

# Digital Video Recorder



## User Manual

Please read this instructions thoroughly before operation and retain it for future reference.

## WARNING

*All the safety and operating instructions should be read before operation. The improper operation may cause permanent damage.*



- Please use the provided adaptor (Other adaptor is not suitable for this machine).
- Please lift and place this equipment gently.
- Do not expose this equipment to open sunlight.
- Do not use this equipment near water or in contact with water.
- Do not spill liquid of any kind on the equipment.
- Please power off the unit before unplugging.
- Do not switch the Power On & Off within short period of time (within 3 seconds).
- Do not attempt to service this equipment by yourself.
- Installation should be made by qualified service personnel.



The lightning flash with 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 the presence of important operating and maintenance-(servicing) instructions in the literature accompanying the appliance.

## TABLE OF CONTENTS

### What do you get ?

- FEATURES ----- 3
- PACKAGE INCLUDING ----- 3

### Before Operation

- INSTALLATION GUIDE ----- 4
- FRONT PANEL ----- 5
- BACK PANEL ----- 7

### Basic Operation

- START THIS UNIT ----- 8
- OPERATION ----- 8

### Detailed Menu Setup

- ACCESS MENU ----- 10
- MAIN MENU ----- 10
- MENU OPTIONS ----- 11

### Advanced Operation

- OPERATION OPTIONS ----- 14
- KEY LOCK ----- 15
- RS-232 PROTOCOL ----- 15

Trouble Shooting ----- 15

Specifications ----- 16

APPENDIX #1 – INSTALLING THE HDD ----- 17

APPENDIX #2 – PIN CONFIGURATIONS ----- 19

APPENDIX #3 – RACK MOUNT ----- 21

APPENDIX #4 – RECORDING SPEED ----- 22

## FEATURES

### DVR Features

- Wavelet Compression Format replaces Time-Lapse VCR
- On Screen Display and RTC (Real time clock) Function
- 2 Audio inputs / 1 Audio outputs (Optional)
- 4 kinds of recording qualities could be chosen
- Alarm Input & Output Function
- Video loss records up to 64 events
- Power-loss memory function
- Support 1 Removable HDD, IDE Type
- Quick Multiple Search by date/time, alarm, full list
- Timer : Schedule recording
- Security password protection
- RS-232, RS-485 communication protocol

## PACKAGE INCLUDING



Digital Quad Recorder(with HDD cartridge)



User Manual



Accessories pack



2 Keys for Cartridge



Power Adapter and Cord

NOTE : Please check the package to make sure that you receive the complete accessories which includes those components shown above.

## INSTALLATION GUIDE

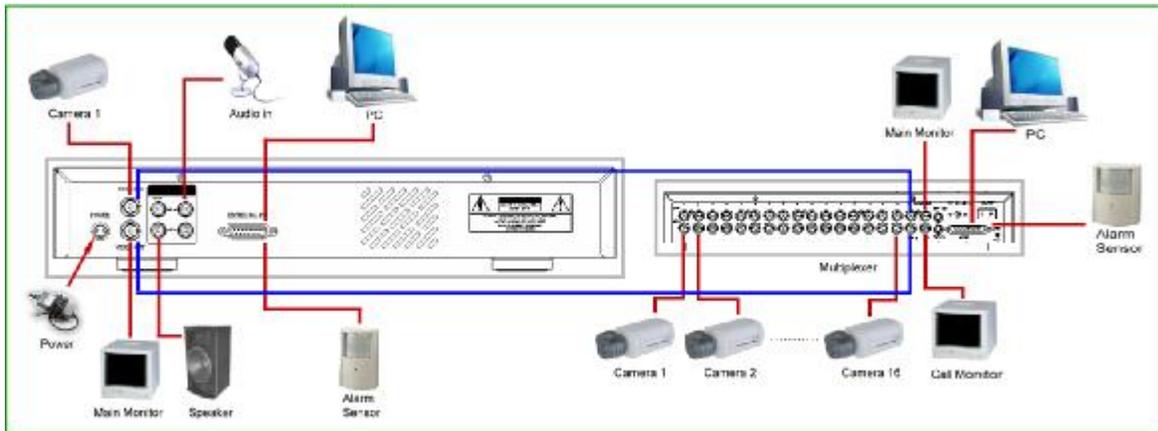
1. Connect cameras and monitor with the DVR.
2. Shown below is one example for connecting the DVR to your existing Observation System.

NOTE : The audio inputs / outputs are optional.

3. Install HDD (The compatible HDD is over 137 GB)

Please refer to page.17 Appendix #1 for installation instructions.

