Please read this instructions thoroughly before operation and keep the manual in a safe place for further reference.
This adaptor is only for this machine. Do not use it for other electronic products.

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 down 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.
FEATURES

DVR Features
• Wavelet compression format replaces Time-Lapse VCR + Multiplexer / Quad
• 4 audio inputs / 2 audio outputs
• On Screen Display and Remote Control via Video Server & PC
• Picture-in-picture (PIP) and Picture-on-Picture (POP) function in live
• Motion detection & motion trigger recording function
• Alarm input & output function
• Video loss detected on each channel
• Linear Zoom (2x~4x)
• Multiplexer & Quad recording mode switching
• Recording rate up to full size 30 images/sec. or Quad size 120 images/sec.
• Support 1 removable HDD with hot-swap capability, IDE TYPE (over 500 GB)
• Multiple quick search by date/time, alarm, full, motion list
• Security password protection
• RS-232, RS-485 communication protocol

PACKAGE CONTENT

Digital Multiplex Recorder(with HDD cartridge)  User Manual  2 Keys for Cartridge

Accessories pack-1  Accessories pack-2  Power Adapter and Cord

NOTE :
1. Please check the package to make sure that you receive the complete accessories which includes the components shown above.
2. This adaptor is DC19V 2A If it is damaged, user can find replacement adaptor with this specification.
1. Connect cameras and monitor to the DVR.
2. Shown below is an example of connecting the DVR to your existing Observation System.
3. Install HDD (The compatible HDD Brands are listed in the following table.)

Please refer to page 22 Appendix #1 for installation instructions.

*The HDD must be installed before turning on the DVR. If HDD is not installed, the DVR would function as a 4 CH multiplexer.

### INSTALLATION GUIDE

#### COMPATIBLE HARD DISK MODELS

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Model</th>
<th>Capacity</th>
<th>Rotation</th>
</tr>
</thead>
<tbody>
<tr>
<td>HITACHI</td>
<td>Deskstar 180 GXP (120 GB)</td>
<td>120GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>HITACHI</td>
<td>Deskstar 7K250, HDST22516VLAT20</td>
<td>160GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>HITACHI</td>
<td>Deskstar 7K250, HDST22525VLAT80</td>
<td>250GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>IBM</td>
<td>Deskstar 120GXP (80GB)</td>
<td>80GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>IBM</td>
<td>Deskstar 120GXP (120GB)</td>
<td>120GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Maxtor</td>
<td>DiamondMax 536DX(60GB) 4W060H4</td>
<td>60GB</td>
<td>5400rpm</td>
</tr>
<tr>
<td>Maxtor</td>
<td>DiamondMax Plus 9</td>
<td>80GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Maxtor</td>
<td>DiamondMax Plus 9, Model#6Y120L</td>
<td>120GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Maxtor</td>
<td>DiamondMax Plus 9, Model#6Y160L0</td>
<td>160GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Maxtor</td>
<td>MaxLine Plus , Model#7Y250P0</td>
<td>250GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Seagate</td>
<td>Barracuda ATA IV, ST380021A</td>
<td>80GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Seagate</td>
<td>Barracuda ATA V, ST3120023A</td>
<td>120GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Seagate</td>
<td>Barracuda 7200.7 Plus, ST3160023A</td>
<td>160GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Western Digital</td>
<td>Caviar WD1200BB-00CAA1</td>
<td>120GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Western Digital</td>
<td>Caviar WD2000BB-00DWA0</td>
<td>200GB</td>
<td>7200 rpm</td>
</tr>
<tr>
<td>Western Digital</td>
<td>CaviarSE WD2500JB</td>
<td>250GB</td>
<td>7200 rpm</td>
</tr>
</tbody>
</table>
1. REMOVABLE HDD CARTRIDGE & KEYHOLE
   Please refer to page 22 Appendix #1.

2. LED LIGHT
   The LED Light is ON under following condition.
   HDD : HDD status
   HDD Full : HDD is full
   ALARM : To turn off the ALARM LED light, please refer to page 14 and set the ALARM mode as OFF.
   TIMER : When Timer is Enabled
   PLAY : Playing mode
   REC : Recording mode

3. MENU
   Press MENU to enter main menu.

4. ENTER
   Press ENTER for confirmation.

5. SEARCH
   Press SEARCH for searching recorded video.

6. ZOOM
   Press ZOOM to enlarge the picture display.

7. Picture in Picture
   PIP: Press "PIP" button for Picture in Picture screen and press twice to enter POP function.
   + : Press "+" button can change the setting in the menu.

8. 4 channels display mode
   : Press " button for 4 CH display modes
   - : Press " - " button can change the setting in the menu.

9. SLOW
   To slow down the speed of playing mode.

10. POWER
    Press Power to turn ON / OFF the DMR.
11. FF / Right
   FF : Play video fast forward. (Press FF button again to adjust speed from 1, 2, 4, 8, 16, 32 times)
   Right : Under setup mode, it works as Right button.

