

**Mace** Security Products, Inc. Presents:

**Digital Video Recorder** based on Mpeg4 Technology

## **Operational Manual**



DVR0404RW  
DVR0804RW  
DVR1604RW

Thanks for purchasing products of Mace Security International, Inc.

For your convenience in calling for service or technical support, please record the following important information:

Model: DVR0404RW, DVR0804RW, DVR1604RW (select one)

Hard Disk: 80G, or \_\_\_\_\_

Serial #:

Date Purchased:

Sales Person:

Company Name:

Phone:

Fax:

Consult Mace's website at <http://www.mace.com> for a complete line of surveillance and security products.

## General Safety Precautions

This manual applies to Mace DVR0404RW (4-Channel CD-R Writer) and DVR0804RW (8-Channel CD-R Writer). DVR0804RW has been used as the example in all illustrations.

1. **Installation Environment**
2. **Open Product Box and Verify Contents**
3. **Before Power-up**

## 1. Installation Environment

- **An UPS (Uninterrupted Power Supply) with power surge protection is strongly recommended for DVRs and all associated devices (routers, DSL modems, etc)**
- Avoid extreme heat
- Avoid direct sunlight
- Avoid excessive humidity
- Maintain horizontal mounting
- Avoid excessive vibrations
- Do not stack other devices on top of the DVR
- Operate in well ventilated place, do not block the cooling fan

## 2. Open Product Box and Verify Contents

Check for the following accessories:

- One power cord
- One hard disc Ribbon Cable
- One operation manual
- One CD for utility software (normally it is not needed).
- One remote control unit
- Two AAA batteries

## 3. Before Power-up

- Make sure the orange tab is set to 110V at the back of the DVR power supply
- Be sure the UPS power supply is properly connected
- Be sure to plug power cord into a reliable 110 VAC power source

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## **Chapter 1 Product Specifications And Features**

- 1. Product Specifications**
- 2. Product Features**
- 3. Storage Matrix**

## 1. Product Specifications

Parameter	4 Channel	8 Channel
Processor	AMD ELANSC520/133 embedded microprocessor	
Operation system	Real-time operation system - RTOS	
Model	DVR0404RW	DVR0804RW
Video input	4 Channel (NTSC/PAL) BNC 1.0V <sub>p-p</sub> 75Ω	8 Channel (NTSC/PAL) BNC 1.0V <sub>p-p</sub> 75Ω
Video output	1 Channel PAL/NTSC BNC 1.0V <sub>p-p</sub> 75Ω video signal	
Audio input	4 Channel 200-1000mv10KΩ (BNC)	8 Channel 200-1000mv10KΩ (BNC)
Audio output	1 Channel 2000mv 1KΩ (BNC)	
Video display	1(Full Screen) & 4(Quad) window displays	1(Full Screen),4(Quad),9 (3x3) window displays
Video standard	NTSC 525 line, 60f/s – PAL 625 line, 50f/s	
System resource	Real-time recording, one channel playback and network operation simultaneous (Triplex)	
Image resolution	Real-time monitor 704×576, playback 352×288, VGA output 720×576	
Motion detection	Area setting: 396 detection areas on the screen; detection sense setting: 3 levels detection sense for each area	
Video compression	MPEG-4 CBR (fixed frame rate); MPEG-4 VBR (variable frame rate)	
Audio compression	Audio - ADPCM 28.8 Mb/hour G.729 - 3.6 Mb/hour Video - 40-460 Mb/hour	
Image compression rate	352×288CIF format - 176×144QCIF format - 704×576 4CIF format.	
Video recording speed	Real-time mode: NTSC 1f/s - 30f/s for each channel adjustable. PAL 1f/s - 25f/s for each channel adjustable;	
Image quality	6 levels selectable	
CDRW	Built-in CDRW writer for data backup	
Pre-Installed Hard Disk	A 80 Gigbyte Hard disk is preinstalled	
Hard Disk Expansion	Inside equipped 4 IDE ports, able to install 8 HDDs inside, With CDRW option, up-to 5 internal HDDs supported	
HDD space used	Audio - ADPCM 28.8Mb/hour G.729 - 3.6Mb/hour Video - 40-460Mb/hour	
Alarm input	8 channel voltage alarm input – 5 to 15V DC necessary for the alarm input.	
Alarm output	3 channels output, - output in open/close contact or controllable - 12V output -	
Alarm relay	30VDC 1A, 125VAC 0.5A - relay output.	
Network connection	RJ45 10M/100M Ethernet connection	
Pan-tilt control	RS485	
Power	110VAC/220VAC	
Power consumption	60W	75W
Working temperature	10C – 55C	
Working humidity	10% - 90% Relative	
Barometric pressure	86kpa - 106kpa	
Size	2U standard industrial case 441mm (Wide) x 430mm (Deep) x 89mm (High)	
Weight	11KG in Box	

Parameter	16 Channel
Processor	AMD ELANSC520/133 embedded microprocessor
Operation system	Real-time operation system (RTOS)
Model	DH-DVR1604RW
Video input	16 Channel (NTSC/PAL) BNC (1.0V <sub>p.p.</sub> , 75Ω)
Video output	1 Channel PAL/NTSC, BNC (1.0V <sub>p.p.</sub> , 75Ω) video signal
Audio input	16 Channel 200-3000mv10KΩ (RCA)
Audio output	1 Channel 2000mv 1KΩ (RCA)
Video display	1, 4, 16 window display
Video standard	NTSC (525 line, 60f/s), PAL (625 line, 50f/s)
System resource	16 chs real-time recording, one channel playback and network operation simultaneous
Image resolution	Real-time monitor 704×576, playback 352×288, VGA output 720×576
Motion detection	Area setting: 396 detection areas on the screen; detection sense setting: 3 levels detection sense for each area
Video compression	MPEG-4 CBR (fixed frame rate); MPEG-4 VBR (variable frame rate)
Audio compression	Audio: ADPCM 28.8Mbyte/hour Video: 40-460Mbyte/hour
Image compression rate	352×288 CIF format, 704×576 4CIF format
Video recording speed	MPEG mode: PAL 1frame/10second-25f/s for each channel adjustable; NTSC 1frame/10second-30f/s for each channel adjustable
Image quality	6 levels selectable
Hard disk	Inside equipped 4 IDE ports, able to install 8 HDDs inside, expand with external HDD case for another 12 HDDs
HDD space used	Audio: ADPCM 28.8Mbyte/hour Video: 40-460Mbyte/hour
Alarm input	16 channel voltage alarm input (+5~+15V D. C. Needed for the alarm input)
Alarm output	6 channels output, (output in open/close contact)
Alarm relay	24VDC 1A, 220VAC 0.15A (relay output)
MODEM connection	RS232
Network connection	RJ45 10M/100M Ethernet connection
Pan-tilt control	Alarm input and output port, RS232
Backup	CD-R, USB, HDD
Power	110VAC/220VAC
Power consumption	75W
Working temperature	-10°C - +55°C
Working humidity	10% - 90%
Barometric pressure	86kpa - 106kpa

## 2. Product Features

- Real-time Monitor (Video Displays)
  - o 1 Video output port to Video Monitor and 1 VGA port for video output to PC Type Monitor.
  - o Single window (Full Screen) /4 windows (Quad) /9 windows (3x3) monitor display.
- Compression Method
  - o Multiple video compression modes: MPEG4 fixed frame variable frame.
  - o 4, 8, 16-channel audio/video real-time compression, independent hardware compression for each channel, stable synchronization of sound and image.
- Storage
  - o Internally can hold 8 IDE-compatible large capacity Harddisk(HDD)
  - o Alternative HDD operations that will reduce the power consumption and heat emission.
  - o Overwrite (FIFO) and Stop (HDD Full) modes for DVR HDD recording.
- Back-up
  - o Built-in CD-RW drive to back up records onto CD-R disks, upgradeable to DVR-RW drive.
  - o USB port for external back up of records.
  - o Download the files on DVR to local PC through network.
- Play and Record
  - o Supports multiplexed operation: live monitor, record, search for downloading, one channel play-back, and remote transmission simultaneously.
  - o Multiple recording mode: Manual – Timing – Alarm - Motion Detection. Note: Alarm Recording and Motion Recording have Pre-Alarm function.
  - o Playback: With PIP or Multi-Channel Real-Time Monitor. Playback also available using Network Connection.
  - o Fast search for reviewing manual recording and alarmed recording.
  - o Multiple play-back modes: X2, X4 & X8 fast play, pause, 15F/S, 5F/S slow play and frame by frame playback.
  - o Displays Time/Date during playback.

- Alarm relay
  - o 8 channel external alarm input, video lost alarm and motion detection alarm.
  - o Multi channel relay switch alarm output activates alarm relay and on-site light control.
  - o Circuit Protection for Alarm inputs and outputs.
- Pan-tilt Control
  - o Supports Camera Pan-Tilt-Zoom (PTZ) Functions using RS485 Communication Protocol.
  - o Integrates multiple protocols to control various PTZ speed domes.
- Communication connection port
  - o DB-25- (25 pin) connection for alarm inputs and PTZ control.
  - o **RS232 port for the connection with keyboard for central control, or with the computer serial port for system upgrades and diagnostics.**
  - o Standard Ethernet port for remote viewing and control.
  - o Remote real-time monitor.
  - o Pan-tilt-zoom control.
  - o Record search and real-time playback. Note: playback quality dependent on network conditions. Downloading records through network.
  - o System programming, settings & modification and system software upgrades available online.
  - o Remote alarm processing and system log review remotely.
  - o Embedded TCP/IP protocol and RTOS (Real Time Operating System) supports Web server direct connection to operate and control all the above functions.
  - o Administration mode: Three USER levels for logging in remotely. Each user login is password protected.