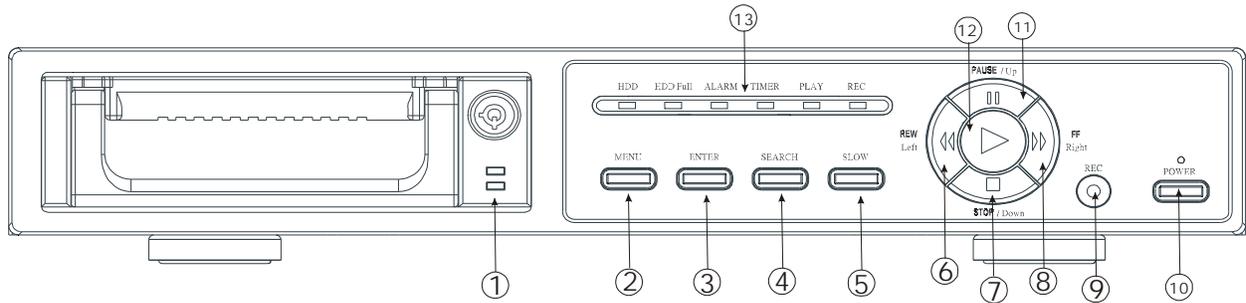
The HDD must be installed before turning on the DVR.



### COMPATIBLE HARD DISK BRANDS

Manufacturer	Model	Capacity	Rotation
HITACHI	Deskstar 180 GXP (120 GB)	120GB	7200 rpm
HITACHI	Deskstar 7K250, HDS722516VLAT20	160GB	7200rpm
HITACHI	Deskstar 7K250, HDS722525VLAT80	250GB	7200rpm
IBM	Deskstar 120GXP (80GB)	80GB	7200 rpm
IBM	Deskstar 120GXP (120GB)	120GB	7200 rpm
Maxtor	DiamondMax 536DX(60GB) 4W060H4	60GB	5400rpm
Maxtor	DiamondMax Plus 9	80GB	7200 rpm
Maxtor	DiamondMax Plus 9, Model#6Y120L	120GB	7200 rpm
Maxtor	DiamondMax Plus 9, Model#6Y160L0	160GB	7200rpm
Seagate	Barracuda ATA IV, ST380021A	80GB	7200rpm
Seagate	Barracuda ATA V, ST3120023A	120GB	7200 rpm
Seagate	Barracuda 7200.7 Plus, ST3160023A	160GB	7200 rpm
Western Digital	Caviar WD1200BB-00CAA1	120GB	7200rpm
Western Digital	Caviar WD2000BB-00DWA0	200GB	7200rpm

## FRONT PANEL



### 1. REMOVABLE HDD CARTRIDGE

Please refer to page.17 Appendix #1.

### 2. MENU

Press MENU to enter main menu.

### 3. ENTER

Press ENTER for confirmation.

### 4. SEARCH

Press SEARCH for searching recording video.

### 5. SLOW

To slow down speed of play mode.

### 6. REW / Left

- REW : Under DVR play mode, it can play video backward at different speeds. (Press REW again to adjust speed as 1, 2, 4, 8, 16, 32 times)
- Left : Under setup mode, it works as Left button.

### 7. STOP / Down

- STOP : Under DVR Record / Play mode, it can stop the moment action.
- DOWN : Under setup mode, it works as Down button.

### 8. FF / Right

- FF : It can play video forward at high speed, and press FF again to adjust speed from 1, 2, 4, 8, 16, 32 times.
- Right : Under setup mode, it can work as Right button.

### 9. REC

Press REC to start recording.

### 10. POWER

Press Power to turn ON / OFF the DVR.

### 11. PAUSE / Up

- Pause : Under DVR play mode, it can pause the action.
- UP : Under setup mode, it works as Up button.

### 12. PLAY

Press PLAY to playback recorded video.

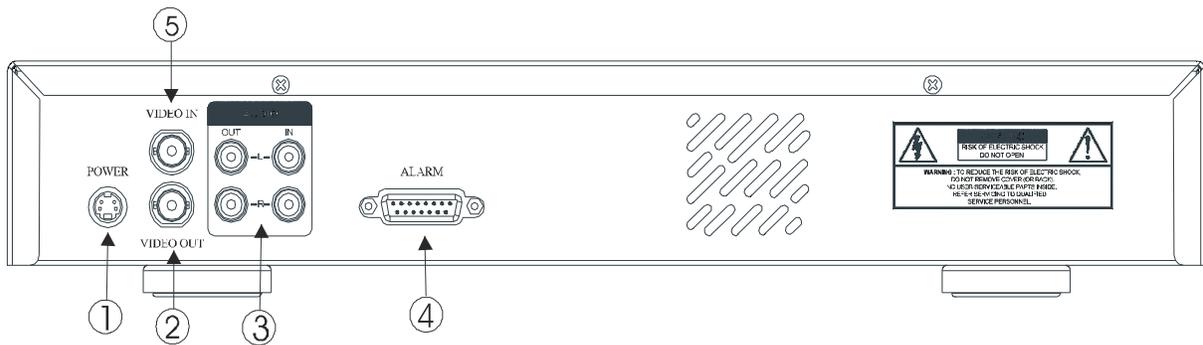
### 13. LED LIGHT

The LED Light is ON under following condition.

- HDD : Blinks on startup after HDD is activated
- HDD Full : HDD is full
- ALARM : If Alarm Enable sets as "YES", while the alarm is triggered , the led will be flashing
- TIMER : When Timer is set as Enabled
- PLAY : On Play mode
- REC : On Recording mode

# BACK PANEL

# DVR



## 1. POWER

Please use the provided adaptor to connect power cord (Other adaptor is not suitable for this machine).

