

ESP WITNESS DVR4

User Manual

(With Removable HDD & USB Interface)

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Introduction

The digital video recorder (DVR) is for recording / retrieving video streams from up to 4 channels at the same time. It adopts a digital image compression technology to compress the input channel video streams, and uses a HDD (Hard Disk Drive) to record the compressed video stream.

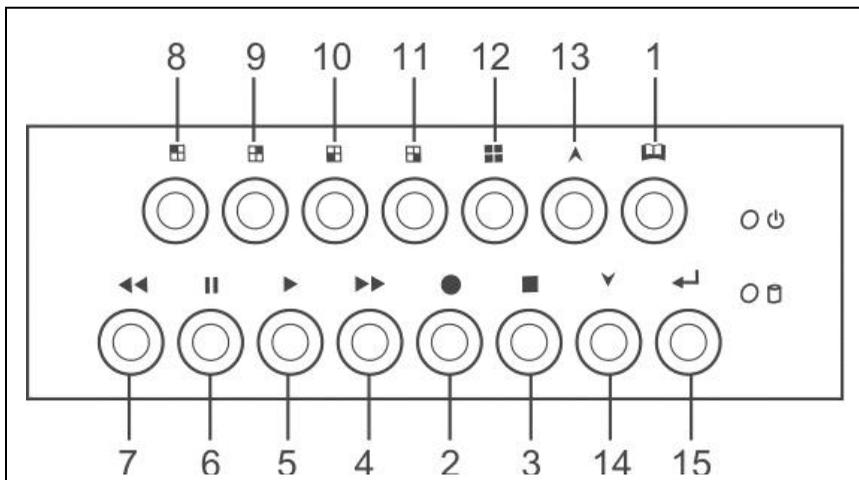
The following operation guide explains how to operate / manage the DVR and explains how to install the DVR at your premises and install the HDD into the DVR.

DVR Package

Those following items are supplied with the DVR package. If any are missing, please contact your supplier.

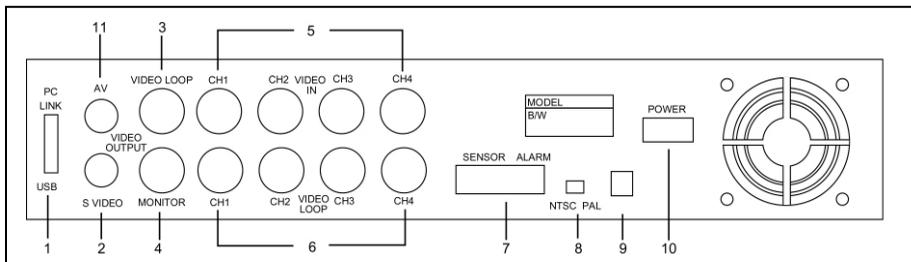
Item	Q'ty	Remarks
Stand Alone DVR	1	
AC-DC Power Adapter	1	
Removable Hard Drive	1	With security KEY
Power Cable	1	
User Guide	1	
CD Disk	1	
USB Line	1	Optional

Front Panel



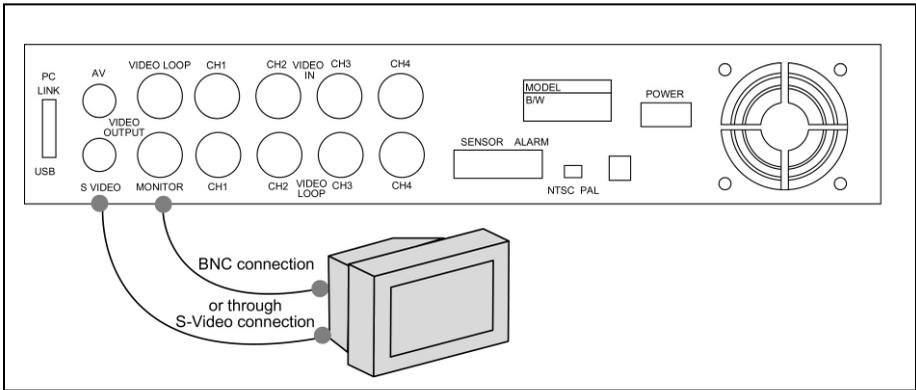
1. ☐ (Menu) button: press to display Operation menu option
2. ● (Recording button): press to start recording.
3. ■ (Stop recording/playback button): press stop recording/playback (the authorized password is requested upon stopping record; the default password is 111111)
4. ►► (Fast forward button): press to play the recorded stream faster.
5. ► (Playback button): press to start playback
6. || (Pause button): press to pause the video playback
7. ◀◀ Reverse: press to playback backward
8. ☐ Channel 1 button: press to select channel 1
9. ☐ Channel 2 button: press to select channel 2
10. ☐ Channel 3 button: press to select channel 3
11. ☐ Channel 4 button: press to select channel 4
12. ☐ All channels button: press to select all channels display
- 13, 14. ▲ ▼ up down buttons: press to change menu field
15. ↵ (Select) button: press to change the setting value or enter into a sub menu