### 3. Storage Matrix

The HDD Capacities and Recording lengths are determined by capacity of the installed HDDs and the selected image level.

The following storage time is based on the average use for HDD space for single channel recording.

Coding	Image level	Resolution	Frames	Maximum data flux	Average HDD space (/hour)
CBR	1	352*288	30	128Kb/S	40MB
	2	352*288	30	256Kb/S	80MB
	3	352*288	30	384Kb/S	120MB
	4	352*288	30	512Kb/S	160MB
	5	352*288	30	768Kb/S	240MB
	6	352*288	30	1Mb/S	320MB

**Note:** Adjustable frame rates, from 1fs to 30f/s can be selected. User can choose based on own needs.

Using other than 30f/s (Real time), HDD (Hard Disk) space can be greatly increased.

Following are storage calculation guidelines (in the number of Days):

	Img Quality	30F/S	1-ch	4-ch	8-ch
80G	1(128kb/s)	128kb/s	61	<b>15*</b>	8
	2(256kb/s)	256kb/s	30	8	4
MP4(CBR)	3(384kb/s)	384kb/s	20	5	3
	4(512kb/s)	512kb/s	15	4	2
	5(768kb/s)	768kb/s	10	3	1
	6(1024kb/s)	1024kb/s	8	2	1

\* This reads that with a 80G harrdisk, at CBR (constant bit rate) and Image Quality 1, DVR will be able to record 15 days for 4 camera inputs.

	Img Quality	30F/S	1-ch	4-ch	8-ch	1F/S	1-ch	4-ch	8-ch
80G	1	116kb/s	67	17	9	12.5kb/s	621	155	78
	2	160kb/s	49	12	6	25kb/s	312	78	39
MP4(VBR)	3	212kb/s	37	9	5	44kb/s	176	44	22
	4	330kb/s	24	6	3	50kb/s	156	39	20
	5	447kb/s	17	4	2	62kb/s	124	31	16
	6	825kb/s	9	2	1	88kb/s	88	22	11

	Img Quality	2F/S	1-ch	4-ch	8-ch	3F/S	1-ch	4-ch	8-ch
80G	1	25kb/s	311	78	39	44kb/s	176	44	22
	2	44kb/s	176	44	22	45kb/s	172	43	21
MP4(VBR)	3	50kb/s	156	39	20	55kb/s	140	35	18
	4	63kb/s	124	31	15	84kb/s	92	23	11
	5	78kb/s	100	25	12	100kb/s	76	19	10
	6	92kb/s	84	21	10	122kb/s	64	16	8

	Img Quality	10F/S	1-ch	4-ch	8-ch	12F/S	1-ch	4-ch	8-ch
80G	1	71kb/s	108	27	14	80kb/s	96	24	12
	2	109kb/s	72	18	9	130kb/s	60	15	7
MP4(VBR)	3	133kb/s	60	15	7	149kb/s	52	13	6
	4	175kb/s	44	11	6	210kb/s	36	9	5
	5	258kb/s	32	8	4	275kb/s	28	7	4
	6	443kb/s	16	4	2	525kb/s	16	4	2

## Chapter 2 Basic System Operations

1. Start/Stop the DVR
2. Recording
3. Alarm Input/Output
4. Pan-tilt Control
5. Network

## 1. Start/close the recorder

### 1.1 Start the recorder

Plug in the power line; switch on the power button at the back of the recorder; power indicator light on; DVR on; default single window for the video output displays; press Enter the Log-in screen appears on Monitor; If the starting time is within the programmed recording time, the system will start recording function automatically. Channel indicator lights will indicate the cameras in record mode. The system will work in a normal manner.

**Note:** if the system stops during HDD Boot detection, the HDD may not be installed right and please check the HDD connections (Ribbon and Power Connections). **\*Please unplug the 120VAC power supply during HDD installation\***

### 1.2 Enter the setting menu

Before you enter the menu, you must input the password. There are two levels of password—User password and Administrator password.

**Administrator password**        **888888**

**General user password**        **666666**

If input the user password, you have to input again at the next login; you are also not allowed to enter system setting and admin setting.

**Note:** For the consideration of security, please change the Administrator password in admin settings. Refer to Chapter 4 Front Panel Menu Operation for details.

### 1.3 Turning off the DVR

Press the POWER key on the front panel for 4 seconds to stop the current operations. Then switch off the power button at the DVR rear to turn off the power.

### 1.4 Power off recovery

When the power is cut off abnormally, the recorder will recall it's last state and continue where it left off. The state indicator light is the same as it was before the power off.

## 2. Recording

The default recording mode after startup of the DVR is 24 hr continuous recording for each channel. The User can program customized recording times for each camera. Instructions for the different recording modes are as follows:

a) Timing Recording:

- Enter the menu, and set the timing period for the recording. See details at [Menu>System setting>Timing](#)

b) Manual Record Selection

- Press “Record” button on the remote controller or “Rec” on the front panel.
- Check the status of each channel in the recording menu; The Highlighted channels are in record mode.
- To select the channel to be recorded, press the related number key. Selected camera # will highlight on your screen. When all cameras that need to be recorded are selected, press Enter to begin the recording.
- Repeat above steps and remove the highlight to stop the camera from recording. ·Press Cancel or ESC to return without changes.

c) Alarm recording

- Connect the alarm input according to the device connection and the instructions.
- Program the related settings in the menu to start Alarm recording. See details at [Menu>System setting>Alarm setting](#)

d) Motion detection recording

- Record the channel only in need of motion detection. First confirm whether this channel is programmed in Timing Recording; if it is, please turn off Timing Recording for the selected Camera..
- Program the related settings in the menu to start Motion detection recording. See details at [Menu>System setting>Motion detection.](#)

## 3. Alarm connection operation

- Connect the alarm input according to the device connection and the instructions.
- Connect the related alarm output relay on the DVR to associated alarm device. Example: lights, beeper, etc.
- Program the associated information in the menu. See details at [Menu>System setting>Alarm setting](#)

#### 4. Pan-tilt control operation

- Confirm the proper connection of the pan-tilt-zoom and Communication Protocol. Set the Camera address.
- Confirm the proper wiring connection between the PTZ and RS-485 A & B lines and DVR's 25-pin port's A & B lines.
- Set up the programming. See details at [Menu>System setting>Control](#)
- Select full screen call-up of associated P/T/Z Camera.
- Press and hold "Assistant" on the remote controller or "Fn1" on the front panel to select
- Use direction arrow keys to move and control the selections on the screen

#### 5. Network connection operation

- Confirm correct network connections between DVR and computer
- Set the IP address, subnet mask and gateway of the computer and DVR separately. If there is no router in the network, only the IP address is needed. If there are routers in the network, please enter the related gateway and subnet mask.
- Ping `***.***.***.***` the IP address of the DVR to check the link of the network. A successful reply shall look like (TTL value less than 64 ms is normal):

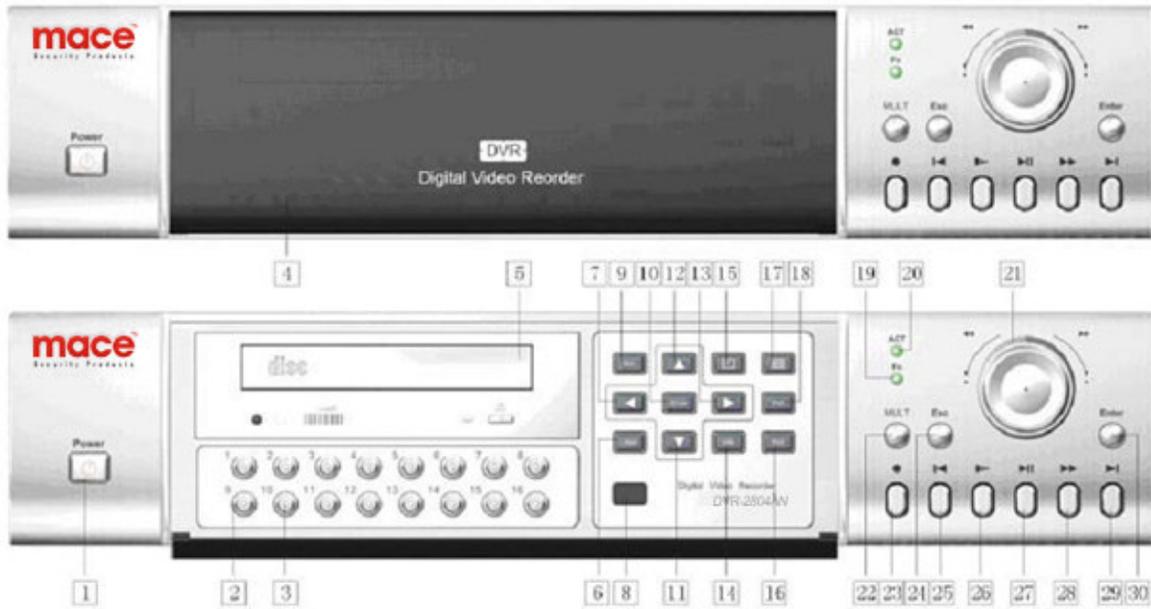
Reply from 68.153.205.130: bytes=32 time=31ms TTL=57

- Open IE browser and input the IP address of the DVR you want to log in to.
- For Network operation see details at Chapter 4

## **Chapter 3 Operations From Front Panel**

- 1. Front Panel Overview**
- 2. Detail Key Function**
- 3. Entering the Operation Menu**
- 4. Maneuver in the Operation Menu**
- 5. Menu Overview**
- 6. Operation Description**
  - 6.1 Recording**
  - 6.2 Playback**
  - 6.3 Pan-Tilt and Zoom Camera Control**
  - 6.4 Menu Detail**

1. Front Panel Description



1. Power Switch	2. Camera Selection #	3. Recording Light	4. Control Cover
5. CD-RW	6. Onscreen Addr Entry	7. Left Direction	8. IR Remote Receiver
9. ESC (Cancel)	10. Enter	11. Down Direction	12. Up Direction
13. Right Direction	14. Information	15. Single & PIP Selection	16. FN2 (Function 2)
17. Multi-screen Selection	18. FN1 (Function 1)	19. FN Indication Light	20. Standby Light
21. Jog Shuttle	22. Multi-screen Selection	23. Rec (Recording Control)	24. ESC (Cancel)
25. Replay Last Selection	26. Slow Play	27. Play/Pause	28. Fast Forward
29. Jump to Next Section	30. Enter		

**Note:** Outside Ring of the jog shuttle when turning clockwise is equal to right direction arrow, turning counterclockwise is equal to left direction arrow; inner circle turning clockwise equal to down direction, otherwise equal to up direction.