## 2. VIDEO OUT

Connect to the monitor on which the DVR video will be viewed

## 3. AUDIO IN (R/L) – NOTE : THIS FUNCTION IS OPTIONAL.

Connect to audio source, such as microphone

NOTE : 1. IPS should be set over 30 (for NTSC) or 25 (for PAL)

2. You can record only one Audio source at a time.

## AUDIO OUT (R/L) – NOTE : THIS FUNCTION IS OPTIONAL.

Connect to monitor or speaker.

\* with 2 mono audio outputs from the same source.

## 4. EXTERNAL I/O

- Controlled remotely by an external device or control system.
- Alarm input, external I / O explanation.

NOTE : While the power is off, if the DVR is triggered by Timer or Alarm, it will start recording automatically and while stop recording (depend on Alarm Duration Time), the power will be back to the “off” status again.

## 5. VIDEO IN

Connect to a video source, such as a camera, Quad or Multiplexer

# Basic Operation

## START THIS UNIT

Before using the DVR, please have a HDD installed ready. (refer to Appendix #1 for installation or removal of a HDD).

1. Connect the AC Power Cord with Power Adapter and plug into an electrical outlet. The red LED indicator light will be ON and the DVR is in Standby mode.
2. Press the Power button. The POWER LED will turn from red to orange, and other red LED indicators will turn ON. It takes approximately 5 to 15 seconds to boot the system with the message : " HDD Detecting ". Once connected, the POWER LED will change to green color, and the Alarm and Timer LED will be ON.
3. Before operating the DVR, please set up the system time first. (for setting system time, please refer to page.11).

NOTE : When "HDD not found" message has been shown up, please refer to appendix # 1. As the HDD is likely not installed correctly.

## OPERATION

### RECORDING

The DVR offers a variety of recording modes, such as record continuously, at scheduled time, and by events. You can set up recording speed and resolution. You can set these options by selecting MENU / RECORD before recording, please refer to page.12. Under the recording status, if power is off accidentally, recorded video will still store in the HDD. DVR will return to original recording situation after power returns again.

On the screen, you will find the date, time, HDD recording type, the size of available GB left in the HDD memory and the letter "A" represents the method of recording that is occurring.

(OW : HDD Overwrite)

2002 - JAN -01 01:02:03 A●OW
---------------------------------

NOTE : 1. When the HDD is full under O/W Recording mode, previous recorded files may be overwritten without further warning notices.

2. If the HDDs' capacity is only 5 GB left, it will buzz for 3 seconds; so as in 4GB, 3GB, 2GB and 1GB. If the O/W Recording mode(NOTE 1) is on, it won't have the warning buzzer.

There are 4 different recording modes as followings : Alarm, Timer, Manual and External Record.

#### 1. ALARM RECORD

When DVR is triggered by an alarm input, it will record immediately. Indicated by the letter "A" and show ! symbol on the triggered channel.

#### 2. TIMER RECORD

When recording is scheduled by a Timer. Indicated by the letter "T".

#### 3. MANUAL RECORD

When recording is initiated by manually pressing the REC button. Indicated by the letter "M".

#### 4. EXTERNAL RECORD

When recording is triggered by an External device. Indicated by the letter "E".

## PLAY

Press "PLAY" button, the DVR will show the last recording.

### 1. FAST FORWARD (F.F.) & FAST REWIND (F.R.)

You can increase the speed of Fast Forward and Rewind on the DVR.

In the Play mode, press "▶▶" once to get 2X speed forward and press twice to get 4X speed,... and the maximum speed can reach 32X.

Press "◀◀" once to get 1X speed rewind and press twice to get 2X speed, ... and the maximum speed can reach 32X.

### 2. SLOW FORWARD (S.F.) & SLOW REWIND (S.R.)

You can also slow down the speeds of Forward and Rewind on the DVR.

In the Play mode, press the SLOW button and you will enter Slow mode.

Press "▶▶" once to get 1/2X speed forward and press twice to get 1/4X speed,... and the slowest speed can reach 1/32X.

Press "◀◀" once to get 1/2X speed rewind and press twice to get 1/4X speed, ... and the slowest speed can reach 1/32X.

### 3. PAUSE

It will let you pause the current video displayed on the screen.

### 4. STOP

Press "STOP" under any circumstance, it will return DVR to live monitoring mode.

### 5. IMAGE JOG DIAL

It will allow you to manually view video frame-by-frame, one image at a time.

While in PLAY mode, press "PAUSE", it will pause the screen.

Pressing "▶▶" button advances the frozen screen one image forward.

Pressing "◀◀" button moves back one image.

# Detailed Menu Setup

## ACCESS MENU

The Menu allows you to configure your DVR settings. Please follow below steps to access the Menu :

Press the Menu button. The password screen will appear:



NOTE : The default Password is 0000. Simply press the Enter button to access the Menu.

To key-in the Password, press the "Right" and "Left" buttons to move between numbers, and use the "Up" and "Down" buttons to input the number.

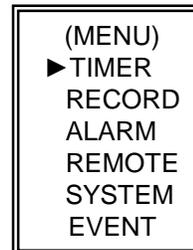
Press the ENTER button once the correct Password is entered. The MENU options screen will appear.

Note: If you get a message "Password Error", you have entered an incorrect password.