12. REW / Left
   REW : Play video fast backward. (Press REW button again to adjust speed as 1, 2, 4, 8, 16, 32 times)
   Left : Under setup mode, it works as Left button.

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

14. PAUSE / Up
   Pause : Under DMR play mode, it can pause the action.
   UP : Under setup mode, it works as Up button.

15. PLAY
   Press PLAY to playback recorded video.

16. REC
   Press REC to start recording.

17. CAMERA SELECT (1-4)
   Press the Camera Select (1-4) to select the camera.
1. **POWER**
   Please use the provided power cord.

   **Note:**
   1. This adaptor is only for this machine. Do not use it for other electronic product.
   2. This adaptor is DC19V 2A If it is damaged, user can find replacement adaptor with this specification.

2. **EXTERNAL I/O**
   Controlled remotely by an external device or control system like Video Web Server. Alarm input, external I/O expansion.

3. **VIDEO INPUT (1-4)**
   Connect to video source, such as camera.

4. **MAIN**
   Connect to Main monitor.

5. **CALL**
   Connect to CALL monitor. Show the Switch Display. When alarm trigger happens, the call monitor will show the triggered channel for a period of time.

6. **AUDIO IN (1-4)**
   Connect to audio sources, such as a microphone.
   IPS should be set to 30 (for NTSC) or 25 (for PAL)
   * 4 audio inputs, but can only record one input at the same time.

7. **AUDIO OUT (R/L)**
   Connect to monitor or speaker.
   IPS should be set to 30 (for NTSC) or 25 (for PAL)
   * with 2 mono audio outputs from the same source.

8. **FAN**
   For ventilation, do not block the opening.
GETTING STARTED

Before using the DMR, please have a HDD installed ready, or it will function as 4 CH multiplexer (refer to Appendix #1 for installation or removal of a HDD).

1. Connect the AC power cord and plug into an electrical outlet then press the power switch “ON”. 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 LED will be ON.

3. Before operating the DVR, sets the system time first. (refer to page.11).

NOTE : 1. Under O/W Recording mode, previously recorded files will be automatically overwritten without further warning notices, when the HDD is full.

2. If the HDD capacity is only 5 GB left, it will display “5 GB” on the up-right screen and shows orange color, and it will buzz for 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.

OPERATION

RECORDING

The DVR offers 4 recording modes, variety of recording modes. Refer P.13 for advanced setting of recording speed and resolution. Under the recording status, if power is off accidentally, recorded video will still be stored in the HDD. DVR will return to original recording setting after power restores again.

On the screen, you will find the date, time, HDD recording type, the available space of HDD (in GB) and the symbol “ ” represents the recording mode.

NOTE : 1. Under O/W Recording mode, previously recorded files will be automatically overwritten without further warning notices, when the HDD is full.

2. If the HDD capacity is only 5 GB left, it will display “5 GB” on the up-right screen and shows orange color, and it will buzz for 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 recording modes: Alarm, Motion, Timer and Manual Recording.

1. ALARM RECORDING
   DVR is triggered by an alarm input. symbol will be shown on the triggered channel. (refer to page14)

2. MOTION TRIGGER RECORDING
   Recording is triggered by motion detection symbol will be shown on the triggered channel. (refer to page15)

3. TIMER RECORDING
   Recording is scheduled by a Timer. It will indicate by the symbol . (refer to page12)

4. MANUAL RECORDING
   Recording is initiated manually by pressing the REC button. Symbol will be shown.
**PLAY BACK**

Press “PLAY” button, the DMR 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 DMR.
   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 speed of Forward and Rewind on the DMR.
   In the Play mode, press the SLOW button and you will enter Slow mode.
   Press "SLOW" once to get 1/2X speed forward and press "►" 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**
   You can pause the playback and the image will be displayed on the screen.

4. **STOP**
   Press “STOP” button under any circumstance, DMR will return 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.
   Press “►” button advances the frozen screen one image forward.
   Press “◄” button moves back one image.
   **Note:** During the LIVE or PLAY mode, press “ENTER” + “SEARCH” buttons at the same time to switch the “NORMAL” and “SHARPNESS” display.

**CAMERA SELECT (1-4)**

Press Camera Select (1-4) to select the camera to display in full screen.
There are 12 options available in the Main Menu:

- **TIMER** — Program Timer Recording
- **CAMERA** — Camera Setup
- **RECORD** — Recording Mode Setup
- **ALARM** — Alarm Setup
- **DWELL** — Dwell time Setup
- **PIP** — Picture in Picture Setup
- **MOTION** — Motion Detection Setup
- **DISPLAY** — Display Mode Setup
- **REMOTE** — Remote Control Setup
- **USER** — User Password Setup
- **SYSTEM** — System Setup
- **EVENT** — Event List

Outlined below are the buttons used for Menu setting:

- "▲" and "▼": Scroll up and down within a menu option.
- "◄" and "►": Scroll sideways within a menu option that has been selected
- "＋" and "−": Increase and decrease the number or change values when an option is selected and is blinking
- **ENTER**: Select a submenu / an option under a submenu for browsing / modification
- **MENU**: Complete modification of a menu option; exit a menu
MENU OPTIONS

SYSTEM

1. AUDIO INPUT
   To choose one of 4 channels to record. (It can only record 1 input)

2. BUZZER
   Set the BUZZER "ON", it will buzzer by event occurrence when the setting is ON.

3. EXT ALARM
   To set the EXT ALARM. It will be triggered by event occurrence when the setting is ON.

4. VLOSS ALARM
   To set the VLOSS ALARM. When the setting is “ON”, the alarm will start by the setting of Buzzer, EXT alarm or Alarm Duration.