## 2. Keys functions

Order	Key name	Logo	Function
1	Power switch and indication light	POWER	Power switch - Power off by pressing the key 4 seconds.
			Indication light
2	Camera Selection Numbers	1, 2, 3 etc.	Manual Password # input, window shift or number input; 10 is used for numeric input 0.
3	Recording light	LED (Red) on numbers	If the LED light is RED, it means the recording is on
4	Plastic Cover	Black plastic	Dust-proof Cover
5	CD-RW	CD-RW	Used to Back-up records
6	Address	ADD	Input remote control address for the operation of DVR.
7 & 13	Left & Right Arrows	◀ ▶	L & R On screen Cursor Control; shifting level 1 and level 2 menu; Left and Right Camera Pan control.
11 & 12	Up & Down Arrows	▲ ▼	Up and Down Onscreen Cursor Control; change setup; change number; Camera Tilt control.
8	IR Remote receiver		Used to receive the remote signal.
9 & 24	Cancel	ESC	Cancels cursor selection.
			During playback, restore to real-time monitor.
10	Enter	ENTER	Enter Cursor Selection.
			Enter main menu.
14	Information	INFO	Press to show the system information.
15	Single window display	□	Shift the window to single window
16	Function assistant 1	Fn1	In the Full Screen Mode: Press the key to display the menu of the Camera PTZ.
			When setting Motion Detection fields, Fn1 Enables Cursor field selection.
			During playback, display the playback status bar
17	Function assistant 2	Fn2	During playback work with number key to realize PIP for the playback and real-time monitor.
18	Multi-Screen Display		Select to change from Full screen to multi-window display.

19	Assistant indication light		Indication light for when Function assistant keys are used.
20	Indicator light for standing by		Light on when DVR is in stand by Mode.
21	Jog shuttle		Direction control: outer Ring for Left and Right direction, inner Ring for up and down; When in playback, outer circle can control reverse, and multi-speed play.
22	Multi-Screen Display	<b>MULT</b>	Select for Multi-Screen; During playback, shift between Playback and Real time display.
23	Record	<b>REC</b>	Start/stop recording, use with arrow keys
25	Play last section	⏮	Play the previous recording file.
26	Slow play	▶	3 levels of slow play speed adjustments: (15f/S - 5f/S & frame by frame)
27	Play/stop	▶ /	Play/stop
			When in real time mode, press to enter record search menu
28	Fast play	▶▶	3 levels of fast play speed - X2 - X4 - X8.
29	Play next section	▶▶▶	Play the next recording file after the current file.
30	Enter	<b>ENTER</b>	Enter
			Enter the main menu.

### 3. Enter/Leave the Operation Menu

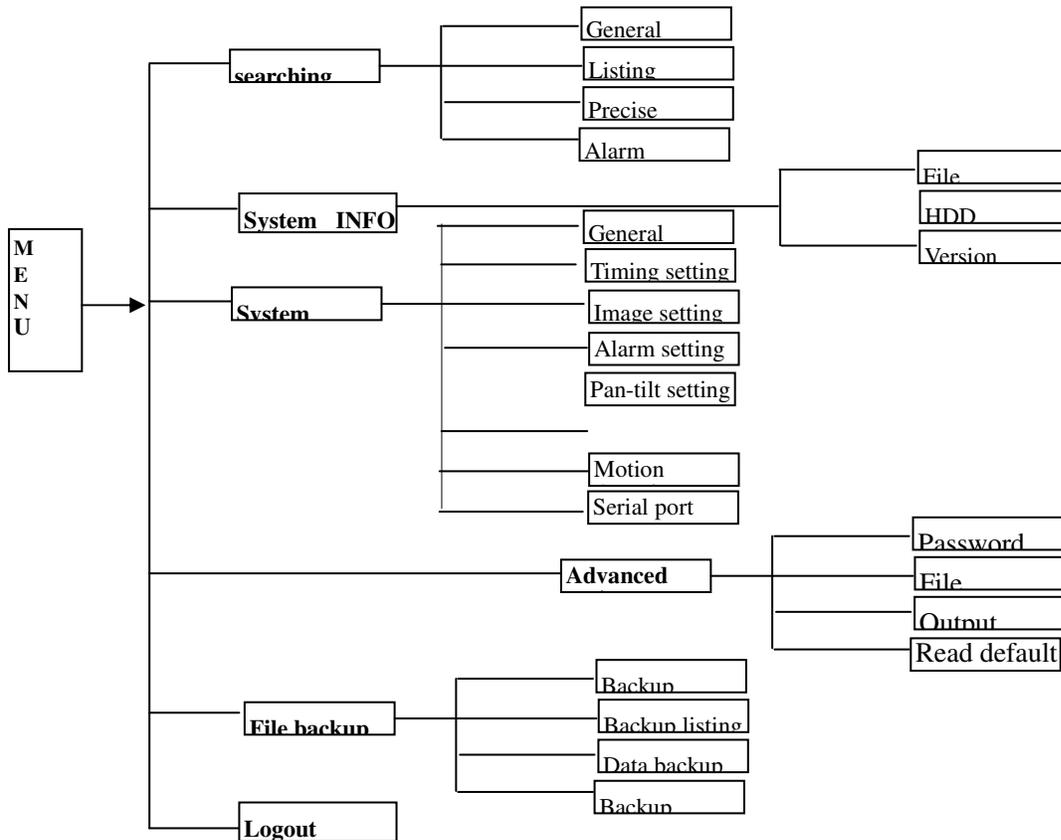
Press **Enter** key twice, the system will prompt for password.

Default Administrator password is “888888”.

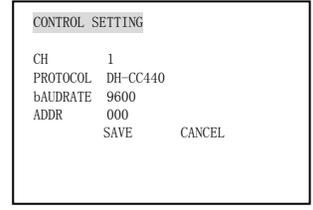
Default User password is “666666”.

If not touched for 5 minutes, the system will automatically logout the currently user.

For security reason, the Administrator may choose to manually logout under **Menu/ Logout**



4. Maneuver in the Menu System

Operation step	Button-pressing order	Instruction	Screen display
Enter main menu and level 1 submenu	1 Confirm <b>Enter</b>	During real-time monitor, press to open the password prompt, type in the correct password, then the menu will auto open.	
	2 Direction arrows ▲▼▶◀	Use arrows to select Icon Choice.	
	3 Confirm <b>Enter</b>	Press Enter to select choice	
Enter level 2 submenu	4 Direction ▲▼▶◀	Use arrows again to select #2 submenu choice	
	5 Confirm <b>Enter</b>	Press Enter to select level 2 submenu	
Set menu contents	1 Use Direction Arrow ▶	Select the option to be revised, flashing item is the selection.	
	2 Direction ▲▼	Use Up/Dn arrows to revise the settings.	
	3 Press <b>Enter</b>	<u>Save</u> is flashing, choose to confirm whether you want to keep the revised setting and press Enter again.	
Exit the current menu	Direction Arrow ◀	Return to the last option of the current menu	
	Cancel <b>ESC</b>	Exit to the last level menu	

◇ You can set the multiple channels before you exit the current menu and save all the settings together.

## 5. Menu Overview

Main menu	Menu level 1	Menu level 2	Remarks
SEARCH 	RECORD 	CH 1 DATE 24-10-2003 TIME 2:20 PM PLAY START	Use DIRECTION arrows to perform settings in menu level 2 See details at 6.4.1
	LIST 	CH 1 DATE 24-10-2003 TIME 2:20 PM LIST SEARCH	Use DIRECTION arrows to perform setting in menu level 2. See details at 6.4.1
	ALARM 	CH 1 DATE 24-10-2003 SEARCH START	Records associated with Alarm Inputs. Not able to search motion detection records. See details at 6.4.1
INFORMATION 	FILE INFO 	HDD NUM 0 2 HDD CAP 0 1 6 0 0 8 6 M FREE SPACE 0 0 0 0 0 0 0 M FILE START 2003-04-12 01: 30AM FILE END 2003-05-13 09:00PM	Information cannot be modified
	HARD DISK STATE 	INDEX 1 2 3 4 5 6 7 8 MASTER W- - - - - SLAVE W- - - - - CDR STATE NO USB STATE NO	
	VERSION 	BIOS VERSION 2.45 ISSUE DATE 03 01 2003 WEB VERSION 1.23	
	BPS 	CH.1 CH.2 CH.3 CH.4 0538Kb 0302 Kb 0267 Kb 0112 Kb 256M/H 132M/H 117 M/H 49M/H CH.5 CH.6 CH.7 CH.8 0663 Kb 0227 Kb 0050 Kb 0283 Kb 291M/H 99M/H 21M/H 124M/H	