## MAIN MENU

There are 6 options available in the Main Menu:

TIMER ----- Scheduling Record  
RECORD ----- Record Mode Setup  
ALARM----- Alarm Mode Setup  
REMOTE----- Remote control protocol Setup  
SYSTEM ----- System Setup  
EVENT ----- Event List



Outlined below are the buttons used for Menu setting :

- "Up" and "Down" : Scroll up and down or change values when an option is selected and is blinking
- "Left" and "Right" : Scroll sideways within a menu option that has been selected
- ENTER : Selects a submenu / an option under a submenu for browsing / modification
- MENU : Completes modification of a menu option; exits a menu

## MENU OPTIONS

### SYSTEM

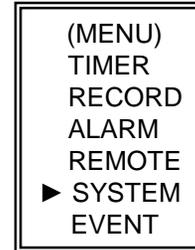
#### 1. BUZZER

While you set the BUZZER as "ON", it will be triggered by event occurrence.

#### 2. HDD OVERWRITE

Select "YES" to overwrite previous recording video in HDD.

NOTE : When the HDD is full under O/W Recording mode, previous recorded files may be overwritten without further warning notices.



#### 3. MESSAGE LATCH

To select whether the DVR messages will disappear after 10 sec or remain on screen. NO is the default setting which the messages will go away after 10 sec.

#### 4. DATE DISPLAY

To set the Date mode showed on the monitor.

#### 5. DATE

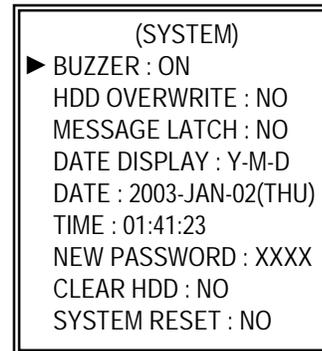
To set the system date on the DVR.

#### 6. TIME

To set the system time on the DVR.

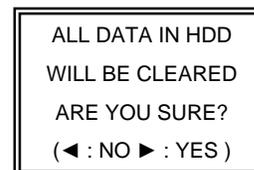
#### 7. NEW PASSWORD : XXXX (Default password : 0000)

To set the new password.



#### 8. CLEAR HDD

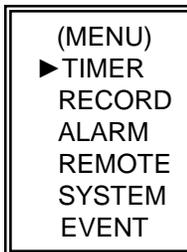
Delete all the contents of your HDD. When you choose "YES" on this option, you will be prompted with the question shown : Press "▶" to clear HDD or press "◀" to confirm not to clear HDD.



#### 10. SYSTEM RESET

Reset all system settings to book to factory default settings.

## TIMER



### 1. DAY

Select the day, or days of the week (Mon–Fri / Sat–Sun / Daily) that you wish to schedule the DVR to automatically record.

NOTE : 1.Special Date could be changed by "Enter", "Up" and "Down" buttons.

- If you have selected the specific date and recording timer set from that specific day to a new day, then the Recording Timer Schedule will be set as whole week. For specific date of Recording Timer Schedule, it is not recommended to set End Time over 23:59. For Example:If you set Timer Schedule Day as Sunday, and START from 11:30, but End on 00:20, then Recording Timer Schedule is set as from every Sunday's 11:30 to next Sunday's 00:20. If you only want to set Recording Timer Schedule from every Sunday 11:30 to Monday 00:20, then you should set Recording Timer Schedule as Sunday from 11:30 to 23:59, and Monday from 00:00 to 00:20.

### 2. START

Select the starting time for the recording.

### 3. END

Select the finishing time for the recording.

### 4. IPS

Stand for Images Per Second and it could let you see Record submenu for more details.

NTSC—60、30、15、8、4、2、1、OFF

PAL—50、25、12、6、3、2、1、OFF

### 5. TIMER ENABLE

Enables / Disables Timer recording function

```
(TIMER)
DAY START END IPS
DAILY 00:00 00:00 OFF
TIMER ENABLE : YES
```

## RECORD

### 1. RECORD IPS

Select the images per second of recording. The options are as following :

NTSC—60、30、15、8、4、2、1

PAL—50、25、12、6、3、2、1

### 2. RECORD QUALITY

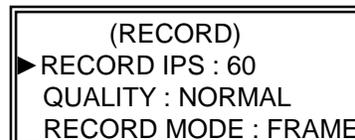
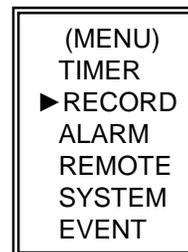
There are four quality settings : BEST, HIGH, NORMAL and BASIC.

NOTE : The relationship of Record time, IPS and record quality, please refer to page.22 Recording Speed.

### 3. RECORD MODE

Set recording mode between Frame and Field. One frame is equal to two fields.

NOTE : It is recommended that you leave the Record Mode as Field.



## ALARM

### 1. ALARM ENABLE

Enables / Disables Alarm function.

### 2. ALARM DURATION

Set the length of time for recording after Alarm triggered.

### 3. RECORD IPS

Select the images per second of recording. The options are as followings :  
 NTSC— 60、30、15、8、4、2、1  
 PAL— 50、25、12、6、3、2、1

### 4. RECORD QUALITY

There are four quality settings : BEST, HIGH, NORMAL and BASIC.