5. MOTION ALARM
   To set the MOTION ALARM. When the setting is “ON”, the alarm will start by the setting of Buzzer, EXT alarm or Alarm Duration.

6. KEY MUTE
   To set the KEY MUTE. When the setting is “YES”, there will be no sound when you press any key.

7. HDD OVERWRITE
   To set the HDD OVERWRITE. When the HDD is full under O/W recording mode, previously recorded files will be overwritten without further warning notices if the HDD OVERWRITE is ON.

8. MESSAGE LATCH
   To select whether the DMR messages will disappear after 10 seconds or remain on screen. NO is the default setting which the messages will disappear after 10 sec.
   **NOTE:** Video loss, Alarm and Motion messages will be shown the same as Alarm Duration time.

9. DATE DISPLAY
   To set the date Y/M/D, M/D/Y, D/M/Y and OFF on monitor or not.

10. DATE
    To set the date on the DVR.

11. TIME
    To set the time on the DVR.

12. CLEAR HDD
    Delete all the contents of the HDD. When you choose “YES” on this option, press “ENTER” and you will be prompted with the question shown: Press "→" to clear HDD or press "←" to cancel.

13. SYSTEM RESET
    Reset all system settings back to factory default settings. Select “YES” and press “ENTER” button.

(SYSTEM)

<table>
<thead>
<tr>
<th>AUDIO INPUT</th>
<th>BUZZER</th>
<th>EXT ALARM</th>
<th>VLOSS ALARM</th>
<th>MOTION ALARM</th>
<th>KEY MUTE</th>
<th>HDD OVERWRITE</th>
<th>MESSAGE LATCH</th>
<th>DATE DISPLAY</th>
<th>DATE</th>
<th>TIME</th>
<th>CLEAR HDD</th>
<th>SYSTEM RESET</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>ON</td>
<td>YES</td>
<td>YES</td>
<td>YES</td>
<td>D/M/Y</td>
<td>26-DEC-2003 [FRI]</td>
<td>22:55:34</td>
<td>YES</td>
<td>YES</td>
</tr>
</tbody>
</table>

(MENU)

<table>
<thead>
<tr>
<th>TIMER</th>
<th>CAMERA</th>
<th>RECORD</th>
<th>ALARM</th>
<th>DWELL</th>
<th>PIP</th>
<th>MOTION</th>
<th>DISPLAY</th>
<th>REMOTE</th>
<th>USER</th>
<th>SYSTEM</th>
<th>EVENT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

11
**1. DAY**
Select the day, or days of the week (Mon–Fri / Sat-Sun / Daily) that you wish to schedule the DMR to automatically record.

**NOTE:**
1. Date could be changed by “+” and “-” buttons.
2. If you have selected the date and timer recording set from that specific day to a new day, then the Timer Recording Schedule will be set as whole week.
3. For specific date of Timer Recording Schedule, it is not recommended to set Ending 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**
Set the time to start the recording.

**3. END**
Set the time to end the recording.

**4. IPS (IMAGE PER SECOND)**
- NTSC - 30, 15, 8, 4, 2, 1
- PAL - 25, 12, 6, 3, 2, 1

**5. QUALITY**
Select the quality of recording image: BEST, HIGH, NORM and BASE.

**6. MODE**
There are three recording mode settings:
- QUAD-FRAME, QUAD-FIELD, MULTIPLEX.

**NOTE:** To select the appropriate recording mode before you start recording. We don’t suggest to change the different recording mode during the recording to ensure the best recording quality.

**7. TIMER ENABLE**
When TIMER ENABLE is “YES”, press “menu” button, you can see the timer diagram according to your setting.
### CAMERA

1. **TITLE**
   
   Assign a title to each camera. Initially each title is the camera’s number.

2. **ALARM**

   Select LOW / OFF / HIGH for alarm polarity. The default value is LOW.

<table>
<thead>
<tr>
<th>(CAMERA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>TITLE</td>
</tr>
<tr>
<td>CAMERA 1</td>
</tr>
<tr>
<td>CAMERA 2</td>
</tr>
<tr>
<td>CAMERA 3</td>
</tr>
<tr>
<td>CAMERA 4</td>
</tr>
</tbody>
</table>

3. **REC (RECORD)**

   Set up which channel you want to record.