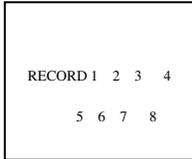
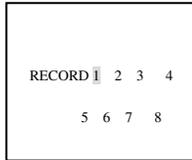
Main menu	Menu level 1	Menu level 2	Remarks
SYSTEM SETTING 	GENERAL 	DATE 10-28-2003 FORMAT MM-DD-YYYY TIME 12:22:01 FORMAT AM/PM SAVETIME INTERVAL 005 SEC HDDFULL OVERWRITE RECORDLEN 15 MIN REMOTEADDR 108 COMMCTRL NONE SAVE CANCEL	See details at 6.4.3
	SCHEDULE 	CH 1 WEEK S M T W T F S SLOT1 00:00 – 24:00 STATE ON SLOT2 00:00 – 24:00 STATE ON SAVE CANCEL	See details at 6.4.3
	IMAGE 	CH 1 MODE CBR AV FRAMERATE REAL BITRATE 1024K VIDEO LOSS OFF COVERED OFF VIDEO SET DEFAULT TITLE 01 ON CYCLE OFF SAVE CANCEL	See details at 6.4.3
	ALARM 	CH 1 TYPE NORAML CLOSE RECORD CH 1 2 3 4 ALMOUT 1 2 3 4 DELAY 1SEC SLOT1 00:00 – 24:00 ON SLOT2 00:00 – 24:00 OFF ALMSVR IP <b>192.168.000.118</b> OFF SAVE CANCEL	See details at 6.4.3

Main menu	Menu level 1	Menu level 2	Remarks
SYSTEM SETTING  	PANTILT CONTROL  	CH 1 PROTOCOL NONE BAUDRATE 4800 ADDRESS 000 SAVE CANCEL	See details at 6.4.3
	NETWORK  	IP 192.168.001.108 SUBNETMASK 255.255.255.000 GATEWAY 192.168.001.001 WEB PORT 00080 TCP PORT 37777 MONITOR TCP PLAYBACK TCP SAVE CANCEL	See details at 6.4.3
	MOTION DETECTION  	CH 1 DELAY 30 SEC ALMOUT OFF LEVEL MID AREA SET TIME1 00:00 – 24:00 OFF TIME2 00:00 – 24:00 OFF SAVE CANCEL	See details at 6.4.3
ADMIN SETTING  	PASSWORD  	GUEST * * * * * CONFIRM * * * * * MANAGE * * * * * CONFIRM * * * * * SAVE CANCEL	Only the Administrator password logged in is able to change password. See details at 6.4.4
	FILE DELETE  	PASSWORD -----	See details at 6.4.4
	OTHERS  	ALARM TIP ON SHUTDOWN PWD OFF OUTPUT X/Y POINT 000/000 PLAYBACK HEIGHT 480 AUDIO MODE PCM 8KHZ TITLE COLOR WHITE MONITOR OSD ON MAINTENACE WEEK S M T W T F S MAINTENACE TIME 12:00 AM SAVE CANCEL	Able to set the color of words on the menu. Able to set the starting point of the monitor screen and the size of the monitor screen, playback screen.
DEFAULT  	LOAD DEFAULT CONFIGURATION? YES NO	See details at 6.4.4	

Main menu	Menu level 1	Menu level 2	Remarks
<b>BACKUP</b>  BACKUP	<b>BACKUP RECORDS</b>  BACKUP RECORDS	DEVICE      HDD CH            1 BACKUP SPEED    NORMAL STARTING DATE    2003-3-18 STARTING TIME    12:18PM ENDING DATE      2003-3-18 ENDING TIME      5:18PM BACKUP    ADD    START	See details at 6.4.5
	<b>DELETE BACKUP</b>  DELETE RECORDS	DEVICE      HDD DELETE      CONFIRM	
<b>LOGOUT</b>  LOGOUT			

## 6.Menu Operation Description

### 6.1 Recording Operation

Model	Button-pressing order	Instruction	Display
DVR0804 (Example)	1. Record <b>REC</b>	Press to enter screen display.	
	2. Direction <b>▲▼</b> or the related number key	Press to toggle the recording state on/off. The highlighted Camera # means Record On or selected to Record..	
	3 Direction <b>◀▶</b>	Arrow to change camera channels. The highlighted item means On.	
	4 Record <b>REC</b> OR <b>Enter</b>	Press to save the setting.	

### 6.2 Playback operation

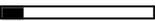
Button-pressing order	Instruction	Display
1 Play/Pause	Press the button to enter screen display.(if logged out, log back in with password)	
2 Play/Pause	Press twice to begin the playback (The on screen video displays channel, date, time). If display shows no record found, the operation will not take effect. After the completion of the playback, display shows "The End".	

To display Record Information during playback, press **Fn** to display or hide the playback state bar.

### 6.2.1 Playback fast play

Button-pressing order	Instruction	Display
1 Fast play ►►	During playback press this key to shift between 2X speed, 4X speed, or 8X speed.	CH1 PLAY X2 
2 Play/Pause	During fast play press this key to shift between play and pause.	
3 Play next section, play last section	Operates in playback state. Press◀◀ ▶▶to view the next or last record of the same channel.	

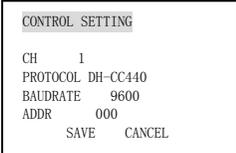
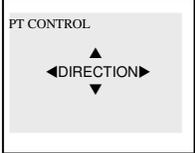
### 6.2.2 Playback slow play

Button-pressing order	Instruction	Display
1 Slow play ►	During playback press to shift among 30f/s, 15f/s, 1f/s speed.	CH1 PLAY 15F/S 
2 Play/Pause	During slow play of the playback record press to shift between play and pause.	
3 Play next section, play last section	Works when in Playback Mode. Press◀◀ ▶▶to view the next or last record of the same channel.	

✧ 1f/s speed during slow play is a frame by frame selection.

6.3 Control of Pan-Tilt and Zoom Cameras

**\*The PTZ Camera # must be selected on DVR before you can control the camera from the DVR or remotely.**

Button-pressing order	Instruction	Press <b>Fn</b> to display
<p>1 Refer to menu operation at 6.4.4</p>	<p>In <b>Control setting</b> select the related <b>Channel</b> and <b>Protocol</b>, see the right picture. Set the <b>Baudrate</b> and <b>Address</b> of the PTZ Camera. Press Enter to save.</p>	
<p>2 Assistant function <b>Fn1</b></p>	<p>When in Full Screen Mode, press Fn1 to enter the screen display. Press continuously to shift among <b>PT CONTROL</b>, <b>DIRECTION</b>, <b>LENS CONTROL</b>, <b>ZOOM FOCUS IRIS</b>, <b>LIGHT CONTROL</b> (OFF ON). Use arrows to adjust.</p>	
<p>3 Direction ▲▼◀▶</p>	<p>Control the related pan-tilt, lens and light. Use Arrows to select.</p>	

## 6.4 Menu Operation Detail

\*The following Menu settings must be saved before the changes take effect.\*

### 6.4.1 Record search

The menu for record search is pictured at the right.



#### Record

First set the channel#, then date and time you want to search, then select **START**, the playback begins.

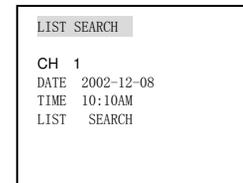


#### List

First set the channel #, date and time you want to search, then select **SEARCH**, the screen shows the 8 recording files following the searching time. Use ▲▼ to select the file to be played. Press **ENTER** to begin the playback.

Note the letters before the record are equal to following

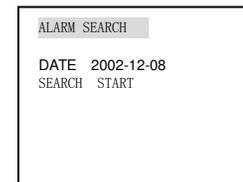
R—Record M—Motion Detection A—Alarm



#### Alarm

First set the search date, then select **START**, all the alarm records will be displayed. Press ▲▼ to select the record. Press **ENTER** to play the alarm record. Note: motion detection alarm can not be searched in this category, but can be

searched in **RECORD** and **LIST**.



6.4.2 Informtion

Menu of Information is pictured at right.



**File Info**

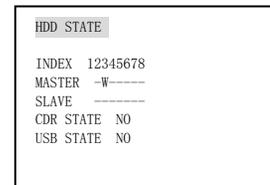
Recording start time(the earliest recording time among all the HDDs) and recording end time. The information cannot be changed.



**HDD State**

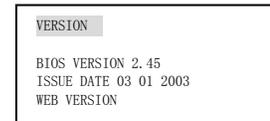
Display HDD index and the conditions of master drive and slave drive.

Note: The HDD being used, will show as “W”.



**Version**

The issuing date and ID of the operating system. The information cannot be modified.



**BIT RATE STATISTICS**

Real time display the frame rate of the current channels and the space occupied

Frame rates are in Kb/s

HDD space occupied in MB/h

CH.1	CH.2	CH.3	CH.4
0538Kb	0302 Kb	0267 Kb	0112 Kb
256M/H	132M/H	117 M/H	49M/H
CH.5	CH.6	CH.7	CH.8
0663 Kb	0227 Kb	0050 Kb	0283 Kb
291M/H	99M/H	21M/H	124M/H

6.4.3 System Setting

Picture of the System Setting Menu

See screen shot at right:



General

**DATE** and **TIME** are used to modify the current system date and time; after the modification reserve the change by selecting **SAVETIME**; in **HDDFULL** if selecting **OVERWRITE** system covers the previous recording files; **RECORDLEN** can set the length of each recording file(15 mins, 30 mins, 60 mins)Note: 15 minutes is suggested. **COMMCTRL** can Activate the communication control protocols. The existing comm control protocols are:

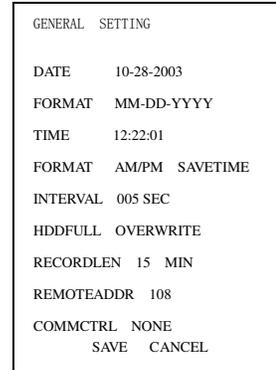
MODEM - Dial-up connection through modem.