Rear Panel



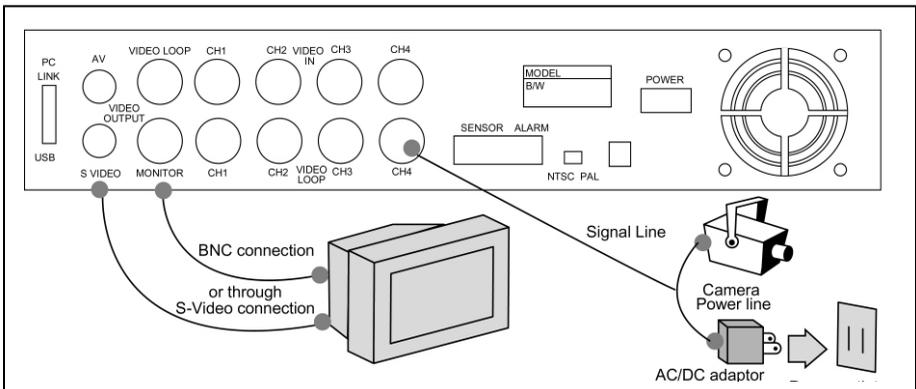
1. PC Link: USB device interface (2.0)
2. S-Video
3. Video output
4. Monitor: Second Video output
5. Video input
6. Video loop-through
7. Sensor input / alarm output: 4 sensor inputs and one alarm output
8. NTSC/PAL switch
9. DC – in (12 volts, 2.0A)
10. Power ON/OFF
11. AV

DVR Installation



1. Video Output Connection (TV or Monitor)

Connect a TV (Monitor) to the DVR using one of the video output connectors. The DVR provides 1x S-Video input and 2 x BNC connector. The above figure shows the video line connection.

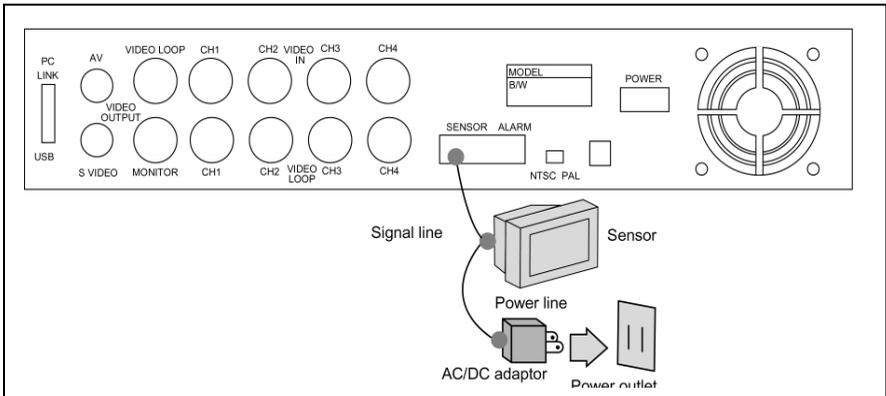


DVR Installation

2. Video Input Connection (Camera)

Connect cameras to the DVR using the video input connectors. The DVR provides 4 x BNC connectors. The camera installation procedures are as follows:

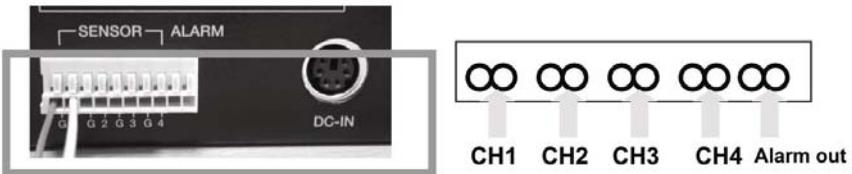
- i. Connect the video signal line to the DVR.
- ii. Connect power to the camera.



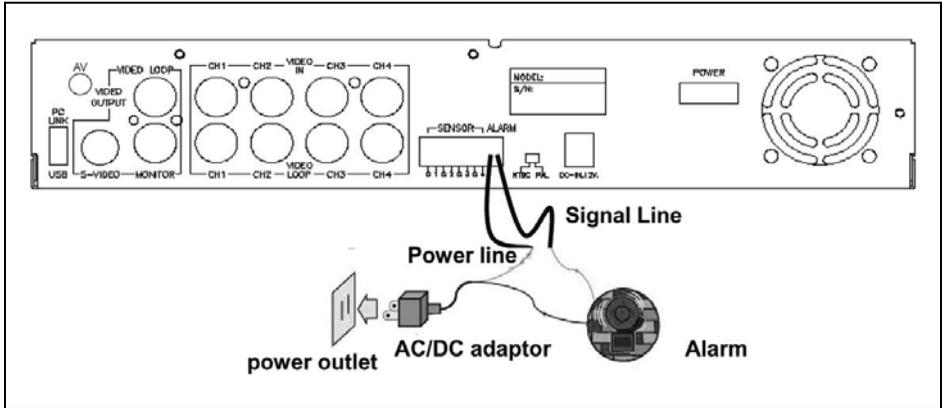
3. Sensor Installation

The DVR has 4 sensor inputs, one for each channel. The sensor installation procedure is as follows:

- i. Connect the sensor signal line to the unit. The sensor signal terminal is on the DVR rear panel.
- ii. Connect the sensor adaptor jack into the sensor, and plug in the power adaptor.



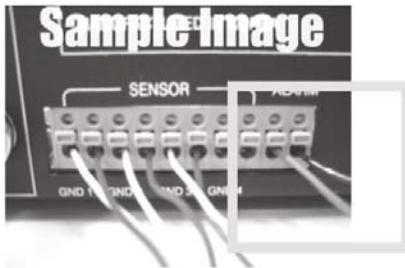
DVR Installation



4. Alarm Installation

The DVR includes one internal switch for sounding an alarm when any of the sensor inputs is activated. The switch is normally open and closed upon activation. The circuitry is shown in the above figure. The alarm is installed as follows:

- i. The alarm requires a power supply, which is normally supplied with the alarm.
- ii. Connect the alarm power line to the alarm switch terminal on the rear of the DVR.



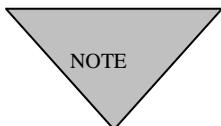
Powering up the DVR

Once the DVR has been properly installed (please refer to pages 15-18 for further details on DVR installation) the unit is ready to record and display. Apply power and switch on.

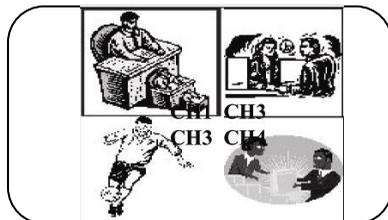
Following power on, the DVR takes a few seconds checking the HDD, the message shown on the right will be displayed:

HDD CHECKING
OK

The DVR will enter into real-time Display Mode as shown on the right.