   **ON** : when alarm input is triggered, DVR will record alarming channel more frequently.
   
   For example : when CH01 is triggered, the record method will become 1-2-1-3-1-4-...

   **OFF** : DVR will not record.

4. **BR (BRIGHTNESS)**

   Adjust the brightness of each channel. The level is from 0 to 63.

5. **CT (CONTRAST)**

   Adjust the contrast of each channel. The level is from 0 to 63.

6. **CL (COLOR)**

   Adjust the color of each channel. The level is from 0 to 63.

7. **HUE (HUE)**

   Adjust the hue of each channel. The level is from 0 to 63.

### RECORD

1. **RECORD IPS**

   Select the recording speed. The options are as following:

   **NTSC** - 30, 15, 8, 4, 2, 1
   
   **PAL** - 25, 12, 6, 3, 2, 1

2. **QUALITY**

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

   **NOTE** : The relationship of Record time, IPS and record quality, please refer to page.27 Recording Speed.

3. **RECORD MODE**

   There are three recording settings: QUAD-FRAME, QUAD-FIELD, MULTIPLEX.

   **NOTE**: To select the appropriate recording mode before you start recording. We don’t suggest to change the different recording mode during the recording to ensure the best recording quality.
**ALARM**

1. **ALARM ENABLE**
   Alarm will be triggered by event occurrence when the setting is YES.

2. **ALARM DURATION**
   Set the reaction time which was determined by how long the alarm mode responded to a buzzer. Default setting is 10 sec. Options are 10 SEC, 15 SEC, 20 SEC, 30 SEC, 1 MIN, 2 MIN, 3 MIN, 5 MIN, 10 MIN, 15 MIN, 30 MIN, ALWAYS, AUTO.

3. **REC IPS**
   Select the images per second of recording during an ALARM. The options are as following:
   - NTSC: 30, 15, 8, 4, 2, 1
   - PAL: 25, 12, 6, 3, 2, 1

4. **QUALITY**
   There are four quality settings during an ALARM: BASIC, BEST, HIGH, NORMAL.

5. **RECORD MODE**
   There are three recording settings: QUAD-FRAME, QUAD-FIELD, MULTIPLEX.

**DWELL**

1. **NORM**
   To set up the DWELL time period that each channel auto sequentially shows on call monitor. The level is from 1 to 15 SEC or OFF.

2. **ALARM**
   To set up the DWELL time period when alarm input is triggered. The level is from 1 to 15 SEC or OFF.

**PIP**

1. **FULL SCREEN**
   To set up the full screen background picture display.

2. **PIP SCREEN**
   To set up the picture with a 1/9 size screen "insert".

3. **POSITION**
   There are six position settings: D/L, D/M, D/R, U/L, U/M, U/R.
MOTION

1. SEN (SENSITIVITY)
   Sets the sensitivity of the pixel-based Motion Detection feature from 1 to 99. The highest sensitivity setting is 1, the lowest sensitivity setting is 99. The default setting is 70.

2. MD-NUM (MOTION DETECTION NUMBER)
   Sets the number of targets in which Motion must occur in order to trigger an Alarm (from 1-99 target areas).
   Note: MD-NVM cannot be less than the number of targets set in the AREA.

3. RE (REFERENCE)
   Set the Reference image to which the current screen is compared (from 1-99).
   For example, the value 64 would compare the current image to the 64th previous screen image. The higher value may increase the sensitivity.

4. DET (DETECTION)
   The motion detection on each channel can be turned to ON or OFF individually.

5. AREA
   Press the ENTER button on this option to set the Pixel-based Motion Detection Area for each channel. Green targets represent the Motion Detection Area (Figure 1-2), and Purple targets represent motion currently taking place (Figure 1-3).
   To modify the Motion Detection Area, use the following controls:
   - ZOOM: turn the selected target ON/OFF.
   - ▲▼◄►: navigates between targets
   - - : turns all targets on the screen ON/OFF
   - + : turn all targets in the selected row ON/OFF
   Note: When the "DET" (DETECTION) setting is "ON", you must set the motion detection AREA or it won't be triggered.

6. MOTION RECORD
   When the DET setting is "ON", you can set up the MOTION RECORD function,
   1. Select "ON" to set up the motion trigger recording: It can automatically switch to Record Mode. The motion detection will change the scanning sequence and show on the monitor.
   2. Select "OFF": The screen still shows and if it is in record mode, the motion detection will change the scanning sequence.

   For example: If the motion is detected on Camera #1, its recording & scanning sequence will be more frequently. The sequence will be as 1st, 2nd, 1st, 3rd, 1st, ... 4th. And channel 1 will show on the screen. If both camera and 3rd camera both motion detection are activated, they will be scanning as 2nd, 3rd, 1st, 2nd, 3rd, 4th, 2nd, 3rd, 1st, 2nd, 3rd, 4th ... and vice versa. And CH2 & CH3 will show for a period of time which is same as Alarm Duration time.
7. DAY / START / END
To setup the DAY and the START/END time for motion trigger recording timer setting.