AB- matrix control

DH Keyboard control

NONE upgrading system through serial port

**Note: System time shall NOT be changed freely; otherwise it would cause the malfunction of recording search.**

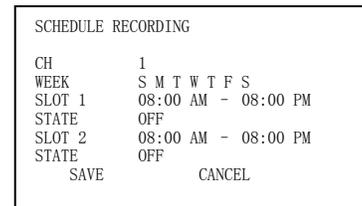


Schedule

Select the corresponding channel in **CH**. In **WEEK** the letter of each day is chosen, when the letter displays are highlighted. **SLOT1** and **SLOT2** express the timed recording period of the current channel. **SLOT2** should be after the ending time of **SLOT1**. The setting range is 00:00-24:00 **STATE** ON means the time setting is on. OFF means the time setting is OFF.

**Note:** 1: If you need to record all day long, set **SLOT1** as 00:00-24:00 & state is on; set **SLOT2** as off. 2: When setting time in **WEEK**, several days can be set at the same time.

When Reviewing a certain channel's timing, only the current day will be highlighted.



**Image** In **CH** option select the related channel. In MODE there are CBR (audio/video) and VBR (audio/video). **AV** is audio and video synchronization, **Video** is the mode without audio (when there is no audio input use this way to save HDD space). When in **CBR**, **Framerate** is Real time, **Bitrate** is the related maximum data flux. Use direction key to select the different bitrates. When in **VBR**, **Framerate** 1f/s-25f/s are selectable. **Video Loss** on means that alarm will be on when the video is lost, and also trigger the relay device.

IMAGE SETTING	
CH	1
MODE	CBR AV
FRAMERATE	REAL
BITRATE	1024K
VIDEO LOSS	OFF
COVERED	OFF
VIDEO	SET DEFAULT
TITLE	01 ON
CYCLE	OFF
	SAVE CANCEL

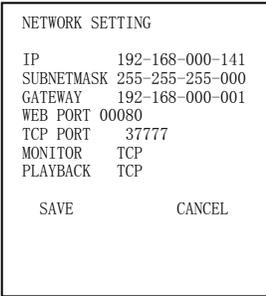
**Alarm** Select the relevant Camera in **CH** (this recorder has 8-Ch alarm input). **TYPE** has NO (normal open) NC (normal close) output modes. If the Camera number in RECORD is selected, recording would be started for that Camera automatically when there is alarm input. If the alarm output port is chosen, it will trigger the corresponding relay when there is an alarm input. **DELAY** means to extend the recording time after receiving alarm signal clears. 10, 20, 30 .....90SEC delays. When the outside alarm is cleared, the system will extend the recording time automatically before closing alarm and relay output. When Time 1 or Time 2 are on, if an alarm occurs within the time of these settings, the recording will be triggered by alarm signals. The beginning time should be earlier than the ending time. The setting in Time 2 should be later than the setting in Time 1. **ALMSVR IP** is used to transmit the alarm signals to the designated IP server.

ALARM SETTING	
CH	1
TYPE	NO
RECORD	1 2 3 4
ALMOUT	1 2 3
ADDR	008
DELAY	60SEC
TIME 1	08:00 AM - 08:00 PM
STATE	OFF
TIME 2	08:00 AM - 08:00 PM
STATE	OFF
ALMSVR	IP 192.168.000.117
	SAVE CANCEL

**Pan-tilt control** Select the corresponding channel in **CH**, and choose the protocol of the brand name of the corresponding pan-tilt decoder in **PROTOCOL**. **ADDR** is the address of the corresponding PTZ Camera.

PANTILT CONTROL	
CH	1
PROTOCOL	NONE
BAUDRATE	1200
ADDRESS	000
	SAVE CANCEL

**Network** IP is set by using ▲▼ or input the exact numbers to change the IP address. IP address setting can only be here. The related SUBNETMASK and GATEWAY should be set according to the IP address. MONITOR and PLAYBACK can be changed by using ▲▼TCP/IP or MULTICAST. Save the setting in SAVE, and restart the recorder.

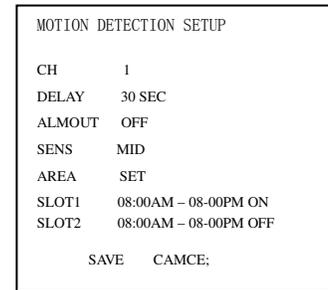


**Note:**

**MULTICAST:** The users with Admin levels can monitor each channel freely. All other users can only view after Admin releases camera. 5 users at maximum.

**TCP Protocol:** All users are able to monitor any channel. User shall select Camera # desired. If the transmission is over Internet, TCP should be chosen. 2 users can log in at a maximum.

**Motion detection** Select the Camera channel in CH. Open or close (On/Off) the function in STATE. Choose how long you want to continue the recording (10, 20, 30, .....90SEC) when motion is detected and then cleared. ALMOUT controls the alarming state for motion detection. SENS has three levels: LOW, MID, HIGH. AREA can be accessed by pressing ENTER. The setting area can be divided in 192 sections. Red section means the current cursor position, and the blue section is the motion detection area. Areas with no color are no motion detection areas. Press Fn to locate the current section, then move the cursor to cover the MD area needed; press Fn again to choose the MD area. Press ▲▼ to get the setting and press ENTER to confirm.



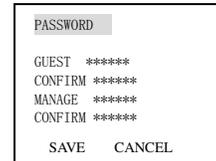
6.4.4 Admin setting

Menu of Admin setting is pictured at Right:



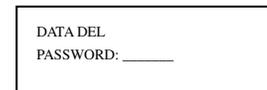
Password

Select **GUEST** and **MANAGE**. Press ▲▼ or the number key to change the password, then confirm the change by inputting the password again. Press **ESC** to go back to the sub menu. Only **ADMIN** level user can change the password.



File delete

Used to clear the data in the HDD. Be careful with this item. Before you delete the data, you have to input the manage password.



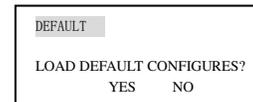
Others

During **Alarm tip** on, when there is alarm input from outside, the alarm information window will pop up. If **Shutdown pwd** is on, you need to input the right manage level password before turning off the DVR; if it is off, 4 seconds after pressing on the power button the DVR will turn off. **Output x o point** and **Output y point** are set for the starting point of the window on the screen, and **Playback height** is to set the window height during playback. The user can set the starting point of the monitor screen and the size of the monitor screen and the playback screen.



Default

Press ▲▼ to get the setting and press **ENTER** to confirm. After the default setting is selected, system will restore the original Factory Default settings.



### 6.4.5 Backup

Menu of Backup is Pictured at Right:



#### Backup records

Move the cursor to select the backup device, channel number, backup speed, starting data and time, ending date and time, and then select to start the backup, and system will display the backup processing. If the user does not connect the backup device correctly, the system will display: **No backup disk**; if the device is full, it will display: **Disk is full**. During the backup, it will display the time. For the backup device you can choose among HDD/USB/CDR. If HDD is chosen as the device, the backup speed can be selected between **Fast** and **Normal**. If the backup speed is **Fast**, system will stop the current recording.

```

BACKUP RECORDS
BACKUP DEVICE  CDR
CH             1
BACKUP SPPED  FAST
STARTING DATE  2003-3-18
STARTING TIME  9: 18AM
ENDING DATE    2003-3-18
ENDING TIME    10: 18AM
BACKUP  ADD   START
  
```

#### Delete backup

Select the backup device you want to delete the records from first, and then confirm the deletion by selecting

```

DELETE BACKUP
DEVICE  HDD
DELETE  CONFIRM
  
```

### 6.4.5 LOGOUT

Press **ENTER** to logout . To enter the menu again , password is needed.

## Chapter 5 Operation Over Network

There are two ways to access the DVR over the network: Using Microsoft Internet Explorer(IE) or Mace Remote Client Software.

Using IE, no special software needs to be installed on the PC. A web control unit will be downloaded to the computer automatically the very first time a connection to DVR is initiated.

The Mace Remote Client Software needs to be installed properly to use the second option. But the graphical user interface menu items are identical. Goto <http://www.mace.com/>, under **Support**, download the Remote Client software.

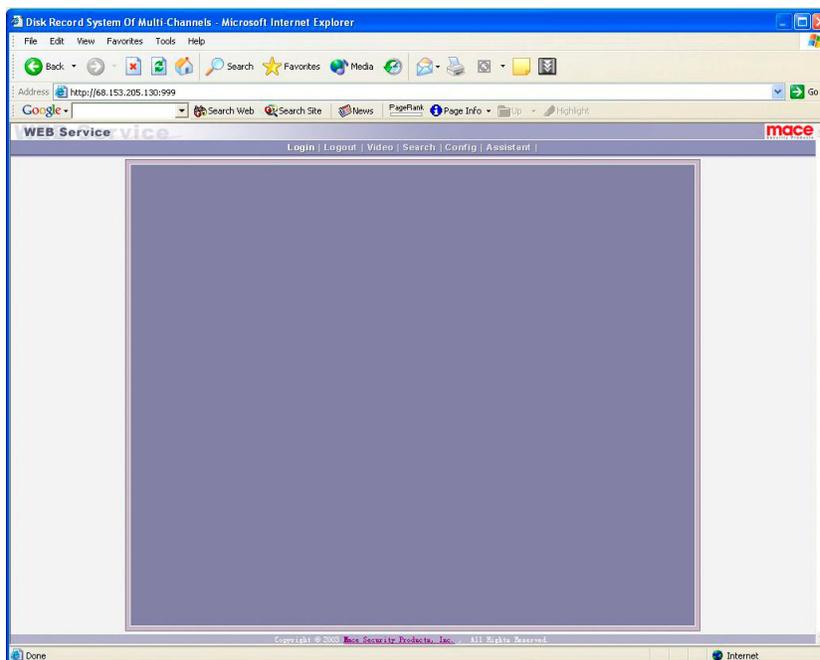
1. **Setting up the Client End**
2. **Login and Logout**
3. **Operation of the Right Click Menu Items**
4. **Record Search**
5. **System Configuration**
6. **Assistant**

## 1. Setting up the client end

No special software is needed to install on the DVR, PC or other devices in order to access DVR using the IE browser. If the IE responds back “Page Cannot Be Displayed” or “Server not Found”, check your network connection carefully.