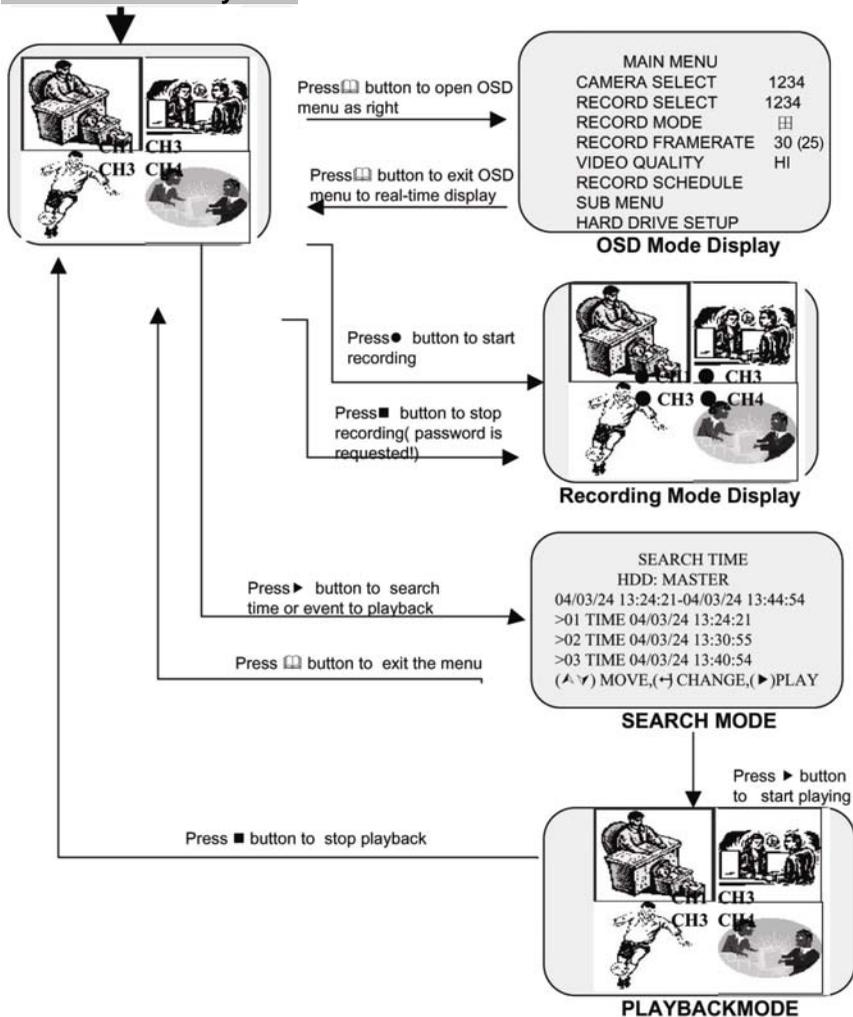
After initial settings are restored the message on the right will be displayed on screen. Turn off the DVR and re-start it.



Turn off the DVR and turn it back on again.

On-Screen Display

1. Power on the system

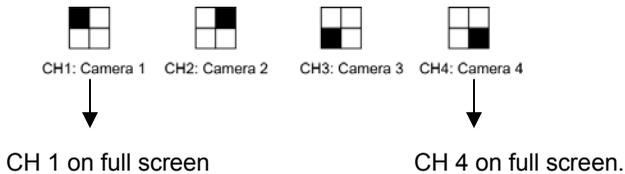


file. Supports full screen and quad display.

«EACH»

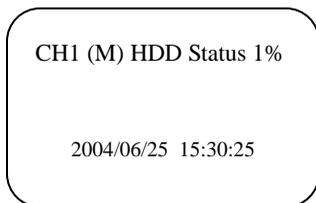
Supports both of one channel display on full screen and quad display. When set to «Each» mode, the display can be quad or one channel on full screen, so as playback. Maximum recording frames for each channel per second is 7.5fps.

- Full Screen from CH1 to CH4

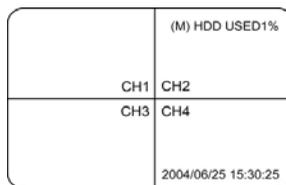


«QUAD»

Supports quad display and quad playback only. Records at a lower resolution compared with single channel recording. The frame rate will be higher – Max. 30 fps (NTSC) and 25fps (PAL).



