of DVMR unit.

1-2. Name and function of each button

[Rear Panel]

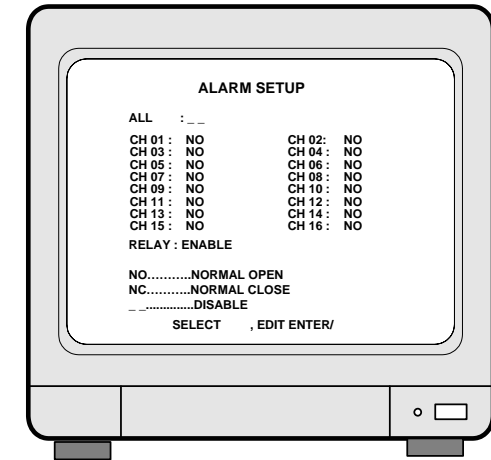
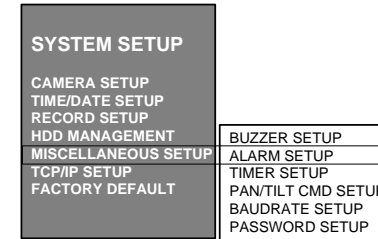


1. CH1~CH16 : Connect cameras of NTSC or PAL system up to 16
2. CH1~CH16 : Loop out from each camera from 1 to 16
3. VCR : Analog Backup output for VCR or video printer
4. MONITOR : Connect to composite monitor in NTSC or PAL system
5. S-VHS : Connect to S-VHS monitor for better quality of display
6. VGA : Connect to PC monitor
7. ALARM/ RELAY : Connect to alarm input and relay output
8. RS-232C/485 : Connect to external device of RS-232C or RS-485 protocol
(RS-232C : Control DVMR using PC keyboard, RS-485 : PTZ camera control)
9. TERATRAY CONNECTION : Connect to HDD BAY for extension of HDD space
10. ETHERNET : Connect to Ethernet port for TCP/IP option
11. D/C 12V : Port for DC 12V, 4.5A

Notice : Improper DC power supply to DVMR unit may cause damage to the system.

Notice : When connect to other devices, make sure to turn off DC power switch on the front.

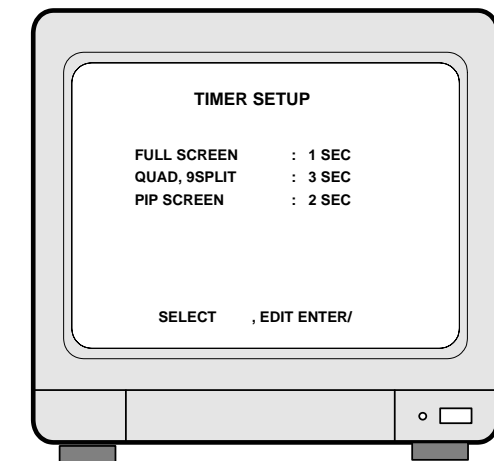
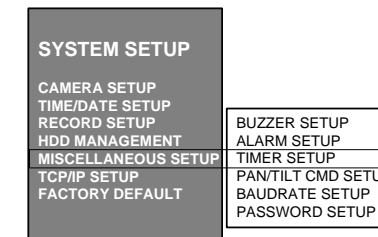
b. Set type of sensor(alarm)



Display of ALARM SETUP

Set type of alarm sensors connected to DVMR unit. Set at NO (Normal Open) or NC (Normal Close) for alarm sensors. Set at DISABLE or ENABLE for relay output. Move to item you want to change using [Up] and [Down] buttons, change type using [Left] and [Right] button. To set altogether as a whole, locate cursor at "ALL ; --" and select type you want using [Left] and [Right] button. Just exit and all setting is memorized by the system.

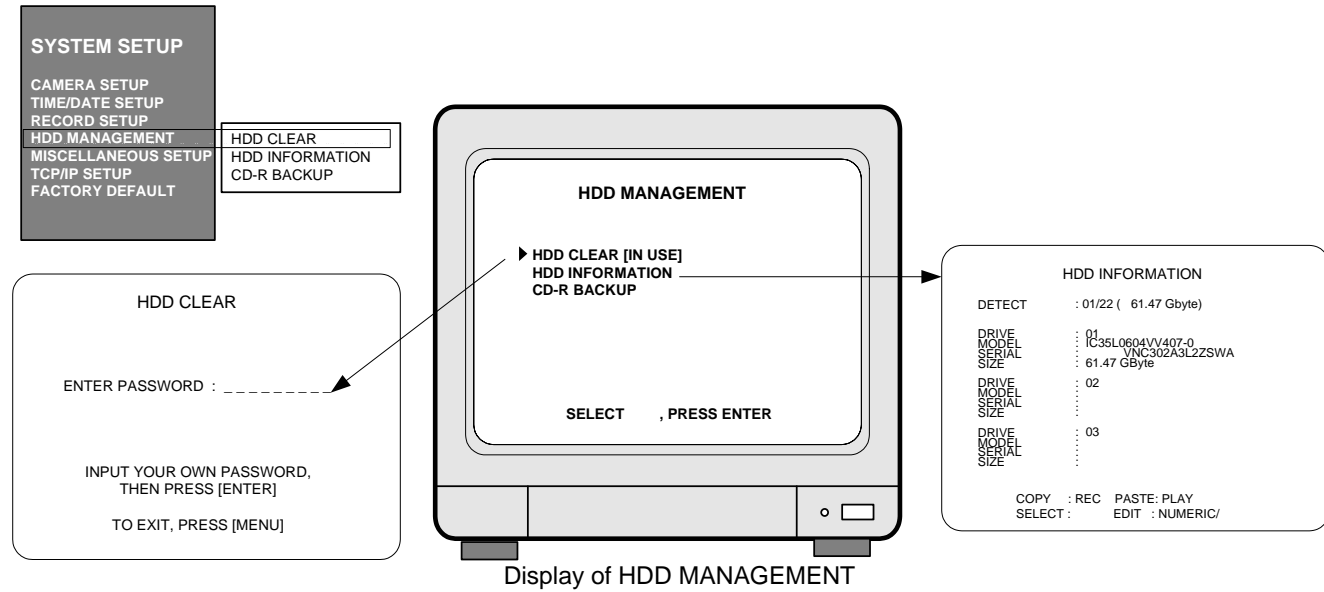
c. Time Interval Setting



Display of TIMER SETUP

Set time interval for SEQ, PIP (Picture in picture).
 FULL SCREEN : Time interval of pictures rotating in channel sequence when [SEQ] button is pressed.
 QUAD, 9 SPLIT : Time interval of pictures rotating in a certain sequence when [SEQ] button is pressed.
 Pattern of rotation in quad rotation is 1/2/3/4, 5/6/7/8, 9/10/11/12, 13/14/15/16, 1/2/3/4, and so on.
 Pattern of rotation in 9-split is 1/2/3/4/5/6/7/8/9, 1/2/10/11/12/13/14/15/16, 1/2/3/4/5/6/7/8/9, and so on.
 PIP SCREEN : Time interval of small pictures rotating in sequence when [PIP] button is pressed.