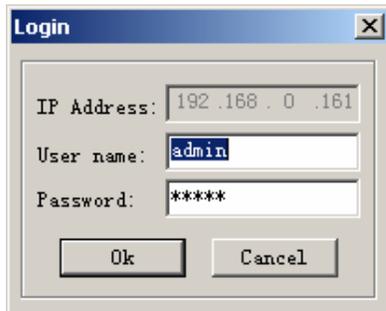
## 2. Login and logout

Please input the IP address of the DVR in the address column of the browser. Take the DVR’s IP address: 192.168.0.168 as an example: Input <http://192.168.0.168>. Note: The first time you visit this DVR the system will pop up the dialogue box to ask whether you accept ActiveX or not, and please choose Yes, then the system will install the software automatically.



On the remote monitor display, there is a monitor video window, with selection choices: [login](#), [logout](#), [search](#), [config](#)(system setting), [Assistant](#)(assistant setting) and so on.

**Login:** Please select [login](#), and the following dialogue box will pop up.



Input the username and password. There are three types of Users: Administrator, User, and Guest. For detailed information please refer to [User manage](#)的 in Assistant setting. The default username is admin, & password is admin. For Security purposes, please change the administrator password.

If after the input of the username and password, the following box pops up(6-3). The system is indicating that some other user has used this name and is logged in. Please use another name to log in.



If after the input of the username and password, the following box pops up. The system is indicating that the name or Password input is incorrect, and to please try again.



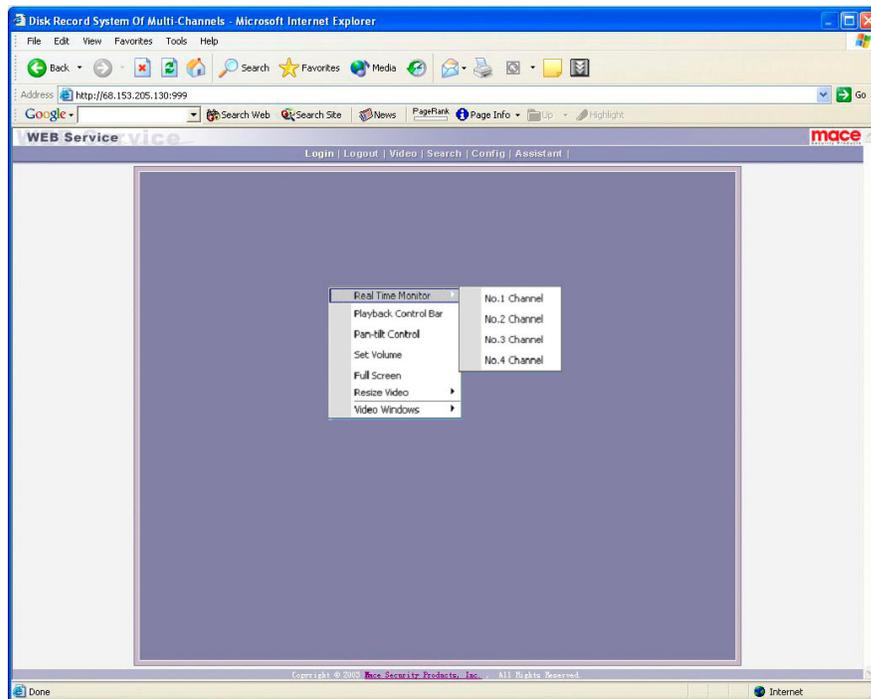
**Log out:** If the logged in user needs to log out, please click logout button. The popup dialogue box appears. Please choose Yes. See 6.5.



6.5

### 3. Operation of the Right Click Menu Items

After you log in as Administrator, the buttons like login, logout, search, config & Assistant are activated. Click the right mouse key and the following interface Display:

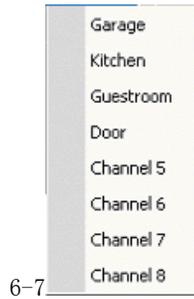


6-6

If the DVR is 8 Channel, the real-time monitor will show 8 channel options; if 4 channel, it will show 4 channel options.

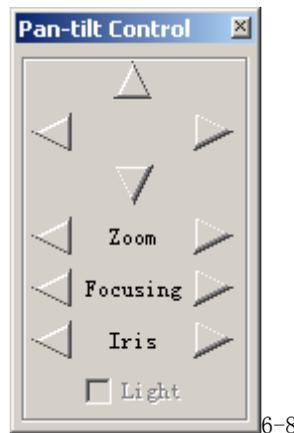
**The right key menu includes: Real time monitor, Playback control bar, Pan-tilt control, Set volume, Net data flux, Full screen, Resize video and so on.**

**Real time monitor** Among the displayed channels,(6-7)you may select the channel you want to see.

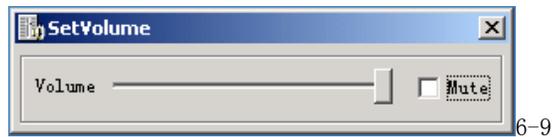


**Playback control bar** Please refer to **Records playback**.

**Pan-tilt control** The Arrows Control the moving direction of the pan-tilt and the zoom, iris & focus of the lens. See 6.8. Press the related buttons to control. Note: Before the PTZ will operate you must set the correct protocol of the pan-tilt on the DVR configuration menu.



**Set volume** Audio volume is User selectable.. User can drag the bar to adjust or select Mute to cancel the sound.



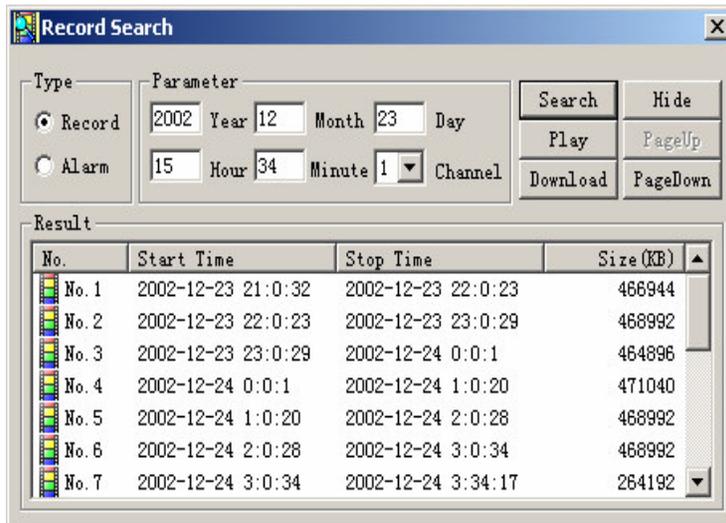
**Net data flux** Display the statistics of the network transmission data flux. When there is no network data transmission the statistics shows zero.



**Full screen** There are two ways to view full screen monitor: One is to double click the window directly; the other is to select Full screen among the right click menu items. During multi-window state, choose one of the windows and double click it for full screen display.

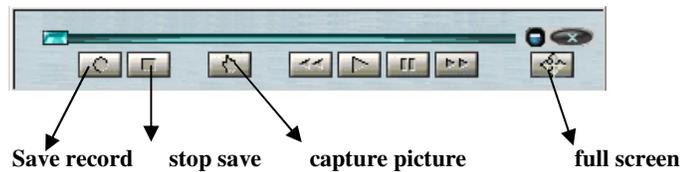
#### 4. Records Search and Playback

Click on search, then fill in the required info on the pop up dialogue box for the records search.



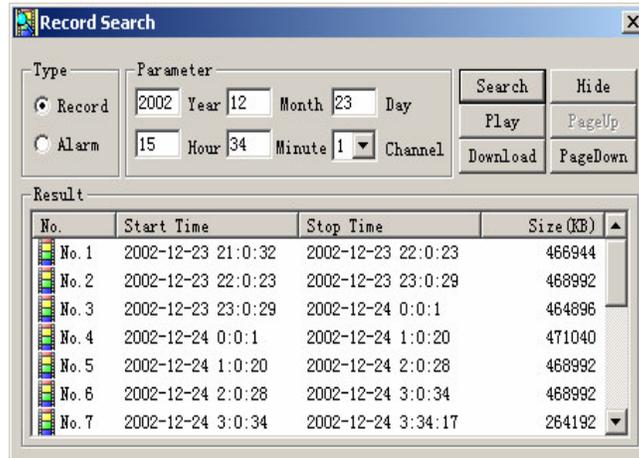
6-11

Input recording time, channel number and searching type: Record or Alarm search, and the results will display in the dialogue box. It displays 15 records from search time and forward. Click **Pageup** and **Pagedown** to select the desired records. Double click the desired record, and system will play the selected record, which can be played at full screen. At the same time you can also perform a record download, and the record will be automatically be saved at C:\Download.