**Figure 1-1**
MOTION DETECTION SETUP

**Figure 1-2**
MOTION DETECTION SETTING — ROW SETUP

**Figure 1-3**
MOTION DETECTION TRIGGERED—TURN INTO PURPLE

**Figure 1-4**
BACK TO MOTION DETECTION SETTING

### DISPLAY

1. **TITLE DISPLAY**
   To set the title shown on monitor or not.

2. **OSD COLOR**
   Select the OSD (On Screen Display) color. The options are YELLOW, WHITE, GREEN, BLACK, BLUE, RED, PINK, CYAN.

(MENU)
TIMER
CAMERA
RECORD
ALARM
Dwell
PIP
MOTION
DISPLAY
REMOTE
USER
SYSTEM
EVENT
3. LOSS SCREEN
Retain the last picture or select the LOSS SCREEN color.
The options are GREEN, BLACK, BLUE and RETAIN.

4. TIME POSITION
To set the OSD POSITION shown on monitor.
The options are NORMAL or CENTER.

REMOTE

1. REMOTE MODE
Set the remote mode for connection with computer via RS-232 or RS-485.
(Please refer to page 23 for RS-232 Remote Control).

2. BAUD RATE
Set the remote protocol transmitting baud rate. Available options are 115200, 57600, 19200, 9600, 4800, 3600, 2400, 1200.

3. ID
To control different DVR by setting remote protocol. ID number can be set from 000 to 255.

USER

1. USER
To set up the user account for controlling. It allows 8 users setting.
    Supervisor – Control all the functions.
    Other Users – View all functions except the menu setting and event list cleaning.

2. PASSWORD
To set the security password for each account. The maximum length of user's password is 4 characters.

NOTE: To switch to different USER, press “ENTER” + “MENU” buttons to “KEY LOCK” and then enter the different user's password to UNLOCK.
**EVENT**

A single page can display 16 recorded events. Press “◄” or “►” to change the pages or press “▲” + “▼” to CLEAR the EVENT record.

- **DISK FULL**: HDD is full
- **PWR REST**: Power restored
- **M-HD REMS**: HDD remove
- **M-HD REPL**: HDD replace
- **M-HD ERR**: HDD error
- **M-HD WARM**: HDD warning
- **K UNLOCKS**: Key is unlock
- **DMA ERROR**: DMA error
- **C1 VLOSS**: Channel 1 is video loss
- **C2 ALARM**: Channel 2 has been triggered by external I/O alarm
- **C3 MOTION**: Channel 3 has been triggered by motion detection
- **SYSTEM ERROR**: System might fail
- **POWER RESTORE**: Power restored

---

**ZOOM**

Press ZOOM button to enlarge the display of main picture. It displays zoomed picture on main picture and a small window inserted. The inserted window contains a movable 1/4 view size of the appointed camera. The range is from 2X to 4X.

- Press PIP button: Zoom in
- Press QUAD button: Zoom out
- Press the “Zoom” button again to leave the zoom pointer.
- Press Camera 1-4 button to select channel.
- Press ▲▼◄► button to move the zoom position.
OPERATION OPTIONS

VIDEO LOSS
Screen will display ‘LOSS’ in the center of display picture, if the video input is not connected properly.

SEARCH

1. LAST RECORD
   Play the last recorded piece of video.

2. FULL LIST
   List all recorded video on the HDD which sorted by time.
   
   - : Motion Recording
   - : Manual Recording
   - : Alarm Recording
   ° : Timer Recording
   M : Storage in Master HDD (or S:Storage in Slave HDD)

   NOTE: It will display different color on each record list mention above.

3. ALARM LIST
   List all recorded video triggered by an Alarm.
   NOTE: If there are no Alarm in the record, the screen will display "EMPTY".

4. MOTION LIST
   List all motion triggered records.

5. TIME SEARCH
   Find video recorded on a specific date that is entered.
KEY LOCK

For advanced security, you can “Lock” the buttons on your DVR. Key-Lock 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 and key in password (Default : 0000), then press “ENTER” to disable Key Lock.

NOTE: To switch to different USER, press “ENTER” + “MENU” buttons to “KEY LOCK” and then enter the different user’s password to UNLOCK.

RS-232 REMOTE PROTOCOL

You can use the PC keyboard to simulate DVR keypad.