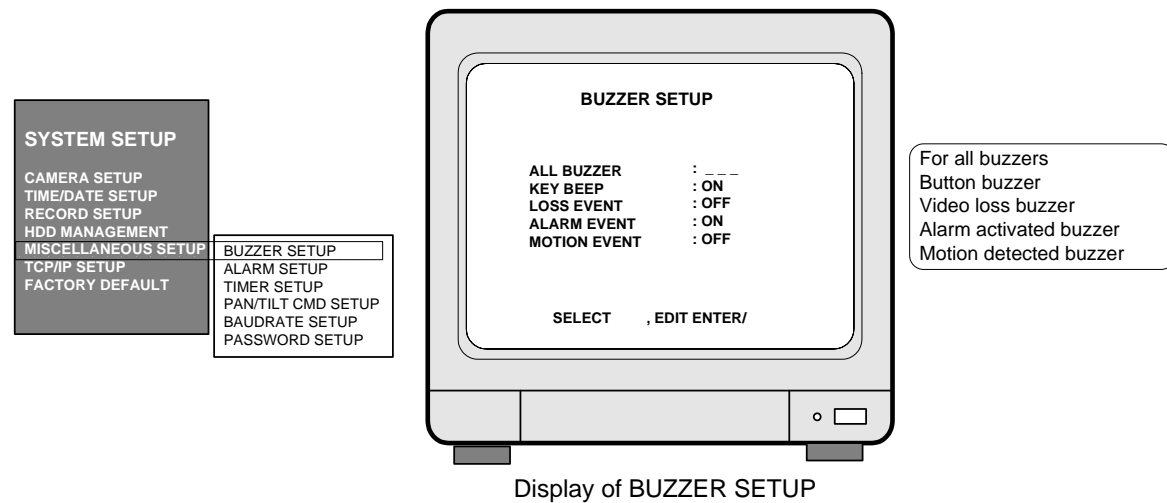
7. HDD MANAGEMENT



- a. Clear data stored on HDD.
When "HDD CLEAR [IN USE]" is displayed, press [ENTER] button and input password you already set. If you entered correct password, HDD shall be cleared and "HDD CLEAR [EMPTY]" is displayed.
- b. Show information of HDDs installed inside DVMR unit or HDD Bay.
- c. You can backup the recorder data by using CD-R media. Please refer to attached Guideline paper for this function.

8. MISCELLANEOUS SETUP

- a. BUZZER ON/OFF

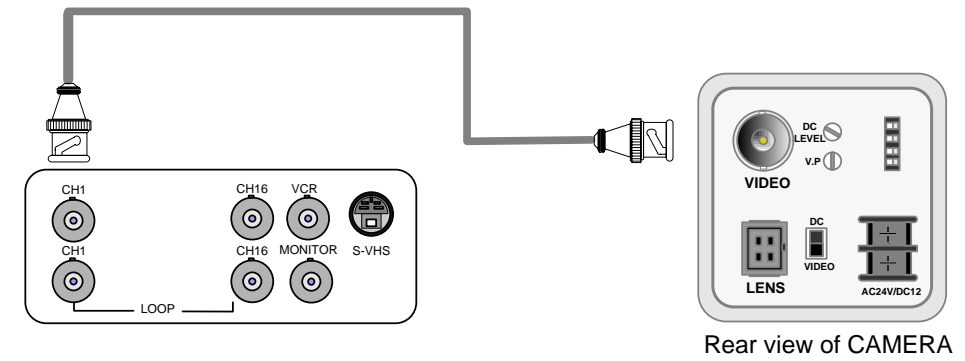


Press [Up] and [Down] buttons to move to item you want to set, and select using [Left] and [Right] button. Press [ENTER] button to set. To set altogether at ON or OFF, move to ALL BUZZER and set at ON or OFF.

Chapter 2. Procedure

2-1. Camera connection

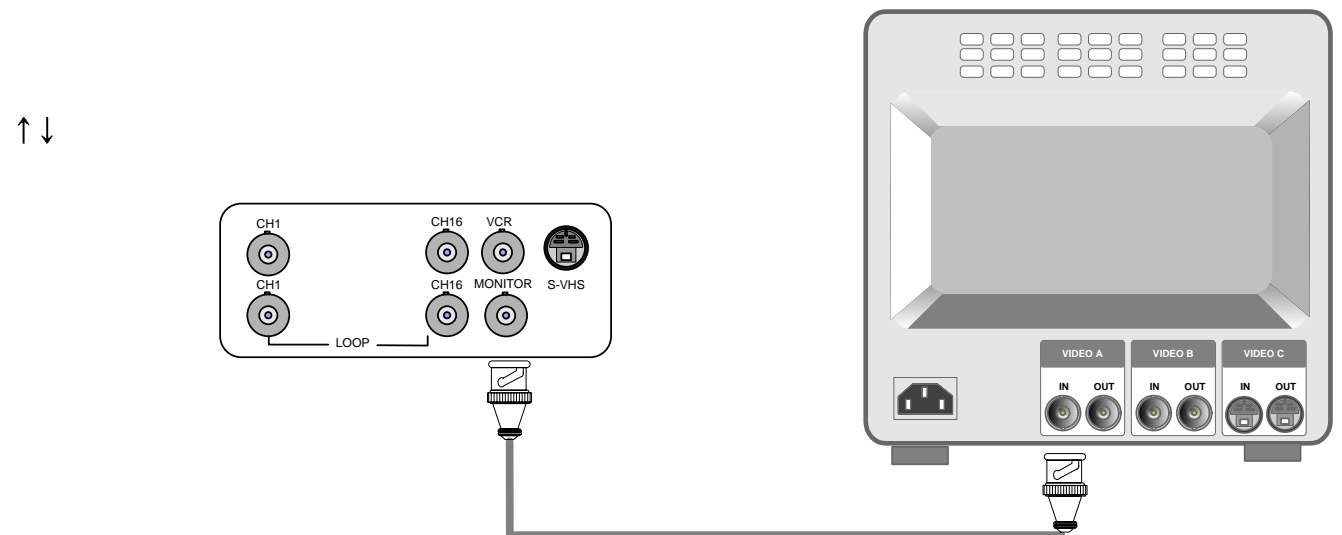
Connect camera to the CAMERA INPUT (1~16) on the rear panel of unit.



Notice : This DVMR system accepts camera with both PAL system or NTSC system, and the DVMR set at PAL or NTSC system automatically. Connect camera and monitor while DC power switch on the front panel is off.

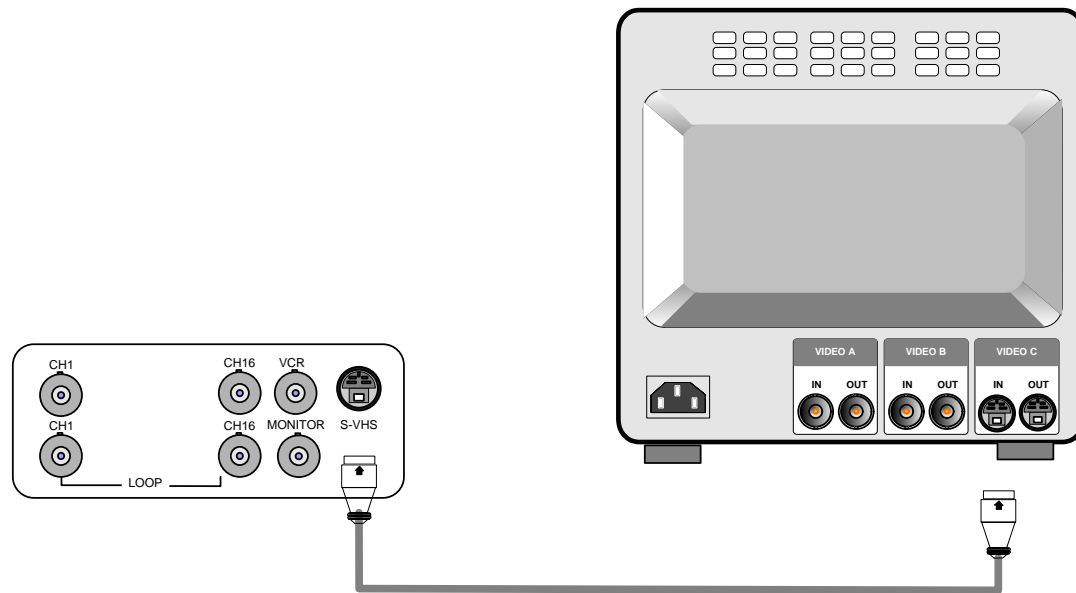
2-2. Monitor connection (Composite monitor)