EACH MODE



QUAD MODE

Note: MENU button can shift to Rec. Mode

Record Frame Rate: N2TC 30fps
PAL 25fps

Operation guide

Press  to display
Menu option

MAIN MENU	
CAMERA SELECT	1234
RECORD SELECT	1234
RECORD MODE	☐☐
RECORD FRAMERATE	30 (25)
VIDEO QUALITY	HI
RECORD SCHEDULE	
SUB MENU	
HARD DRIVE SETUP	
SENSOR SETUP	

Operation Buttons

 --- press to display menu option.
▲▼ --- press to change menu field or
change the unit's configuration values.
↵ --- press to select menu item or
confirm the selection.

- Stop recording or playback before entering into OSD menu.
- You will be requested to enter the password to stop recording.

CAMERA SELECTION

MAIN MENU	
➤ CAMERA SELECT	1234
RECORD SELECT	1234
RECORD MODE	☐☐
RECORD FRAMERATE	30 (25)
VIDEO QUALITY	HI
RECORD SCHEDULE	
SUB MENU	
HARD DRIVE SETUP	
SENSOR SETUP	

The DVR has facility for 4 camera inputs. Use the channel buttons on the front panel to select a specified channel for real-time display.

Use “  ” button or channel buttons for different combinations of channel display.

Example:

1. When you choose (----), all cameras are de-selected.
2. When you choose (1234), all cameras are selected.
3. When you chose (---4), only the fourth camera is selected.

NOTE

VIDEO LOSS!

“VIDEO LOSS” will be displayed and the built-in alarm buzzer will be triggered to sound when there is no video connection or a connection failure.

NOTE

Channel Display Control

In (⏏) mode, use the following buttons to display each channel in full-screen format.



Channel 1 button: Full Screen display of channel 1.



Channel 2 button: Full Screen display of channel 2.



Channel 3 button: Full Screen display of channel 3.



Channel 4 button: Full Screen display of channel 4.

RECORD SELECT

```
MAIN MENU
CAMERA SELECT 1234
> RECORD SELECT 1234
RECORD MODE 田
RECORD FRAMERATE 30 (25)
VIDEO QUALITY HI
RECORD SCHEDULE
SUB MENU
HARD DRIVE SETUP
SENSOR SETUP
```

Options are the same as “CAMERA SELECTION” options.

Only the chosen camera(s) will record real-time events during the recording period.

RECORD MODE

```
MAIN MENU
CAMERA SELECT 1234
RECORD SELECT 1234
> RECORD MODE 田
RECORD FRAMERATE 30 (25)
VIDEO QUALITY HI
RECORD SCHEDULE
SUB MENU
HARD DRIVE SETUP
SENSOR SETUP
```

The DVR has 4 cameras inputs. Use the channel buttons on the front panel to select a specified channel for real-time display

Operation Guide

MAIN MENU	
CAMERA SELECT	1234
RECORD SELECT	1234
➤ RECORD MODE	田
RECORD FRAMERATE	30 (25)
VIDEO QUALITY	HI
RECORD SCHEDULE	
SUB MENU	
HARD DRIVE SETUP	
SENSOR SETUP	

There are two kinds of recording mode: 田 (each mode; full screen mode)& 田 (quad screen mode).

When set to 田 mode, the specified channel is displayed as full-screen.

When set to 田 mode, quad-screen will be displayed.

Please use ▲ ▼ buttons on front panel to select mode then press enter ↵ to confirm the selection.

RECORD FRAMRATE

MAIN MENU	
CAMERA SELECT	1234
RECORD SELECT	1234
RECORD MODE	田
➤ RECORD FRAMERATE	30 (25)
VIDEO QUALITY	HI
RECORD SCHEDULE	
SUB MENU	
HARD DRIVE SETUP	
SENSOR SETUP	

There are a number of different frame rate settings.

NTSC: 30fps,15fps,10fps,7fps,5fps,4fps,3fps,2fps,1fps

PAL: 25fps,12fps,8fps,6fps,4fps,3fps,2fps,1fps

The DVR is factory set at the highest frame rate.

Please use ▲ ▼ buttons on the front panel to select mode then press enter ↵ to confirm the selection.