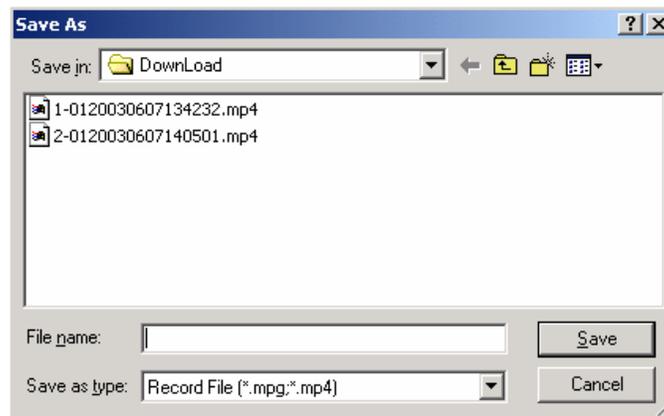
During the playback, you can operate the buttons in the playback bar such as: save record, stop save, capture picture, fast play, pause, full screen. During the playback on the video screen, the video can indicate the channel number, time and data flux of the record.

**Download** See 6-12, select the desired record and click **Download**.



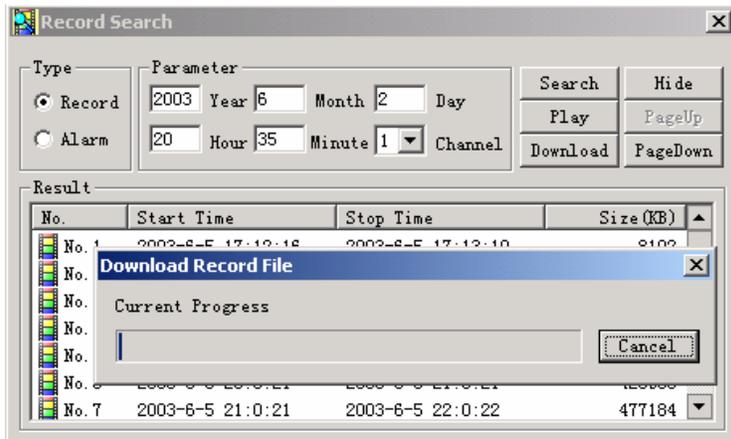
6-12

The software supports the downloading of several records simultaneously. The default format of the downloaded records' name is: file name, Channel # , date, time, extension name is .mp4(Example: a-0120021205071028.mp4, 01 means channel 1, 20021205 means December 5<sup>th</sup> of 2002, 071028 means 7 o'clock 10 minutes 28 seconds).



6-13

To Save a File located in the Search Record Display, Select File, press the Download button. A Save Window opens. Input the file name and choose **Save**. The screen shows the processing of the downloading until the completion.



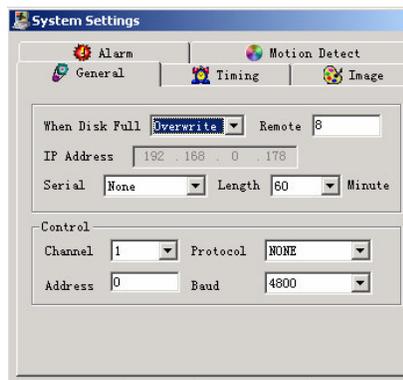
6-14

### 5. System Configuration

Click **Config** button and a pop up the dialogue box appears. There are **General**, **Timing**, **Image**, **Alarm**, **Motion Detection** tabs of the five menu configuration screens.

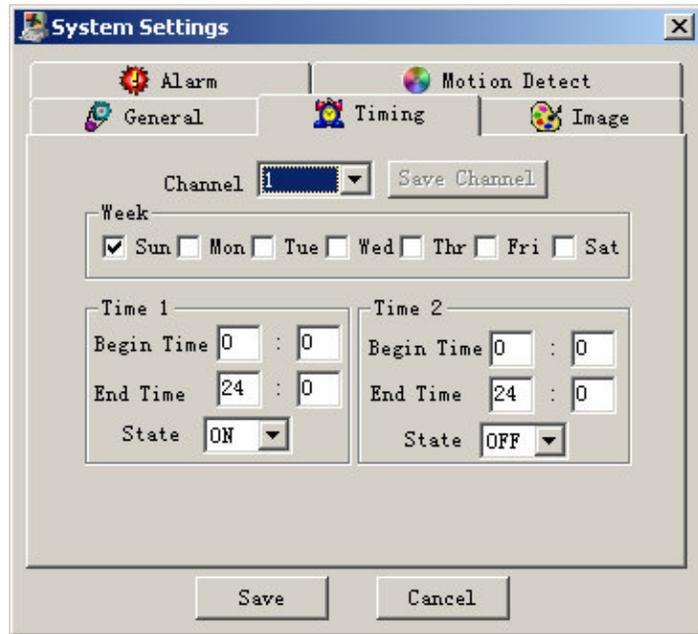
Note: The grayed part of the menus that cannot be changed, can only be modified directly at the DVR.

**General**: Include the recording length setting. In Control Column select the channel number and its PTZ decoder's protocol, as well as the related address for the control of the PTZ Camera.



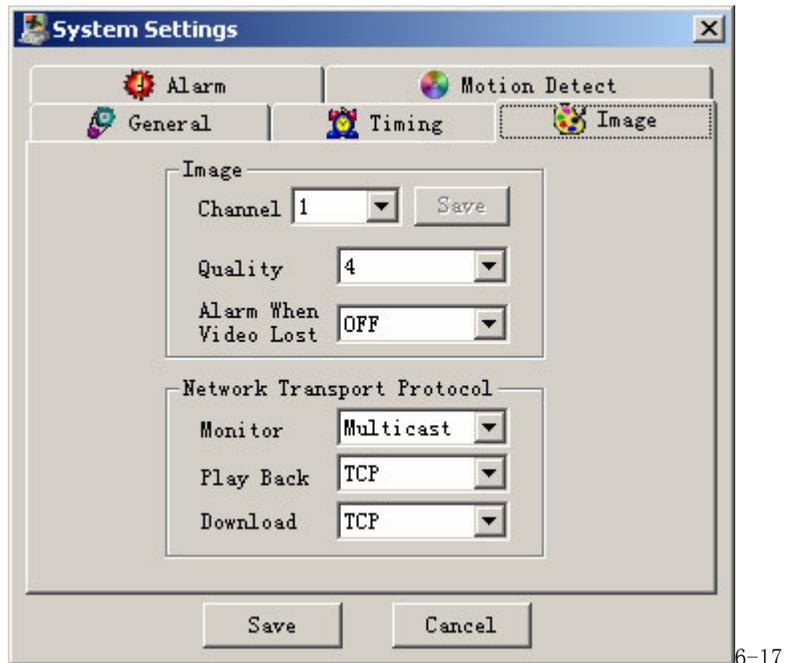
**Timing** 6-16 Allows the User to select the different channels and dates to perform the manual recording and 2 different periods of time. The set time in **Time 1** and **Time 2** are independent with the set time in Motion detection. There is no week setting for Motion detection.

**Timing of motion detection:** User can set two time periods of the motion detection, **time** and the **state** of the motion detection so as to activate the recording during the time period. Only when Motion Detection is On, the set time period takes effect. If the state of the two time periods are both Off, the system will not record in motion detection.



6-16

**Image** With this menu, adjustments can be made for image quality and protocols of each channel.



6-17

**Style:** Among the options of the coding styles there are: VBR(variable baud rate), CBR(consistent baud rate), f/10s, f/5s, f/2s, 1f/s, 2f/s, 3f/s, 4f/s, 5f/s, 6f/s, 8f/s, 10f/s, 12f/s, 15f/s & 20f/s. Select one of the styles and save. For VBR and selectable frames there are 1, 2, 3, 4, 5 & 6 level of image quality. Please choose the desired level.

6-18

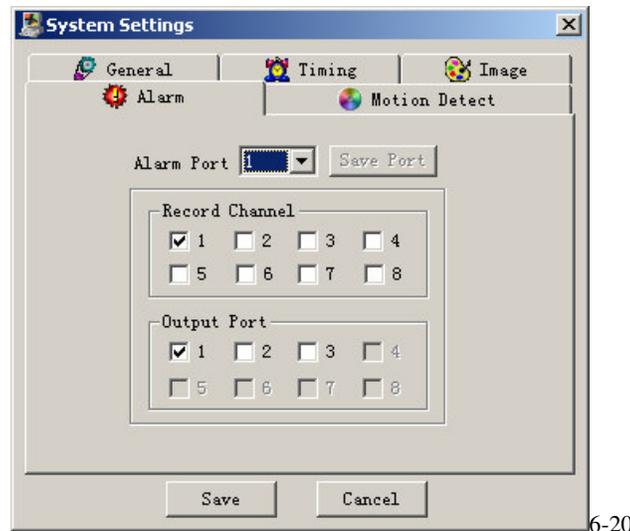


Level 1: data flux 128Kb/S, Level 2: 256Kb/S, Level 3: 384Kb/S, Level 4: 512Kb/S, Level 5: 768 Kb/S, Level 6: 1Mb/S.

The different data flux demands on the related bandwidth and the transmission image quality is also different. Among them, Level 6 demands on the highest bandwidth and has the best image quality.