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



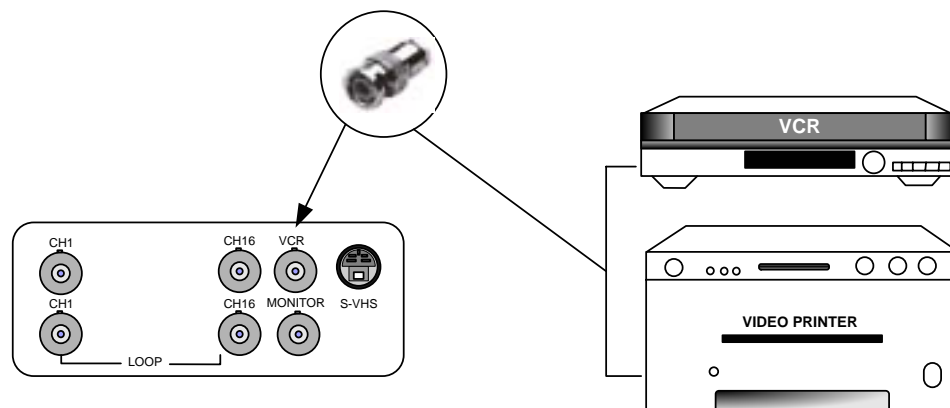
2-3. Monitor (S-VHS) connection

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



2-4. VCR & VIDEO PRINTER Connection

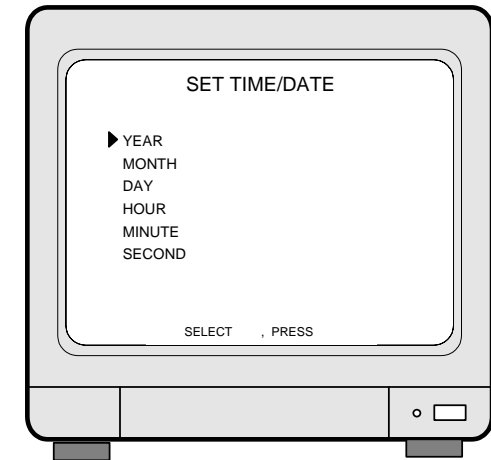
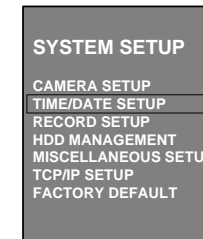
Connect VCR or Video printer to VCR OUT on the rear panel of unit.



5. SET TIME/DATE

Sets Year/Month/Day/Hour/Minute/Second.

Using [Up] and [Down] buttons, move to menu item, and change value using [Left] and [Right] buttons.

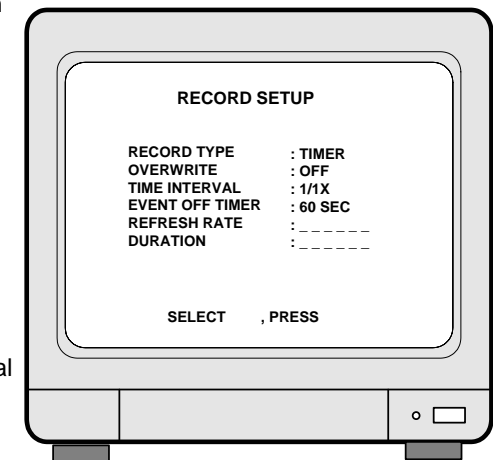


Display of SET TIME/DATE

6. RECORD SETUP

Setting for recording

- a. Press [MENU] button and enter password and press [ENTER] button to enter into main SETUP menu. In the main SETUP menu, select RECORD SETUP. Default password set by manufacturer is null, therefore just press [ENTER] button after you press [MENU] button to enter into main SETUP menu, in case you did not change password.
- b. Select RECORD TYPE.
 - TIMER : Recording at a certain time interval (DEFAULT)
 - MOTION : Recording when a motion detected
 - ALARM : Recording when an alarm is activated
- c. Decide to overwrite or not when HDD is full.
 - OFF : Stop recording when HDD is full.
 - ON : Overwrite when HDD is full (DEFAULT).
- d. Total recording rate (Fields/sec)
 - 1/1X : Records at maximum rate/60(50) Fields/sec in total (FACTORY DEFAULT)
 - 1/2X: Records at half of maximum rate/30(25) Fields/sec in total
 - Possible to set from 1/1X to 1/999X.
 - If you set at 1/480X, it corresponds to 960 hours recording mode in Time Lapse VCR.
- e. REFRESH RATE : In Motion or Alarm recording mode, DVMR system records pictures at a certain time interval (REFRESH RATE) even though there is no motion detected or alarm activated.
 - 20 SEC : Records pictures from all channels at time interval of 20 sec, regardless of motion detected or alarm activated.
- f. DURATION : Records for DURATION time when a motion is detected or an alarm is activated.
 - 20 SEC : Records pictures from a channel where motion is detected or alarm is activated, for 20 sec.
 - 1 SEC : FACTORY DEFAULT
- g. EVENT OFF TIMER : To limit numbers of motion detected, alarm activated or video loss to be enlisted to event list, we set EVENT OFF TIMER.
 - 60 SEC : Just in case time interval between previously detected motion (alarm or loss) and currently detected motion (alarm or loss) is longer than 60 sec, currently detected motion(alarm) is enlisted in event list. 60 SEC is FACTORY DEFAULT.
 - EVENT OFF TIMER is to protect event list from being filled with motion, alarm, or video loss detected very frequently. If time interval between previous motion(alarm or loss) and current motion(alarm or loss) is shorter than set EVENT OFF TIMER, motion, event, or video loss is not enlisted in event list, but recording is done as set(if it is set at Motion recording or Alarm recording).

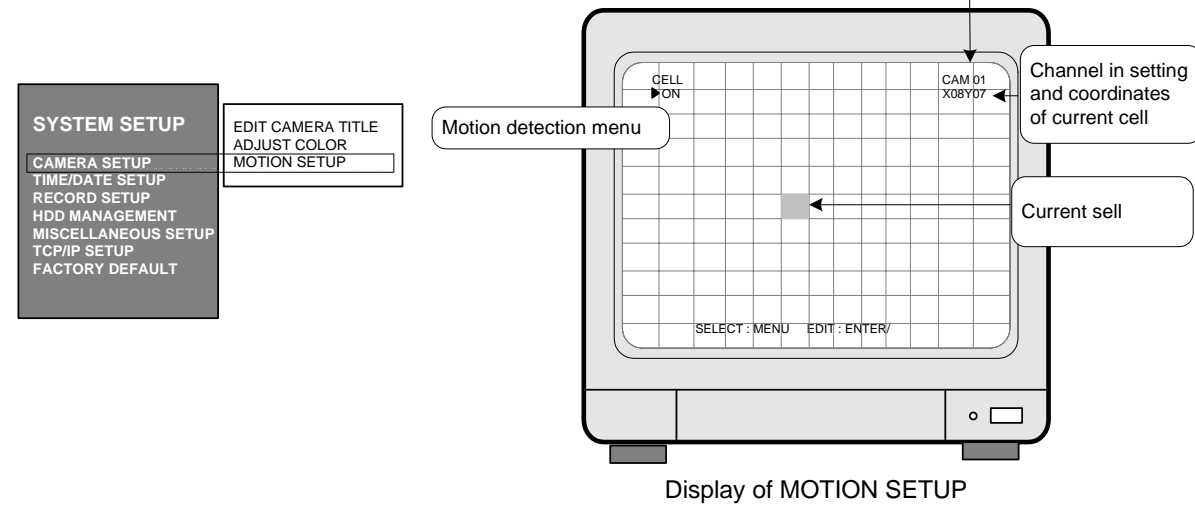


Display of RECORD SETUP

4. MOTION SETUP

Sets motion detection area and sensitivity of motion to be detected.

When motion is detected, it is changed to green color and glittering.



Basic display : Press [MENU] button repeatedly until you find menu item to set, and select by pressing [ENTER] button.
In basic display of MOTION SETUP, green colored cell represent motion detection area.