NOTE

RECORDING FRAME RATE TABLE

The higher the recording frame rate the more natural the video stream will look when it's played back.

The lower the recording frame rate the less space is used on the HDD.

The following are examples of the recording fps table for a 80GB HDD.

NTSC

Frame/Second	1	2	3	4	5	7	10	15	30	
MODE	CH1	1	2	3	4	5	7	10	15	30
	CH2	0.5	1	1.5	2	2.5	3.5	5	7.5	15
	CH3	0.33	0.67	1	1.33	1.7	2.33	3.33	5	10
	CH4	0.25	0.5	0.75	1	1.25	1.75	2.5	3.75	7.5

PAL

Frame/Second	1	2	3	4	6	8	12	25	
MODE	CH1	1	2	3	4	6	8	12	25
	CH2	0.5	1	1.5	2	3	4	6	12.5
	CH3	0.33	0.66	1	1.33	2	2.66	4	8.33
	CH4	0.25	0.5	0.75	1	1.5	2	3	6.25

Operation Guide

VIDEO QUALITY

MAIN MENU	
CAMERA SELECT	1234
RECORD SELECT	1234
RECORD MODE	田
RECORD FRAMERATE	30 (25)
> VIDEO QUALITY	HI
RECORD SCHEDULE	
SUB MENU	
HARD DRIVE SETUP	
SENSOR SETUP	

There are 3 different video quality settings :
Low, Normal and High.

Please use ▲ ▼ buttons on the front panel to select mode and then enter ↵ to confirm the selection.



VIDEO QUALITY SETTINGS vs HDD CAPACITY

The higher the video quality the clearer the image will be.
The lower the video quality the less space is used on the HDD.

The following is the recording time vs video quality settings.

DVR Recording Hours / 80GB Hard Drive

Recording Results in NTSC Format			30 fps	15 fps	7 fps	1 fps
Video Signal	Display Format	Video quality				
NTSC	Quad screen	High	36 Hours	72 Hours	144 Hours	1080 Hours
		Normal	48 Hours	96 Hours	192 Hours	1440 Hours
		Basic	58 Hours	116 Hours	232 Hours	1740 Hours
	Full screen	High	64 Hours	128 Hours	256 Hours	1920 Hours
		Normal	90 Hours	180 Hours	360 Hours	2700 Hours
		Basic	112 Hours	224 Hours	448 Hours	3360 Hours
Recording Results in PAL Format			25 fps	12 fps	6 fps	1 fps
Video Signal	Display Format	Video quality				
PAL	Quad screen	High	38 Hours	76 Hours	152 Hours	950 Hours
		Normal	48 Hours	96 Hours	192 Hours	1200 Hours
		Basic	60 Hours	120 Hours	240 Hours	1500 Hours
	Full screen	High	62 Hours	124 Hours	248 Hours	1550 Hours
		Normal	90 Hours	180 Hours	360 Hours	2250 Hours
		Basic	108 Hours	236 Hours	472 Hours	2950 Hours

Operation Guide

RECORD SCHEDULE

```
MAIN MENU
CAMERA SELECT 1234
RECORD SELECT 1234
RECORD MODE [ ]
RECORD FRAMERATE 30(25)
VIDEO QUALITY HI
>RECORD SCHEDULE
SUB MENU
HARD DRIVE SETUP
SENSOR SETUP
```

Select this option to change a recording schedule during the day (24-hour period)

```
PROGRAMMED RECORD
+ T T T S T T T T T T T T +
0 3 6 9 12 15 18 21 24
PRESS (▲▼), THEN (←)
PRESS (□) TO EXIT
```

Numbers below indicate the time duration in 24 hour format.

(T) 24-hour recording.

(S) Motion recording. The DVR only starts recording when an event (motion, GPLO) is triggered.

```
+ S S S S S S - - - - T T T T T T S S S S S S +
:           :           :           :           :
0           6           11          18           24
```

SETTING EXAMPLE

0:00 ~ 7: 00 SENSOR RECORDING

7:00 ~ 11:00 RECORDING DISABLED

11: 00 ~ 18:00 RECORDING

18:00 ~ 24:00 SENSORING RECORDING



NOTE

SENSOR RECORDING INSTALLATION (MOTION)

The DVR has 4 alarm inputs that can be configured as normally closed, normally open, motion detection +NC and motion detection +NO on the "SENSOR SETUP" menu. (refer to P.19).