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

<table>
<thead>
<tr>
<th>FUNCTION CODE</th>
<th>ASCII</th>
<th>FUNCTION CODE</th>
<th>ASCII</th>
</tr>
</thead>
<tbody>
<tr>
<td>KEY_MENU 0x4D</td>
<td>M</td>
<td>KEY_PLAY 0x50</td>
<td>P</td>
</tr>
<tr>
<td>KEY_SEARCH 0x73</td>
<td>s</td>
<td>KEY_DOWN 0x4E</td>
<td>N</td>
</tr>
<tr>
<td>KEY_ENTER 0x0D</td>
<td>ENTER</td>
<td>KEY_RIGHT 0x52</td>
<td>R</td>
</tr>
<tr>
<td>KEY_QUAD 0x51</td>
<td>Q</td>
<td>KEY_POWER 0x57</td>
<td>W</td>
</tr>
<tr>
<td>KEY_ZOOM 0x5A</td>
<td>Z</td>
<td>KEY_KEY_LOCK 0x4B</td>
<td>K</td>
</tr>
<tr>
<td>KEY_PIP 0x70</td>
<td>p</td>
<td>KEY_CH1 0x31</td>
<td>1</td>
</tr>
<tr>
<td>KEY_SLOW 0x53</td>
<td>S</td>
<td>KEY_CH2 0x32</td>
<td>2</td>
</tr>
<tr>
<td>KEY_REC 0x72</td>
<td>r</td>
<td>KEY_CH3 0x33</td>
<td>3</td>
</tr>
<tr>
<td>KEY_LEFT 0x4C</td>
<td>L</td>
<td>KEY_CH4 0x34</td>
<td>4</td>
</tr>
<tr>
<td>KEY_UP 0x55</td>
<td>U</td>
<td>TIMER_REC_PROCEED 0x54</td>
<td>T</td>
</tr>
</tbody>
</table>

TROUBLESHOOTING

When malfunction occurs, 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.

<table>
<thead>
<tr>
<th>PROBLEM</th>
<th>SOLUTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>No power</td>
<td>• Check power cord connections.</td>
</tr>
<tr>
<td>Not working when press any button</td>
<td>• Check if it is under Key Lock mode.</td>
</tr>
<tr>
<td></td>
<td>• Press “MENU” &amp; “ENTER” to exist Key Lock mode.</td>
</tr>
<tr>
<td>No recorded video</td>
<td>• Check if the HDD is installed properly.</td>
</tr>
<tr>
<td>Timer Record enable does not working</td>
<td>• Check if the Record Enable is set to YES</td>
</tr>
<tr>
<td>No live video</td>
<td>• Check camera video cable and connections.</td>
</tr>
<tr>
<td></td>
<td>• Check monitor video cable and connections.</td>
</tr>
<tr>
<td></td>
<td>• Confirm that the camera has power.</td>
</tr>
<tr>
<td></td>
<td>• Check camera lens setting.</td>
</tr>
<tr>
<td>NTSC &amp; PAL System switch</td>
<td>To switch the system, press “POWER” + “FF” to NTSC system and “POWER” + “REW” to PAL system.</td>
</tr>
</tbody>
</table>
### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Video format</td>
<td>NTSC/EIA or PAL/CCIR</td>
</tr>
<tr>
<td>Hard disk storage</td>
<td>IDE type, UDMA 66, supported 500 GB HDD</td>
</tr>
<tr>
<td>Record mode</td>
<td>Manual / Alarm / Timer / Motion</td>
</tr>
<tr>
<td>Camera Input Signal</td>
<td>Composite video signal 1 Vp-p 75Ω BNC, 4 channels</td>
</tr>
<tr>
<td>Main Monitor Output</td>
<td>Composite video signal 1 Vp-p 75Ω BNC</td>
</tr>
<tr>
<td>Call Monitor Output</td>
<td>Composite video signal 1 Vp-p 75Ω BNC</td>
</tr>
<tr>
<td>Audio input</td>
<td>4 audio inputs, (RCA)</td>
</tr>
<tr>
<td>Audio output</td>
<td>2 audio outputs, (RCA)</td>
</tr>
<tr>
<td>Motion Detect Area</td>
<td>16 * 12 targets per camera</td>
</tr>
<tr>
<td>Motion Detect Sensitivity</td>
<td>99 Levels</td>
</tr>
<tr>
<td>Video Loss Detection</td>
<td>Yes</td>
</tr>
<tr>
<td>Refresh Rate</td>
<td>Up to 240 images/sec. for NTSC / 200 images/sec. for PAL</td>
</tr>
<tr>
<td>Recording Rate</td>
<td>Up to 30 images/sec. for NTSC / 25 images/sec. for PAL</td>
</tr>
<tr>
<td>Dwell Time</td>
<td>Programmable (1~15 Sec)</td>
</tr>
<tr>
<td>Picture in Picture</td>
<td>Yes (Movable)</td>
</tr>
<tr>
<td>Key Lock</td>
<td>Yes</td>
</tr>
<tr>
<td>Picture Zoom</td>
<td>2<em>2 ~ 4</em>4 (Movable)</td>
</tr>
<tr>
<td>Camera Title</td>
<td>8 letters</td>
</tr>
<tr>
<td>Video Adjustable</td>
<td>Hue/ Color/ Contrast/ Brightness Adjustable</td>
</tr>
<tr>
<td>Alarm Input</td>
<td>TTL input, Hi (5V), Low (GND)</td>
</tr>
<tr>
<td>Alarm Output</td>
<td>COM./N.O/N.C</td>
</tr>
<tr>
<td>Remote Control</td>
<td>RS-232 or RS-485</td>
</tr>
<tr>
<td>Time Display Format</td>
<td>YY/MM/DD, DD/MM/YY, MM/DD/YY, OFF</td>
</tr>
<tr>
<td>Power Source</td>
<td>DC 19V</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>&lt;32W</td>
</tr>
<tr>
<td>Operation Temperature</td>
<td>10 ~ 40 °C</td>
</tr>
<tr>
<td>RS-232C / RS-485 (bps)</td>
<td>115200, 57600, 19200, 9600, 4800, 3600, 2400, 1200</td>
</tr>
<tr>
<td>Dimension (mm)</td>
<td>343(W) x 223(L) x 59(H)</td>
</tr>
<tr>
<td>Net Weight</td>
<td>2.52 kgs</td>
</tr>
</tbody>
</table>