CELL ON(OFF) Sets motion detection area cell by cell.
Using direction keys, select cell to set and press [ENTER] button. Color of cell set is changed to green.

BLOCK ON BEGIN END Sets motion detection area by block(X x Y).

Using direction keys, select the first location of cell and press [ENTER] button, and then select the second location of cell using direction keys and again press [ENTER] button.
You will see color of all cells inside 2 coordinates is changed to green, motion detection area.

ALL OFF(ON) All cells are set as a detection area or no detection area.

When it is in ALL-OFF, press [ENTER] make all cells no detection area. When it is in ALL-ON, press [ENTER] to make all cells detection area.

SENSITIVITY LEVEL 10 Sets sensitivity of motion detection.
Using [Up] and [Down] buttons, choose sensitivity level.
LEVEL 01(Dull) ← → LEVEL 10(Sensitive)

DETECT WINDOW NUMBER 01 Sets numbers of cells corresponding to size of motion.
Just in case numbers of cell detected (green colored) is more than set numbers, motion is detected.
If you set DETECT WINDOW NUMBER at bigger number, motion by small object is not detected.
Press [Up] and [Down] buttons to increase or decrease cell number.

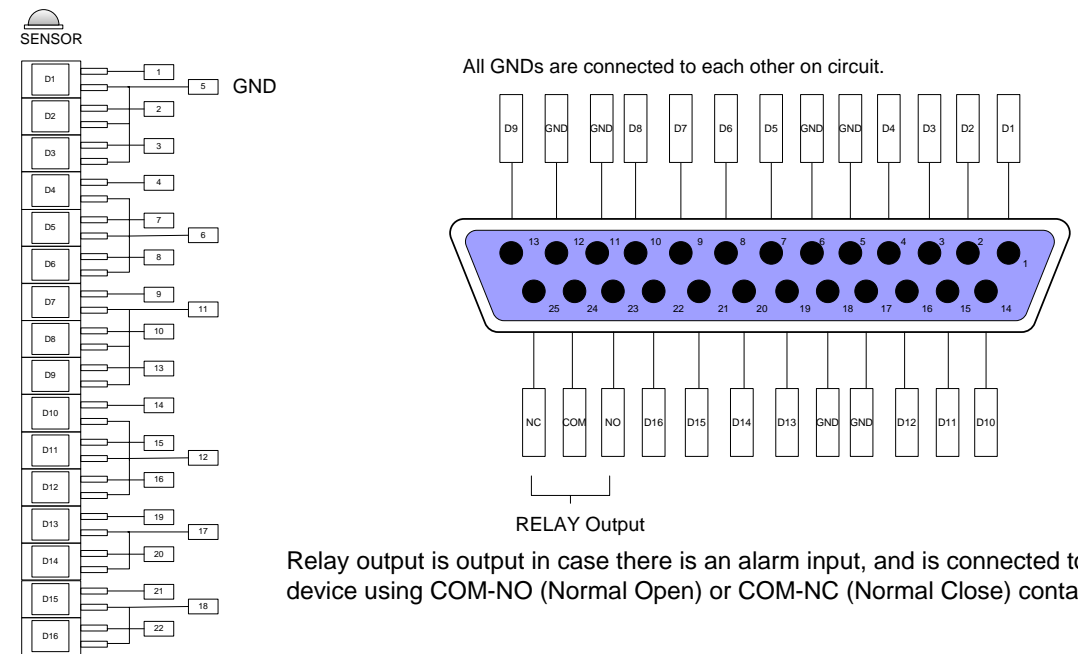
Exit To exit, press [ENTER] button.

2-5. Sensor connection

Connect sensors to D-SUB 25 Pin as specified below.

You can connect dry-contact type sensors. In case of sensors with TTL output (5 Volts system), GND of sensor must be connected to GND of DVMR unit and signal line to alarm input from D1 to D16 as shown in following figure.

Short-circuit between any of D1 from D16 and GND is recognized as an alarm.



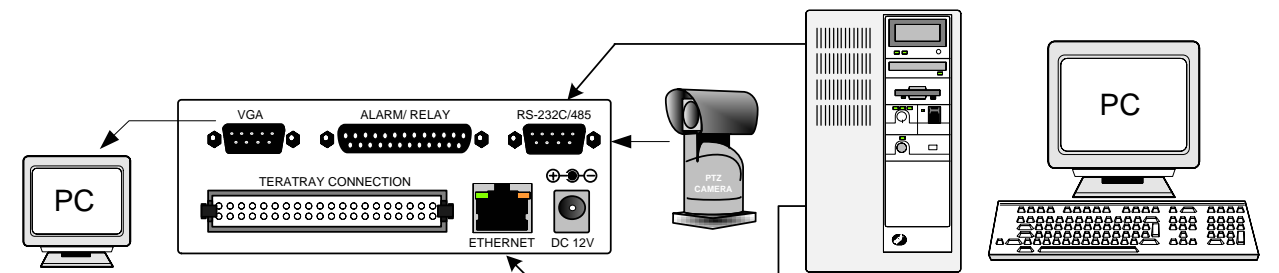
Relay output is output in case there is an alarm input, and is connected to external device using COM-NO (Normal Open) or COM-NC (Normal Close) contact.

2-6. Network connection

RS-232C : Connected to RS-232C port of PC to operate DVMR unit with key-board of PC.

RS 485 : Connected to P/T Controller or Speed Dome Camera

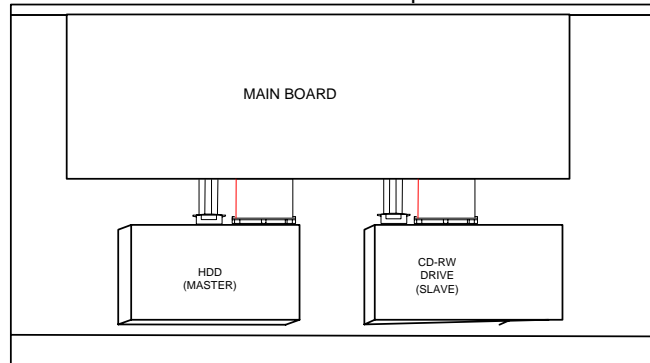
RJ-45 : Connected to LAN, WAN or Internet



Notice :TERATRAY CONNECTION port must be used for connecting HDD Bay (TeraTray), and can not be used for connecting other device. Connection must be done while power supply to DVMR unit is cut.
When TeraTray is connected to DVMR unit, supply power to TeraTray first and then to DVMR unit.

2-7. HDD Connection

Specification of HDD : EIDE, 7200 rpm, LBA mode type

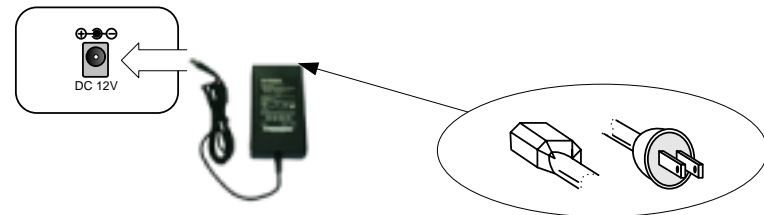


Connect main board and HDD using IDE HDD cable and power cable included in the package. The jumper setting of HDD must be on Master, as specified by HDD manufacturer. The jumper setting must be done properly as specified by HDD manufacturer. Fix HDD on the bottom of DVMR case using screws included in the package. Screws must be inserted from outside of the bottom. And jumper setting of CD-RW DRIVE must be on Slave.

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.

2-8. Power connection

Connect DC 12 V power to the POWER CONNECTION on the rear panel of DVMR unit.



▶ Selection of video system (NTSC/PAL)

The DVMR set the video system of camera NTSC or PAL automatically.