NOTE: AUTO RECORD

In PC LINK mode the Auto Record Function is disabled. Recording will start again automatically 55 seconds after the USB cable is disconnected.

SUB MENU

SUB MENU
>PASSWORD CHANGE
TIME SET
DATE DISPLAY FORMAT
LINK TO PC

PRESS (▲▼), THEN (←)
PRESS(⏸) TO EXIT

Select this option to change the password, time/date setting, date format and to enable the connection between the DVR and PC over the USB interface.

PASSWORD CHANGE
CURRENT PASSWORD: -----
NEW PASSWORD:-----
PASSWORD CONFIRM:-----

PRESS (▲▼), THEN (←)
PRESS(⏸) TO EXIT

PASSWORD CHANGE:

Select "PASSWORD CHANGE" - a password change input replaces the "SUB MENU" (the default password is 111111)

When the new password is accepted, the board will flash the following screen message: PASSWORD changed.

The message will blink 5 times then the display returns to the SUB MENU.

If the password was not accepted, the unit will automatically return to the SUB MENU.

NOTE

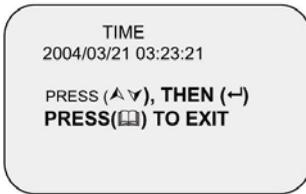
FRONT PANEL BUTTONS DEFINITION

	means "1"	▲	means "5"
	means "2"	▼	means "6"
	means "3"	←	means "7"
	means "4"	◀	means "8"
			means "9"
		▶	means "0"

If the password is mislaid or forgotten press the (||) Pause button 5 times, which returns the DVR to the default setting(111111). The password can then be changed again.

Operation Guide

TIME SET



Select this option to change the date and time.

DATE DISPLAY FORMAT



The DVR has two date formats, these being yyyy/mm/dd or dd/mm/yyyy, which can be set according to regional preference.

Operation Guide

HDD SETUP

HARD DRIVE SETUP
OVERWRITE ENABLED YES
MASTER HDD SIZE 40000MB
MASTER HDD USED 0MB 0%
MASTER HDD FORMAT
SLAVE HDD SIZE

PRESS (▲▼), THEN (←→)
PRESS (ENTER) TO EXIT

OVERWRITE ENABLED.

“YES”. The DVR will record continuously and overwrite the recorded data when the HDD is full.

“NO”. The unit will stop recording once the HDD is full.

MASTER HDD SIZE:

Indicates the capacity of the primary HDD installed in the unit.

MASTER HDD USED:

Indicates the percentage of HDD capacity that has been used.

MASTER HDD FORMAT

Erases all of the recorded data on the Master HDD.

The authorized password is requested before formatting, after the unit formatted, the following information will appear on the screen “HDD DISK FORMATTED”

REMARK: the unit is featured with one HDD only for the time being unless with 1-2 IDE BUS.

Operation Guide

MOTION DETECTION SETUP (SENSOR SETUP)

SENSOR SETUP	
ALARM RECORD TIME	05
ALARM OUT TIME	00
【CH-1】	【NORMAL-OPEN】
【CH-2】	【NORMAL-CLOSE】
【CH-3】	【NOT INSTALLED-】
【CH-4】	【NOT INSTALLED-】
MOTION SETUP	4321
【SENSITIVITY】	4

MOTION RECORDING: setup recording period

ALARM PERIOD: setup 5 to 30 seconds for alarming ch1-ch4

NORMAL-OPEN (N/O):

Once the alarming device set from the N/O (normal-open) to the N/C (normal-close), the alarming even would be triggered.

NORMAL-CLOSE (N/C):

Once the alarming device set from the N/C (normal-close) to the N/O (normal-open), the alarming even would be triggered.

MOTION SETUP: click CH 1 ~ CH 4 to have motion detection.