* Specifications are subject to change without notice.

* 4 audio inputs, can select only 1 during operation for recording
** with 2 mono audio outputs from the same source.
Follow the steps carefully in order to ensure correct installation.
The compartment located on the front panel of the DVR is the removable Cartridge, in which you insert the HDD. The various parts of the Cartridge are labeled for your reference.

**APPENDIX #1 – INSTALLING THE HDD**

**Step 1** Connect the connector with the HDD (refer to Picture 1).

**Step 2** Put HDD into the HDD cartridge. Please notice the bottom side is power side as chart shows (refer to Picture 2).

**Step 3** Check the label’s mark and screw the HDD to the cartridge. Before you screw the HDD, please be aware that you must to level pin 1 of the HDD at pin 1 mark of the label, because the screw hole is different from different HDD brands. Then screw the HDD correctly (refer to Picture 3 and 4).

**Step 5** Reverse the HDD and put it into DVR (refer to Picture 5 and 6).

**Step 6** Connect the HDD with DVR (refer to Picture 7).

**Step 7** Lock the cabinet by turning the key clockwise (refer to Picture 8).

- A (locked)
- B (unlocked)

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

**Step 8** Close the cap (refer to Picture 9).
APPENDIX #2 – REMOVE THE HDD

Step 1  Open the cap (refer to Picture 1).

Step 2  Unlock the cabinet by turning the key clockwise (refer to Picture 2).

Step 3  Pull out the cartridge (refer to Picture 3).

Step 4  Loosen all screws on the Cartridge (refer to Picture 4).

Step 5  Remove the HDD from Cartridge (refer to Picture 5).

Note: If you want to change the different HDD, you must remove the connector from HDD (refer to Page 22).
APPENDIX #3 – PIN CONFIGURATIONS

15 pin com port

9 pin com port
PIN 1. RS232-TX : RS-232
DQR 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 : RS232
DQR can be controlled remotely by an external device or control system, such as a control keyboard, using RS-232 serial communications signals.

PIN 3, 4, 5, 6 ALARM INPUT
To connect wire from ALARM INPUT (PIN 3, 4, 5, 6) to GND (PIN 9) connector, DQR 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 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 will disconnect from NO. But when Alarm triggered, COM will connect with NO.

PIN 9. GND
GROUND

PIN 10. RS485-B
DQR 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
DQR 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 (OUTPUT)
When HDD is full, it sends a signal to trigger next DQR record mode, if you install another DQR. Under normal operation, the signal remains “High”. But when disk full, DQR will send the “Low” signal.

PIN 14. ALARM RESET (INPUT)
To connect wire from ALARM RESET (PIN 14) to GND (PIN 9) connector, it can disable ALARM. An external signal to ALARM RESET (PIN 14) can be used to reset both ALARM OUTPUT signal and DQR’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 15. EXTERNAL ALARM 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 #4 – RECORDING SPEED

The Record Time is different based on Recording Speed, Recording Quality and Recording Mode. Please refer to following table. The HDD capability is 250GB.