▶ Turn on the POWER and Log on the system

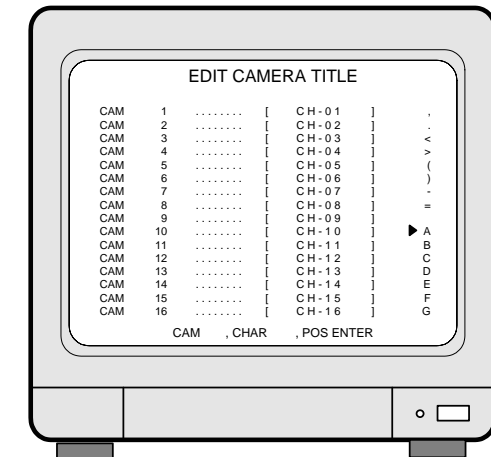
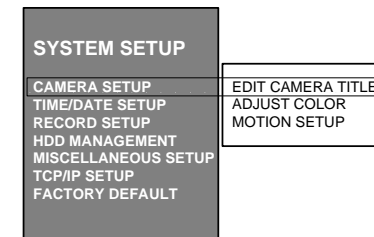
Follow direction of Log-in part of this manual to input own password and start the system. Just press ENTER button if you do not want to input own password.

▶ Detail setup in SYSTEM SETUP : Refer to SYSTEM SETUP of this manual.

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

2. CAMERA SETUP

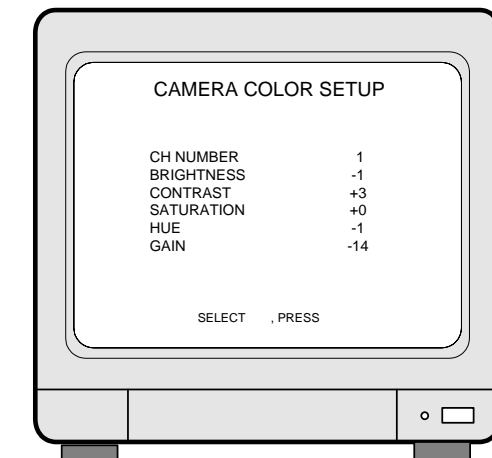
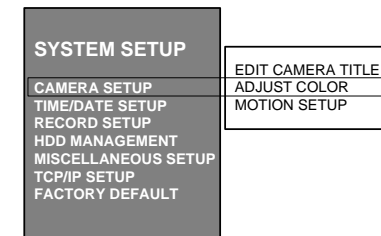
Sets camera titles for display in full screen, 4-split screen, and 9-split screen.



Display of CAMERA SETUP

- Press [ENTER] button to move to menu item you want to set.
- Enter letters (Alphabet, numbers, and symbols) using [Left] and [Right] buttons.
- Move to next camera for settings using [Up] and [Down] buttons.
- If you have same word repeated in camera title for each channel, move to the word you want to copy and press [Record] button for copy and move to the location to put it and press [Playback] to paste.

3. ADJUST COLOR



Display of COLOR SETUP

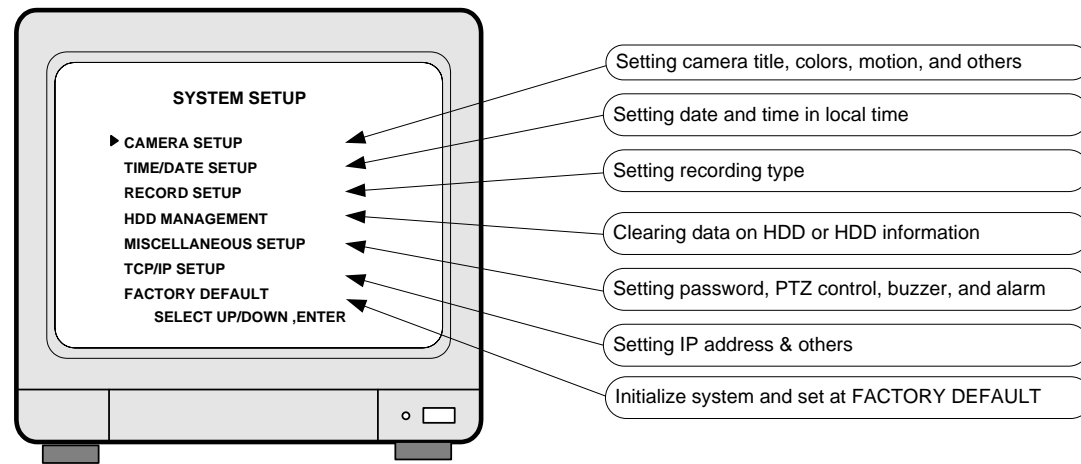
Adjust colors of images from cameras.

- CH NUMBER : Select camera # from 1 to 16
- BRIGHTNESS : Sets brightness
- CONTRAST : Adjust color contrast
- SATURATION : Adjust color saturation
- HUE : Adjust color hue
- GAIN : Adjust image signal level

- (-31~ +32)
- (-31~ +32)
- (-20~ +32)
- (-31~ +32)
- (-31~ +32)

3-5. SETUP

1. Basic operation



Display of SETUP

- Press [MENU] button.
- Enter PASSWORD and log on the system.
- Select SETUP item using [Up] and [Down] buttons.
- Press [ENTER] button to move to Sub-menu.
- In Sub-menu, press [Up] and [Down] buttons to move and press [Left] and [Right] button to set values.
- Press [ENTER] button to select and [MENU] button to exit.
- All settings done in SYSTEM SETUP is memorized automatically when you exit SETUP menu.

▶ Settings remain unchanged after setting at FACTORY DEFAULT

- | | |
|--------------------|---------------------|
| 1. TIME/DATE SETUP | 2. All data on HDD |
| 3. Password | 4. ALARM LIST SETUP |

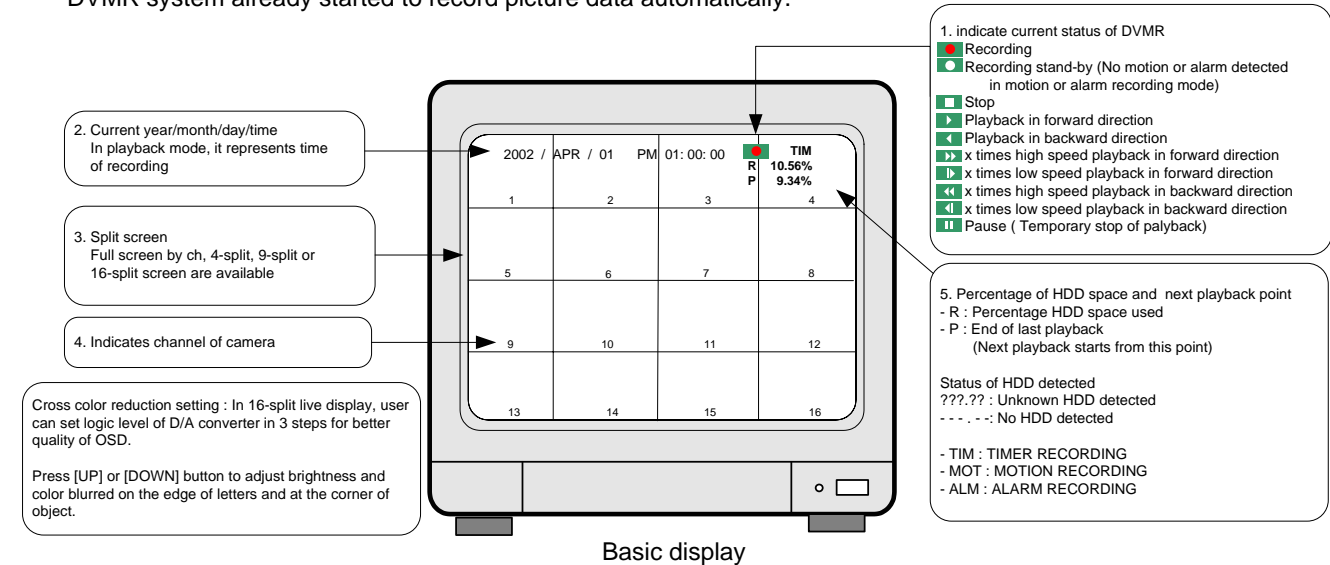
Notice : We recommend users to clear all data on HDD and set at FACTORY DEFAULT in the very first operation of this DVMR unit.