For example:

4 - - - 【CH4 with motion detection】

4 3 2 - 【CH4.CH3.CH2 with motion detection】

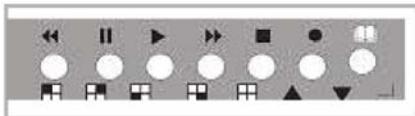
SENSITIVITY (1~9): 1 would be the most easily to trigger on the alarming event, and the more of the number, the lesser probable of the event would be triggered.

CAMERA AUTO-SWITCH

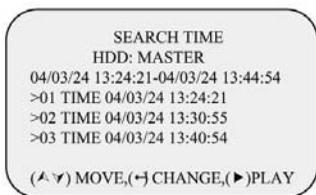
In EACH MODE, press  to turn ON/OFF show "AUTO" on the bottom of screen.

Operation Guide

PLAYBACK



Please use the front panel buttons to operate various playback functions.



Press "▶" button, then the playback time /events selection menu as the left figure appears on the screen. Or you can simply press "▶" twice to directly start playing.

You can either enter the specified time/date to playback or select the event or even view the playback over PC (you can refer to page.13)

NOTICE

1. Please stop recording before playback.

2. Because the events selection is default setting, so you need to press "▶▶" button to switch to time selection.

CONTROL BUTTONS

1. ▶▶ (fast forward button):

Press this button to play the recorded stream faster.

The unit provides three levels of fast forward playback speed:

- ▶▶1: play one time faster (x1), press "▶▶" button
- ▶▶2: play two times faster (x2) than the normal play
- ▶▶3: play four times faster (x4) than the normal play
- ▶▶4: play thirty-two times faster (x32) than the normal play
- ▶▶5: play sixty-four times faster (x64) than the normal play

2. ◀◀ (reverse button):

Press this button to play the recorded stream backward.

Remarks: the reverse playback speed depends on the fps, the number of the recorded channel, the video quality.

3. || (pause button) :

Press this button to pause the playback, or to advance one single frame upon pause mode.

Appendix I.

REGULATORY

FCC Certification

This equipment has been tested and found to comply with the limits for a class A digital device, pursuant to Part 15 of the 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 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 their the own expense.

CE Mark

This product is marked with the CE symbol and indicates compliance with all applicable EEC directives.

Appendix II.

PC LINK

When the DVR is linked with PC via the USB port the message“USB”will be displayed. Once the link is made the DVR automatically switches to real-time display and it is advised that QUAD Mode should be selected for the display.

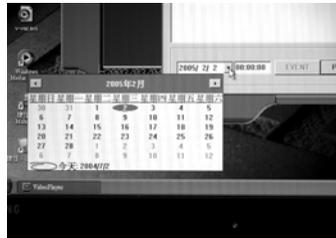
When using the USB port to connect to a PC system the DVR should not be set in either record or playback mode. Once the USB connection is established the following screen should be displayed after approximately 10 to 15 seconds.



- | | |
|--------------------------|--------------------|
| 1. Single Frame Playback | 7. Channel Select |
| 2. Fast Rewind | 8. Search |
| 3. Playback | 9. Convert to BMP |
| 4. Fast Forward | 10. Convert to AVI |
| 5. Single Frame Rewind | 11. Exit |
| 6. Pause | |

Appendix II.

LOG



Press ▼ to show Calendar, access playback files and search for logs

The DVR supports conversion to AVI (playback files) or BMP (singleframe). These are compatible with Windows Media Player.

Remarks:

DVR Player is compatible with Windows 2000 / Windows XP

HDD Brand:

W.D, Seagate, Hitachi

Maxtor HDD's need to the DVR to be reset after removing the USB cable.

Appendix II.

LOG



AVI



BMP

Quick View:

1. Auto Record P.12
2. Camera Auto Switch P.14
3. Quick Search by Calendar P.15
4. Convert to AVI or BMP files P.16



ELECTRONICS LINE UK LTD (ESP)
ADDRESS: UNIT 7 LEVISS TRADING ESTATE, STATION ROAD,
STECHFORD, BIRMINGHAM, B33 9AE, UK
TEL: 44 121 7898111 FAX: 44 121 6030333
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