NOTE : The relationship of Record time, IPS and record quality, please refer to page.22 Recording Speed.

### 5. RECORD MODE

Set recording mode between Frame and Field. One frame is equal to two fields.

NOTE : It is recommended that you leave the Record Mode as Field.

```
(MENU)
TIMER
RECORD
▶ALARM
REMOTE
SYSTEM
EVENT
```

```
(ALARM)
▶ALARM ENABLE : YES
ALARM DURATION : 10 SEC
RECORD IPS : 60
RECORD QUALITY : HIGH
RECORD MODE : FRAME
```

## REMOTE

### 1. REMOTE MODE

Select RS-232 or RS-485 interface for the remote computer connection Protocol. (Please refer to page.15 for RS-232 Remote Protocol)

### 2. BAUD RATE

Set the speed of the remote computer's Baud Rate – which is the rate of Data transmission. Available Baud Rate are 115200, 57600, 19200, 9600, 4800, 3600, 2400 and 1200.

### 3. ID

Allow you to use RS-232 or RS-485 protocol to program different DVRs. The range of ID is from "000" to "255".

```
(MENU)
TIMER
RECORD
ALARM
▶REMOTE
SYSTEM
EVENT
```

```
(REMOTE)
▶REMOTE MODE: RS-232
BAUD RATE: 9600
ID: 000
```

## EVENT

The recorded events will be showed on a single page and please press "◀" or "▶" to change the pages. An "Event" occurs when following incidents occur :

PWR : Recovery time after power shut down  
 in record mode

HDD : HDD error time

VLS : Video loss time

```
(MENU)
TIMER
RECORD
ALARM
REMOTE
SYSTEM
▶EVENT
```

```
PWR 2002-JAN-01 03:00:00
VLS 2002-JAN-01 01:02:04
HDD 2002-JAN-01 01:02:03
PWR 2002-JAN-01 01:02:02
VLS 2002-JAN-01 01:02:01
HDD 2002-JAN-01 01:02:00
◀: Page Up ▶: Page Down
```

## OPERATION OPTIONS

### SEARCH

#### 1. LAST RECORD

Play the last recorded video.

#### 2. FULL LIST

Show a listing of all recorded video on the HDD which sorted by time.

M : Manual Record time

A : Alarm Record time

T : Timer Record time

E : External Record time

#### 3. ALARM LIST

Show a listing of all recorded video triggered by an Alarm.

NOTE : If there are no Alarm in the record, the screen will display "EMPTY".

#### 4. TIME SEARCH

Find video recorded on a specific date that is entered.

▶ LAST RECORD  
FULL LIST  
ALARM LIST  
TIME SEARCH

▶ M 2002-JAN-02 01:02:03  
E 2002-JAN-01 05:02:03  
A 2002-JAN-01 04:02:03  
T 2002-JAN-01 03:02:04  
T 2002-JAN-01 02:02:03  
M 2002-JAN-01 01:02:01  
◀ : PAGE UP ▶ : PAGE DOWN

## KEY LOCK

For added security, you can "Lock" all buttons on your DVR. Locking disables the buttons and prevents other people from using the system.

Press ENTER and MENU at the same time to enable Key Lock.

Press ENTER and MENU at the same time to disable Key Lock.

## RS-232 REMOTE PROTOCOL

You can use the PC keyboard to simulate DVR keypad.

DATA : REMOTE PROTOCOL using 8 bit data · 1 start bit · 1stop bit

FUNCTION	CODE	ASCII	FUNCTION	CODE	ASCII
MENU	0x4D	M	Down / Stop	0x4E	N
ENTER	0x0D	ENTER	Left / F.F.	0x4C	L
Search	0x48	H	Right / F.R.	0x52	R
Slow	0x53	S	PLAY	0x50	P
Up / Pause	0x55	U	RECORD	0x72	r

## TROUBLE SHOOTING

When malfunction occurs with DVR, it may be not serious and can be corrected easily. The table below describes some typical problems and their solutions. Please check them before calling your DVR dealer.

PROBLEM	SOLUTION
HDD Not Found	I Please Insert HDD
	I Please use the Key to lock the HDD Cartridge
	And press any key
No power	I Check power cord connections.
	I Confirm that there is power at the outlet.
Not working when press any button	I Check if it is under Key Lock mode.
	I Press " <b>MENU</b> " & " <b>ENTER</b> " to exist Key Lock mode.
No recorded video	I Check if the HDD is installed properly.
Timer Record enable does not working	I Check if the Record Enable is set to YES
No live video	I Check camera video cable and connections.
	I Check monitor video cable and connections.
	I Confirm that the camera has power.
	I Check camera lens setting.