In case you added HDD, replaced HDD or replaced EPROM (Program for DVMR unit), also clear data on HDD and set at FACTORY DEFAULT again.

Chapter 3 . Operation

3-1. Basic display

Turn on the power switch, and DVMR system shows live display from ch 1 to 16 as following figure. DVMR system already started to record picture data automatically.



Basic display

1. First operation

After power supply, DVMR system automatically starts to record on Timer recording mode. It is factory default setting, and user can change to other recording settings.

- If press [Playback] button (▶) shortly, playback starts from last stop point. If press [Playback] button once more in playback mode, direction of playback is reversed. If press [Playback] button in long time while DVMR system is in stop mode, you can enter into GO TO menu. For details, refer to playback part of this manual.
- If press (▶▶) button in playback mode, ▶▶ [1x] is displayed, and you can select speed of playback higher than x1. If press (▶▶) button repeatedly, speed of playback is increased from 1, 2, 4, 8, 16, 32, up to 64. To the contrary, if press (◀◀) button in playback in x1 speed, playback speed is decreased to ½ and then ¼.
- To go back to Menu, press [Menu] button while in stop mode.

2. Set time when you first operate DVMR unit.

Refer to TIME/DATE SETUP in SYSTEM SETUP in this manual.

3. To enter into 4-split, 9-split, or 16-split screen during live monitoring or playback, press [MSD] button first and then 1, 2, or 3 respectively.

4 Display of camera channel (camera title)

In 16-split screen, camera title is shown in numbers by the system from 1 to 16, and in 4-split and 9-split screen, camera title set by user is shown.

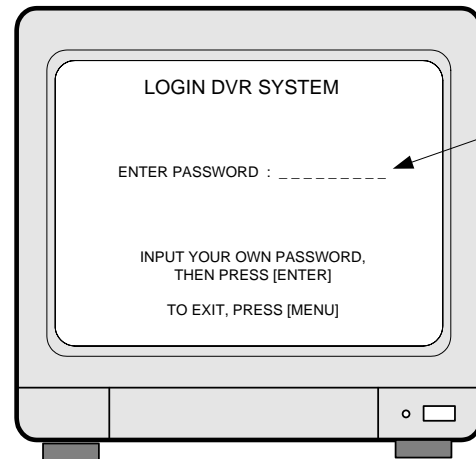
5. Shows how much space in HDD is recorded

- R(RECORD) indicates percentage of HDD space used until now.
- P(PLAY) indicates starting point from which next playback will start. It is the point where last playback stopped. To start playback from the first of recording, press (◀◀) button to set P(PLAY) at 0.00%, and then press [Playback] button (▶). To replay reverse direction from the end of recording, press (▶▶) button to move to the end of recording, and then press [Playback] button (▶).

Notice : If you press [MSD] button for a long time, you can select type of monitor. [MSD] button changes monitor type (default mode is Composite) from(to) Composite to(from) VGA, whenever pressed, in case VGA option is included.

If you press [MSD] button two times continuously, you can adjust screen position by pressing [LEFT], [RIGHT], [UP], and [DOWN] buttons on the front panel of DVMR unit.

3-2. DVMR SYSTEM Log-in



Display of Login

- 1) After system starts to operate, press [MENU] button to enter into SYSTEM menu.
- 2) LOGIN DVR SYSTEM is displayed as shown on the left.
- 3) If you want to input for your own password, press any buttons on the front panel, from 1 button to 8 buttons. If you do not want to have own password, just press [ENTER] button.
- 4) Then press [ENTER] button.

▶ If password you entered is consistent with password already set, "PASSWORD OK" is displayed, and you enter into SYSTEM SETUP. If it is not, system goes back to live display mode.

▶ Factory default password is [ENTER].

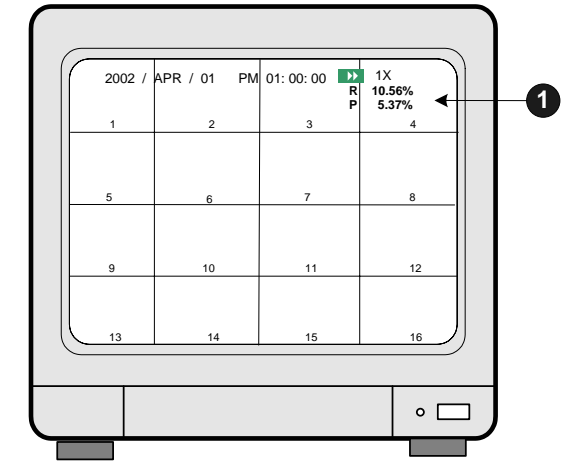
Notice : We recommend users to set own password in the first operation. For details, refer to PASSWORD SETUP IN SYSTEM SETUP-MISCELLANEOUS SETUP.

Notice : Be careful to memorize own password to operate DVMR unit properly. If you forget password, contact this DVMR dealer to know how to enter into SYSTEM SETUP.

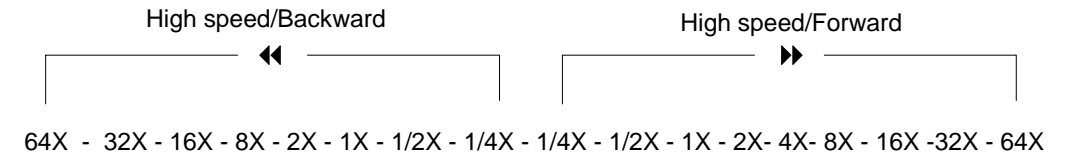
Notice : To protect hard drive from damaged, turn off DC power switch of DVMR unit after you first press [MENU] button. If you press [MENU] button, DVMR unit stops recording, and HDD head is not in the process of writing.

4. Speed of playback

- a. Press [Fast forward](▶▶) in playback mode.
- b. As shown on the left, ▶▶ 1x is displayed, and you can select high and low playback speed.
- c. Press [Fast forward] button repeatedly to increase playback speed, 1,2,4,8,16,32,64. Press [Fast backward] button to decrease playback speed to ½ or ¼.
- d. You can select high speed and low speed when ◀◀ 1x is displayed, by pressing [Fast forward] button or [Fast backward] button.



Display of Playback



5. ZOOM

Press [ZOOM] button in full screen mode, and picture of that channel is enlarged two times. Using direction keys, [Up], [Down], [Left], and [Right], you can select area to be enlarged. This function is available for both in live mode and playback mode.

6. PAUSE

Pauses pictures during playback. After pressing [Pause] button, press [Fast forward] or [Fast backward] buttons to move forward or backward in the unit of field. If you see pictures in 16-split screen, you can move picture by picture in every channel whenever you press [Fast forward] or [Fast backward] button.

7. Others

- a. DVMR system memorizes status of last playback. For instance, you searched recorded data in backward playback and stopped at the point of 45% of total HDD space. In the next playback, DVMR system automatically starts from the point of 45% in reverse direction. It is for efficiency in search recorded data.
- b. If you want to search recorded data from the first of data, press [Fast Backward] button in stop mode. Then, "P 0.00%" is displayed on the top left, and you can search from the first if press [Playback] button. If you want to search from the end of recorded data, press [Fast forward] button when in stop mode, then next playback location is changed to the end of recorded data. If you press [Playback] button, playback starts from the end in backward direction.
- c. During playback, DVMR system does not record.
- d. If image data on the date and time you entered in GOTO menu is not exist, playback starts from the picture which is the nearest to the date and time you set. If the date and time you entered is not between start of recording and end of recording, playback starts from the nearest point, from the start of recording or end of recording.