### NTSC SYSTEM

<table>
<thead>
<tr>
<th>IPS</th>
<th>30</th>
<th>15</th>
<th>8</th>
<th>4</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MULTIPLEX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>50hr</td>
<td>100hr</td>
<td>187hr</td>
<td>375hr</td>
<td>750hr</td>
<td>1500hr</td>
</tr>
<tr>
<td>High</td>
<td>62hr</td>
<td>125hr</td>
<td>235hr</td>
<td>468hr</td>
<td>937hr</td>
<td>1875hr</td>
</tr>
<tr>
<td>Normal</td>
<td>100hr</td>
<td>200hr</td>
<td>375hr</td>
<td>750hr</td>
<td>1500hr</td>
<td>2998hr</td>
</tr>
<tr>
<td>Basic</td>
<td>167hr</td>
<td>333hr</td>
<td>625hr</td>
<td>1250hr</td>
<td>2498hr</td>
<td>4996hr</td>
</tr>
<tr>
<td>QUAD-FIELD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>48hr</td>
<td>95hr</td>
<td>178hr</td>
<td>356hr</td>
<td>712hr</td>
<td>1425hr</td>
</tr>
<tr>
<td>High</td>
<td>59hr</td>
<td>118hr</td>
<td>223hr</td>
<td>445hr</td>
<td>890hr</td>
<td>1781hr</td>
</tr>
<tr>
<td>Normal</td>
<td>95hr</td>
<td>190hr</td>
<td>356hr</td>
<td>712hr</td>
<td>1425hr</td>
<td>2848hr</td>
</tr>
<tr>
<td>Basic</td>
<td>158hr</td>
<td>316hr</td>
<td>594hr</td>
<td>1187hr</td>
<td>2373hr</td>
<td>4746hr</td>
</tr>
<tr>
<td>QUAD-FRAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>24hr</td>
<td>48hr</td>
<td>89hr</td>
<td>178hr</td>
<td>356hr</td>
<td>713hr</td>
</tr>
<tr>
<td>High</td>
<td>30hr</td>
<td>59hr</td>
<td>112hr</td>
<td>223hr</td>
<td>445hr</td>
<td>890hr</td>
</tr>
<tr>
<td>Normal</td>
<td>48hr</td>
<td>95hr</td>
<td>178hr</td>
<td>356hr</td>
<td>713hr</td>
<td>1424hr</td>
</tr>
<tr>
<td>Basic</td>
<td>79hr</td>
<td>158hr</td>
<td>297hr</td>
<td>594hr</td>
<td>1187hr</td>
<td>2373hr</td>
</tr>
</tbody>
</table>

### PAL SYSTEM

<table>
<thead>
<tr>
<th>IPS</th>
<th>25</th>
<th>12</th>
<th>6</th>
<th>3</th>
<th>2</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>MULTIPLEX</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>50hr</td>
<td>104hr</td>
<td>210hr</td>
<td>423hr</td>
<td>633hr</td>
<td>1266hr</td>
</tr>
<tr>
<td>High</td>
<td>62hr</td>
<td>131hr</td>
<td>265hr</td>
<td>527hr</td>
<td>792hr</td>
<td>1583hr</td>
</tr>
<tr>
<td>Normal</td>
<td>102hr</td>
<td>210hr</td>
<td>422hr</td>
<td>844hr</td>
<td>1266hr</td>
<td>2542hr</td>
</tr>
<tr>
<td>Basic</td>
<td>168hr</td>
<td>350hr</td>
<td>704hr</td>
<td>1406hr</td>
<td>2110hr</td>
<td>4218hr</td>
</tr>
<tr>
<td>QUAD-FIELD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>48hr</td>
<td>98hr</td>
<td>200hr</td>
<td>400hr</td>
<td>600hr</td>
<td>1202hr</td>
</tr>
<tr>
<td>High</td>
<td>58hr</td>
<td>124hr</td>
<td>251hr</td>
<td>500hr</td>
<td>752hr</td>
<td>1503hr</td>
</tr>
<tr>
<td>Normal</td>
<td>98hr</td>
<td>200hr</td>
<td>400hr</td>
<td>800hr</td>
<td>1202hr</td>
<td>2414hr</td>
</tr>
<tr>
<td>Basic</td>
<td>160hr</td>
<td>332hr</td>
<td>668hr</td>
<td>1335hr</td>
<td>2004hr</td>
<td>4005hr</td>
</tr>
<tr>
<td>QUAD-FRAME</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Best</td>
<td>24hr</td>
<td>50hr</td>
<td>100hr</td>
<td>200hr</td>
<td>300hr</td>
<td>600hr</td>
</tr>
<tr>
<td>High</td>
<td>30hr</td>
<td>62hr</td>
<td>125hr</td>
<td>250hr</td>
<td>376hr</td>
<td>751hr</td>
</tr>
<tr>
<td>Normal</td>
<td>49hr</td>
<td>100hr</td>
<td>200hr</td>
<td>400hr</td>
<td>601hr</td>
<td>1207hr</td>
</tr>
<tr>
<td>Basic</td>
<td>80hr</td>
<td>166hr</td>
<td>334hr</td>
<td>667hr</td>
<td>1002hr</td>
<td>2003hr</td>
</tr>
</tbody>
</table>

Note: Above data is obtained from actual test of recording normal TV program. (For Reference Only)
APPENDIX #5 – NETWORK APPLICATION

Video Web Server Features

- Compatible with most of CCTV Products;
  empower any video output device watching
  and controlling on the Internet or LAN
- Auto Network Reconnection (ANR)
- Upgrade firmware & AP from FTP site
  via Video Web Server
- Watch dog function supported
- Support Dynamic IP address
- 4 alarm inputs supported
- Duplex function, record and playback
  simultaneously at client site
- Auto e-mail warning system which will remind
  you if external alarm happened
- Intelligent non-stoppable recording function after ANR
- Multi AP screens supported
- Unique video player