## SPECIFICATIONS

<b>Video format</b>	NTSC/EIA or PAL/CCIR
<b>Hard disk storage</b>	IDE type, UTMA 66 above, 1 removable HDD supported
<b>Record mode</b>	Manual / Alarm / Timer / External
<b>Playback searching</b>	Date & Time / Alarm searching
<b>RS-232</b>	Yes
<b>Video input</b>	1 video input, composite 1 Vp-p / 75ohm(BNC)
<b>Video output</b>	1 video output, composite 1 Vp-p / 75ohm(BNC)
<b>Video resolution</b>	720 X 486(NTSC), 720 X 576(PAL)
<b>Video compression</b>	Wavelet
<b>Audio input</b>	Optional
<b>Audio output</b>	Optional
<b>Video Loss Detection</b>	Yes
<b>Refresh Rate</b>	60 images/sec. for NTSC / 50 images/sec. for PAL
<b>Recording Rate</b>	60 images/sec. for NTSC / 50 images/sec. for PAL
<b>Key Lock</b>	Yes
<b>Alarm Input</b>	TTL input, Hi (5V), Low (GND)
<b>Alarm Output</b>	COM / N.O / N.C
<b>Time Display Format</b>	YY/MM/DD, DD/MM/YY, MM/DD/YY, OFF
<b>Power Source</b>	AC90~240V $\pm$ 10% switching adaptor
<b>Power Consumption</b>	<27W
<b>Operation Temperature</b>	10 ~ 40 $^{\circ}$ C
<b>On Screen Display</b>	Yes
<b>Dimension (mm)</b>	380mm(W) x 270mm(L) x 65mm(H)
<b>Net Weight</b>	5.2 kgs

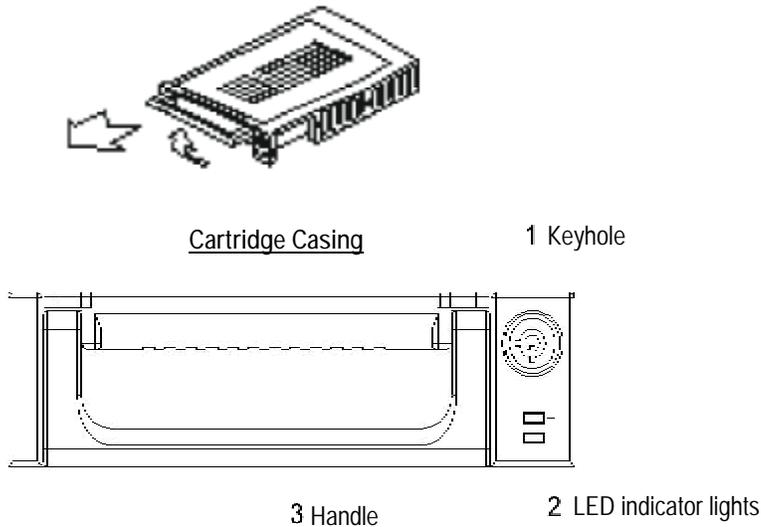
*Specifications are subject to change without notice.*

# APPENDIX #1 – INSTALLING the HDD

Please follow the steps carefully in order to ensure correct installation.

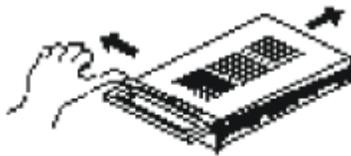
The compartment located on the front panel of the DVR is the removable Cartridge Casing, in which you insert the HDD. The various parts of the Cartridge Casing are labeled for your reference.

## 1. Remove the Cartridge Casing from the DVR



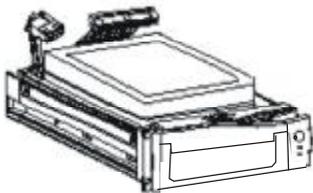
## 2. Remove the Cover from the Cartridge Casing

- à Unclip the release latch with the word "OPEN" printed beside it by gently pushing on the latch.
- à Slide the cover off the Cartridge Casing.



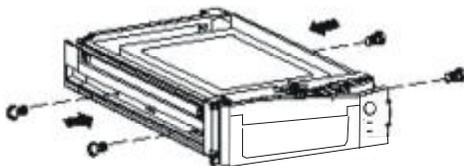
## 3. Connect the HDD into the Cartridge Casing

Please take the Hard Disk Drive and Connect the two cables from the back of the Cartridge Casing to the HDD.



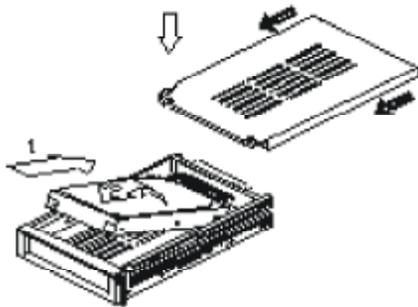
4. Secure the HDD in the Casing (optional)

Use the screws supplied to tighten them, place the HDD into correct position.



5. Slide the top Cover over the Cartridge Casing

Slide the Cover forward over the Cartridge Case. Ensure it is secured in place over the release latch.

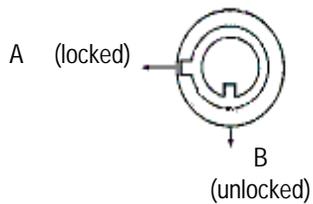


6. Reinsert the Cartridge Casing into the DVR

Fully insert the Cartridge Case into the DVR.