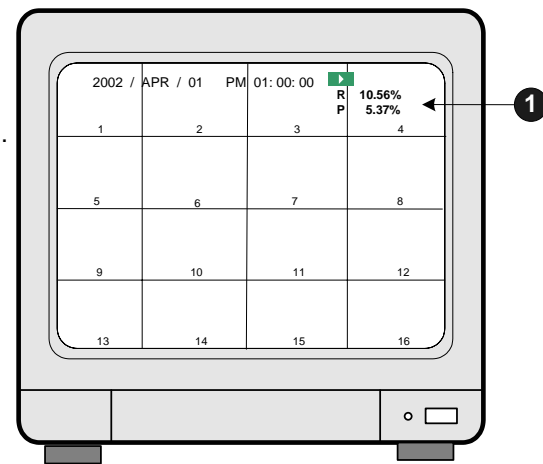
3-4. Playback

1. Basic operation

- a. If press [Playback] button (▶) shortly, DVMR system starts to replay.
- b. If press [Playback] button (▶) once again, direction of playback is reversed.
- c. If press [Playback] button (▶) in long time when DVMR system is in stop mode, you can enter GOTO MENU.
- d. Then you can select search by percentage, by time, and by event in GOTO MENU.

2. Example of operation

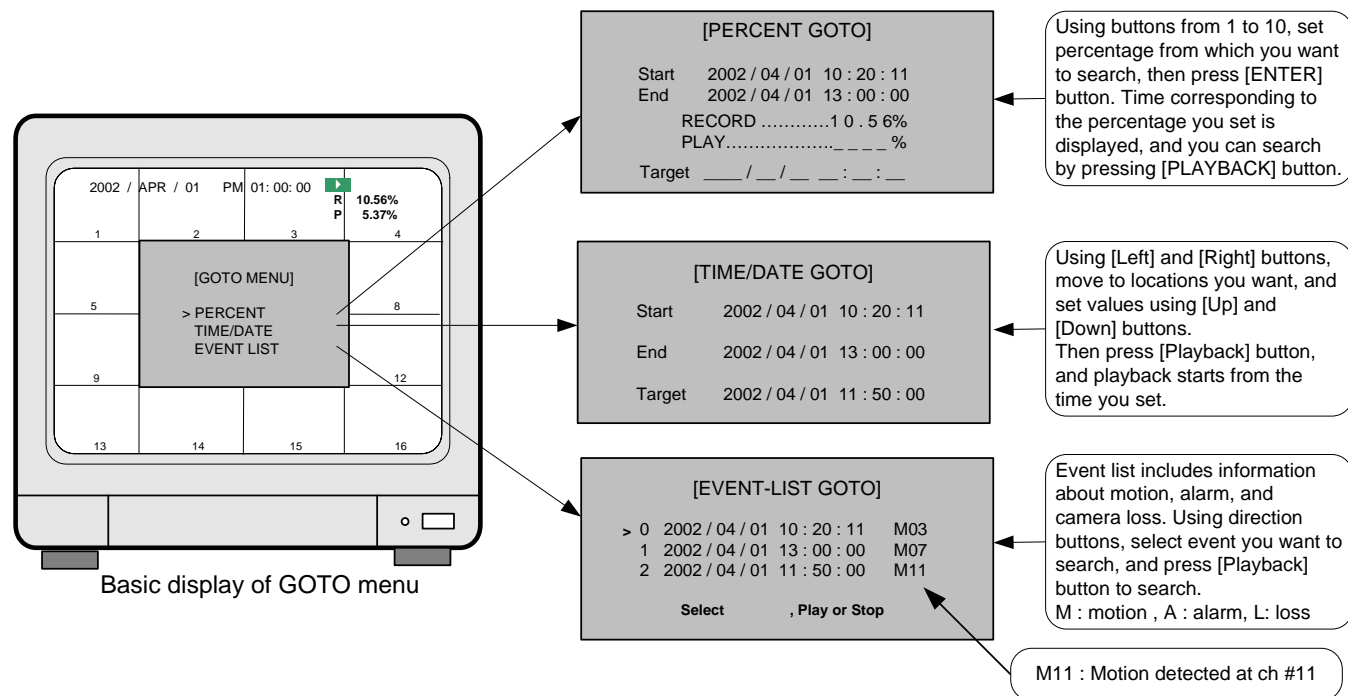
- a. In the picture on the right, ① represents 10.56% of total HDD space is spent for data recording, and next playback will start from the point of 5.37% of total HDD space.
- b. Press [Playback] button (▶).
- c. Playback will start at the point of 5.35% of total HDD space.
- d. When [Stop] button (■) is pressed at the point of 9.34%, DVMR system memorize it (Memorize stop point of last playback).
- e. If press [Playback] button (▶) again, playback starts from 9.34 % (stop point of last playback).
- f. When playback proceeds up to 10.56% of total HDD space, playback is stopped.
- g. If press [Playback] button (▶), playback starts again from the end of data in reverse direction.
- h. If press [Stop] button (■), system goes to live display mode. Unless you press [RECORD] button, DVMR system does not record.



Basic display of playback

3. Search

When DVMR system is in stop mode, press [Playback] button (▶) for a couple of seconds, and you can enter into GOTO MENU.



3-3. Recording

1. Basic recording method

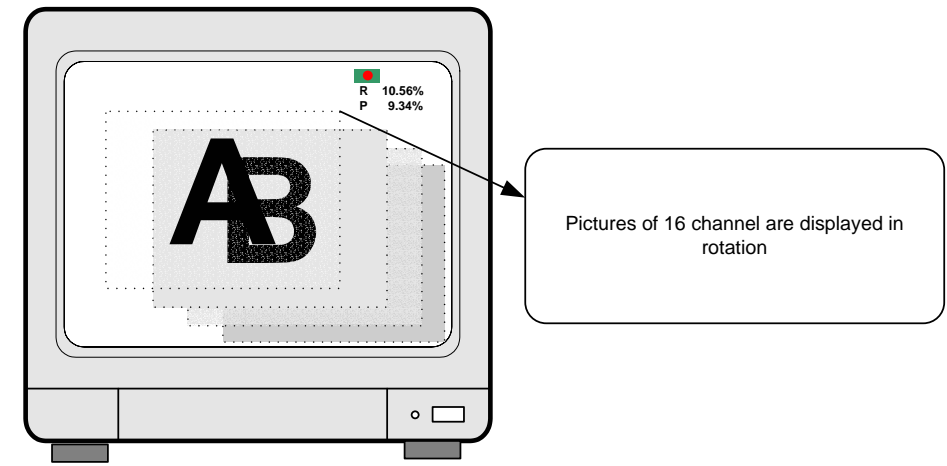
Press [Record] button (■), then recording icon (■) is displayed on the top of screen. If DVMR system is booted again, it is not necessary to set recording settings, because recording setting remains unchanged and memorized. Refer to SYSTEM SETUP-RECORD SETUP in this manual. (PAGE. 20)

2. FRZ (FREEZE)

If press [FRZ] button, "FRZ" is displayed on top left. Then press number of channel you want to freeze. Picture of channel you selected is frozen, and (F) icon is displayed on the left of camera title. Press [FRZ] button again to exit.

3. SEQ (SEQUENCE)

If press [SEQ] button in live display when it is in full screen of any channel, it shows full screen pictures in rotation. Rotation time interval can be set in SYSTEM SETUP-MISCELLANEOUS SETUP-TIMER SETUP.

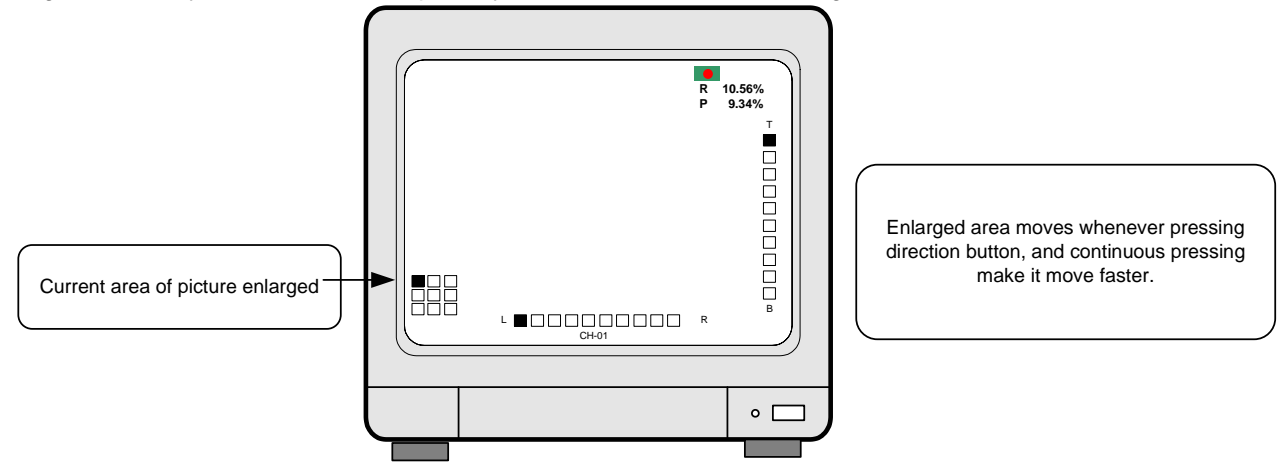


Channel rotation in full screen

Pictures of 16 channel are displayed in rotation

4. ZOOM

If press [ZOOM] button in full screen of one of 16 channel, system enlarges this picture two times. Using direction keys on the left of front panel, you can select area to be enlarged.



Display of ZOOM

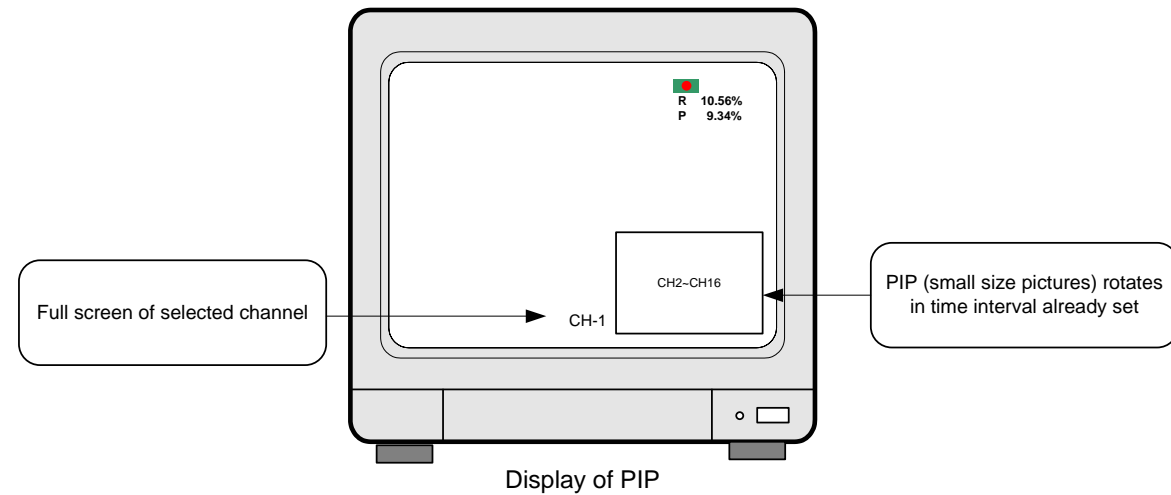
Current area of picture enlarged

Enlarged area moves whenever pressing direction button, and continuous pressing make it move faster.

5. PIP (PICTURE IN PICTURE)

While you see picture of specific channel in full screen, you can see small size pictures of remaining channels in rotation, if you press [PIP] button. Time interval of PIP (small size picture) can be set in SYSTEM SETUP-MISCELLANEOUS-TIMER SETUP.

If press [SEQ] button while it is in PIP mode, picture in full screen and PIP (small size picture) are all rotate.



6. P/T (PAN/TILT)

You can connect PTZ camera or speed dome camera to DVMR unit, and you must input protocol of camera to control camera while you see live pictures, using buttons on the front of DVMR unit or remote controller.

a. Basic control button : ENTER - Transmit COMMAND while pressed

UP/DOWN - Selection of menu item

LEFT/RIGHT - Select Command

For details, refer to SYSTEM SETUP-MISCELLANEOUS-PAN/TILT CMD SETUP.

b. Operation : 1. Press [P/T] button.

2. Select device (PTZ camera) using [UP] and [DOWN] buttons.

3. Select Command using [LEFT] and [RIGHT] buttons.

4. After completing input protocols of PTZ camera, press [P/T] button to exit.

Notice : Maximum numbers of PTZ camera can be connected to DVMR unit is 4.

7. Record setting

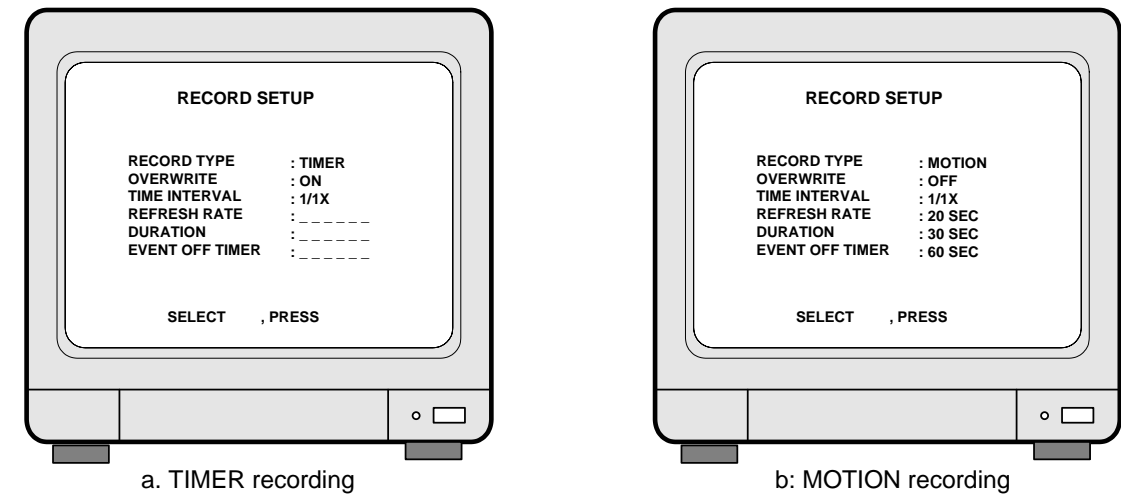
a. TIMER recording : Recording by time (at set recording rate, fields/sec)

Example : Record all images at set recording rate(fields/sec) and overwrite when HDD is full.

1. Log-in to SYSTEM SETUP.

2. Mover to RECORD SETUP and enter.

3. Using direction keys, set as figure-a.



TIME INTERVAL : Images from cameras are coming every 1/60 sec in NTSC system and 1/50 sec in PAL system, respectively, and it is switching time.

TIME INTERVAL represent recording rate, however it practically indicates if it records images at time interval of switching time, at time interval of double of switching time, at time interval of triple of switching time, and so on.

1/1X : Records at all images from all cameras at a time interval of 1/60 or 1/50 second according video system.

1/2X : Records images from all cameras at a time interval of 2/60 or 2/50 second according to video system.

b. MOTION recording : Recording when motion is detected (MOTION DETECTION)

Example : Just record for 30 seconds whenever motion is detected, and stop recording when HDD is full.

1. Log-in to SYSTEM SETUP.

2. Move to RECORD SETUP and enter.

3. Using direction keys, set as figure-b.

c. ALARM recording : Recording when alarm is activated

Very similar to MOTION recording

For details, refer to RECORD SETUP (PAGE. 20) in this manual.

8. Cautions

1) When you are in SYSTEM SETUP, recording is stopped.

2) While DVMR system is in playback mode, recording is stopped.

3) No recording is done in channel to which you did not connect camera.