7. Lock the Cabinet

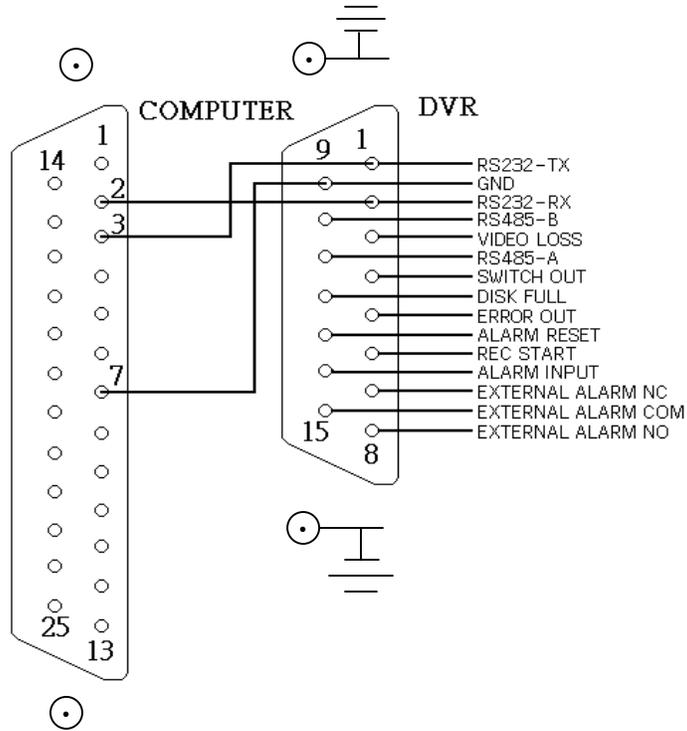
Lock the cabinet by turning the key clockwise.



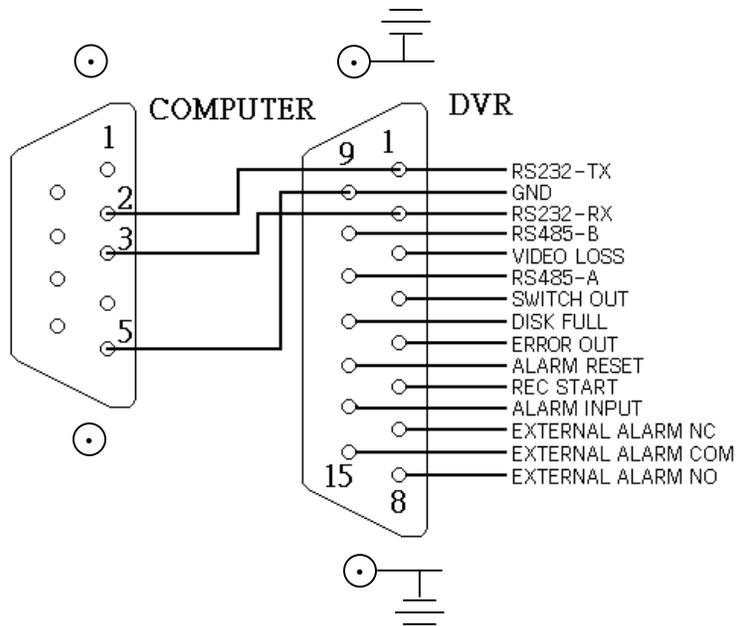
Note : If you do not lock the cabinet, the DVR system will not function properly.

# APPENDIX #2 – PIN CONFIGURATIONS

## 25 pin com port



## 9 pin com port



**PIN 1. RS232-TX : RS-232**

DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS-232 serial communications signals.

**PIN 2. RS232-RX : RS-232**

DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS-232 serial communications signals.

**PIN 3. VIDEO LOSS**

When video loss happens, it will send a signal to trigger another accessory.

This pin output becomes "Low" when video loss, and normal operation remains "High".

**PIN 4. SWITCH OUT**

Connect to VCR trigger recording terminal of multiplexer, in order to synchronize recording signals. The default mode is falling (Negative) Edge.

**PIN 5. ERROR OUT**

When HDD errors happen, this pin will send a signal out.

This pin become "Low" when HDD errors happen. The normal operation remains "High".

**PIN 6. REC START**

This pin can accept the external trigger signal to activate record mode from external device. When the external signal turn to "Low", it will trigger DVR record mode. When the external signal back to "High", it will stop recording action. The default normal operation remains "High".

**PIN 7. EXTERNAL ALARM NC**

Under normal operation COM connect with NC and disconnect with NO. But when alarm triggered, COM disconnect with NC, and connect with NO.

**PIN 8. EXTERNAL ALARM NO**

Under normal operation COM connect with NC and disconnect with NO. But when Alarm triggered, COM disconnect with NC, and connect with NO.

**PIN 9. GND**

GROUND

**PIN 10. RS485-B**

DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS485 serial communications signals.

**PIN 11. RS485-A**

DVR can be controlled remotely by an external device or control system, such as a control keyboard, using RS485 serial communications signals.

**PIN 12. DISK FULL**

When HDD is full, it sends a signal to trigger next DVR record mode, if you install another DVR. Under normal operation, the signal remains "High". But when disk full, DVR will send the "Low" signal.

**PIN 13. ALARM RESET**

To connect wire from ALARM RESET ( PIN 13 ) to GND ( PIN 9 ) connector, it can disable ALARM. An external signal to ALARM RESET ( PIN 13 ) can be used to reset both ALARM OUTPUT signal and DVR's internal buzzer. When alarm has been triggered, signal becomes "Low", and it will stop all alarm activities. Under normal operation, signal remains "High".

**PIN 14. ALARM INPUT**

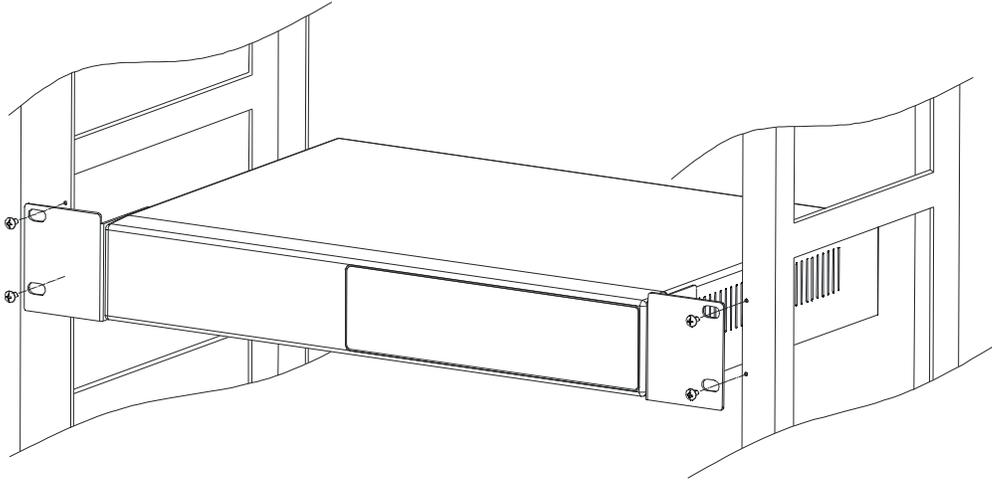
To connect wire from ALARM INPUT ( PIN 14 ) to GND ( PIN 9 ) connector, DVR will start recording and buzzer will be on. When alarm has been triggered, signal becomes "Low", and it will stop all alarm activities. Under normal operation, signal remains "High".

**PIN 15. COM**

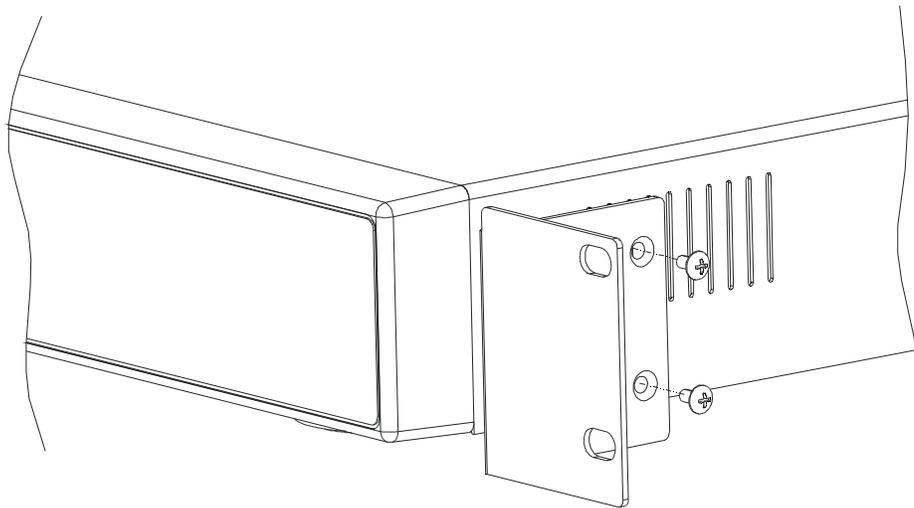
Under normal operation COM connect with NC and disconnect with NO. But when alarm triggered, COM disconnect with NC, and connect with NO.

## APPENDIX #3 – RACK MOUNT

Screws and brackets for rack mounting applications can be purchased as an optional accessory.



Front Angle with Rack Mount



Side View with Rack Mount

## APPENDIX #4 – RECORDING SPEED

The Record Time is different based on Record Speed and Record Quality. Please refer to following table.

### NTSC SYSTEM

IPS		60	30	15	8	4	2	1
Record Quality	Best	12hr	24hr	48hr	90hr	180hr	360hr	720hr
	High	15hr	30hr	60hr	112.5hr	225hr	450hr	900hr
	Normal	24hr	48hr	96hr	180hr	360hr	720hr	1440hr
	Basic	40hr	80hr	160hr	300hr	600hr	1200hr	2400hr
HDD Type	120GB							

### PAL SYSTEM

IPS		50	25	12	6	3	2	1
Record Quality	Best	12hr	24hr	50hr	101hr	203hr	304hr	608hr
	High	15hr	30hr	63hr	127hr	253hr	380hr	760hr
	Normal	24hr	49hr	101hr	203hr	405hr	608hr	1220hr
	Basic	41hr	81hr	168hr	338hr	675hr	1013hr	2025hr
HDD Type	120GB							

*Note: Above data is obtained from actual test of recording normal TV program. (For Reference Only)*