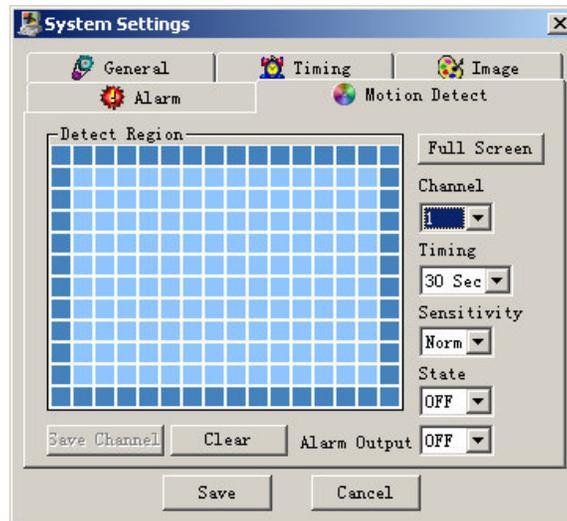
**Net transmission Protocol-** There are TCP and Multicast (two types). Multicast protocol: the 1<sup>st</sup> user logged in can control power, can view the image at will and other users can only follow this user to view the image. 5 users are allowed to view at the same time. TCP protocol: each user can view the image at will. According to the need, users can choose between different protocols. If viewing is through the Internet you must choose TCP. Up-to 5 users are allowed to view at the same time.

**Alarm** When there are alarm input signals, the user can select the recording channel and the output port for the actual need.



6-20

**Motion detection** When the user sets the time period for Motion Detection, the motion detection will take effect. The blue area is the selectable motion detection area. The User can move the dialogue box to choose the correct area and can also set the sensitivity of the area due to the need. Click **Full screen** or press right key on the area to display the motion detection area in full screen mode. After setting the area the user can **Save channel** or **Clear** the area. The Alarm output field allows you to activate an output relay. The default port is 2. If you want to set this channel fully as motion detection recording, you have to turn off the **timing** recording of this channel.



6-21

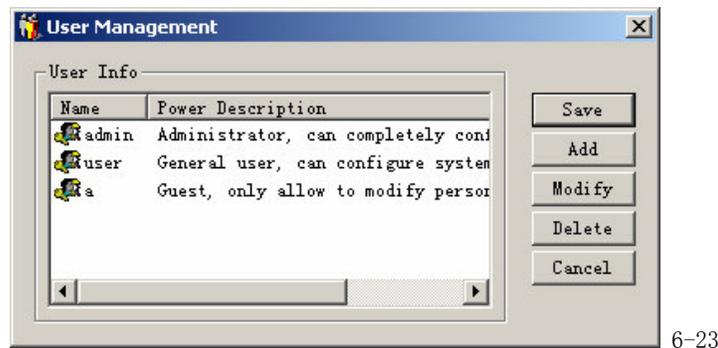
## 6. Assistant

**Assistant** Click on Assistant setting, as following, there are **User manage** - **Record control** - **Apply for control right** - **Log information** - **System information** - **Channel name** - **Upgrade BIOS**, etc.

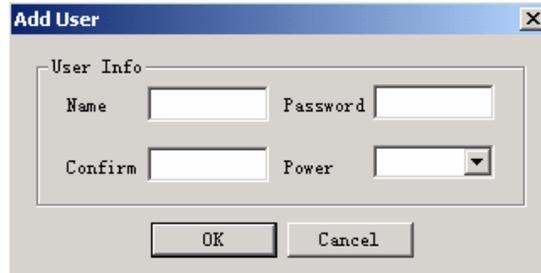


**User manage**: displays the user(Log-In) information of the DVR. The buttons to the right can let an administrator user save, add, modify, delete and cancel the information.

Three levels of users types: Administrator— fully set the system, modify & Use the system.; User— can not set system parameters or modify other users' information. This User can select and Operate existing programming; Guest— can not set system parameter and records search, can only modify personal information.



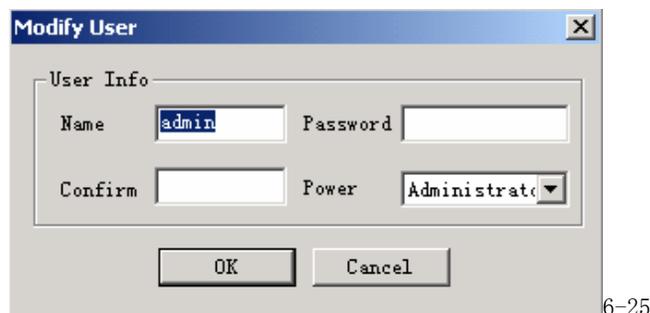
**Add:** Click Add to show the following dialogue box:

A dialog box titled "Add User" with a close button (X) in the top right corner. It contains a "User Info" section with four input fields: "Name", "Password", "Confirm", and "Power". The "Power" field is a dropdown menu. At the bottom are "OK" and "Cancel" buttons.

6-24

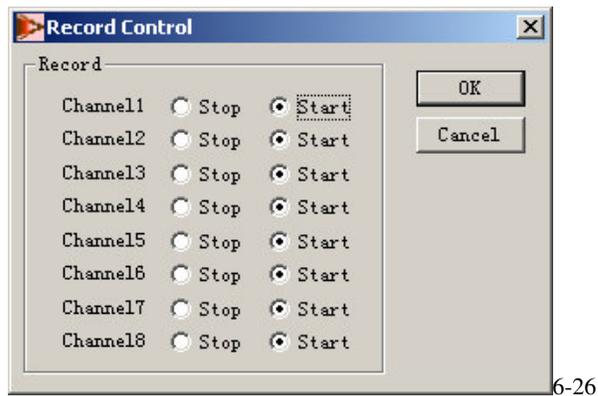
The Admin User can add user information in this dialogue box, select your power. Note: There is only one administrator allowed.

**Modify:** Select this button to show the following. User can modify the filled-in information.

A dialog box titled "Modify User" with a close button (X) in the top right corner. It contains a "User Info" section with four input fields: "Name", "Password", "Confirm", and "Power". The "Name" field contains the text "admin". The "Power" field is a dropdown menu showing "Administrat". At the bottom are "OK" and "Cancel" buttons.

6-25

**Record control:** Manually control the recording of each channel.



**Apply for control power:** Web client software can supply the login of multiple users. If you want to have the control, you can click this option and confirm to have the control. (6-27). If a new user wants to have the control, the new user has to apply and gain the authorization of the existing user with control. If the logged-in users are all normal users, the first logged-in user gains the control power automatically. If a higher lever user logs in later, they can gain the control power automatically. If only one user logs in or the logged-in user is the user with control, the box is gray.

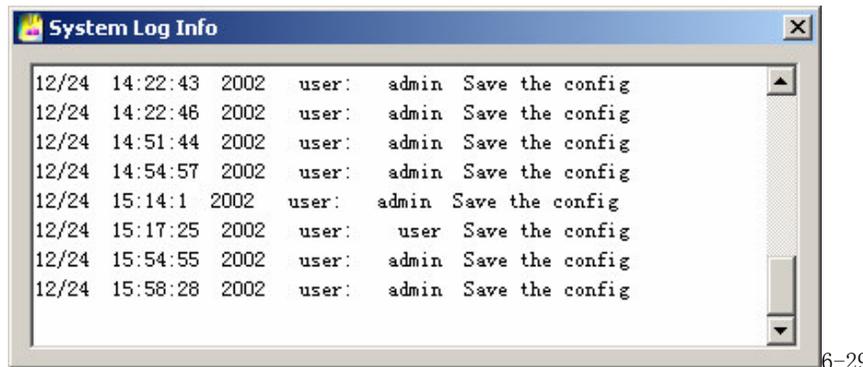


The picture below (6-28) is the other user sending request to the existing user with control.



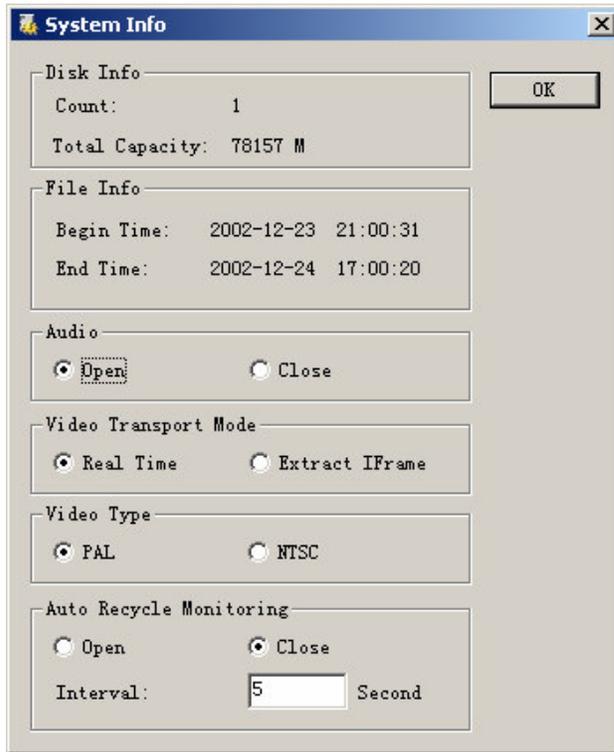
6-28

**Log information:** The operations on the system are all recorded in log information.



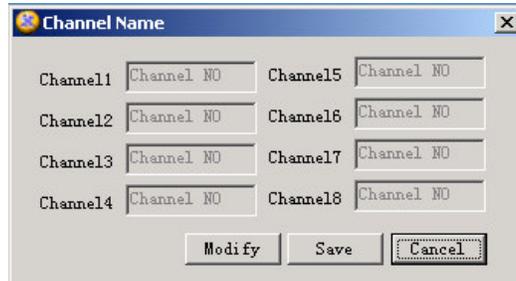
6-29

**System information:** Check the basic information of the system. When sound is not needed, you can turn off the audio. Due to the bandwidth considerations, the user can select the different Video transport modes, Video type PAL or NTSC has to be selected correctly, 110vac, 60hz is normally NTSC, 220vac, 50hz is normally PAL. If Auto recycle monitoring is on, system will sequence between all the channels automatically with a user selectable dwell time. **Net data flux:** during real-time monitor will display the statistics of the network data flux.



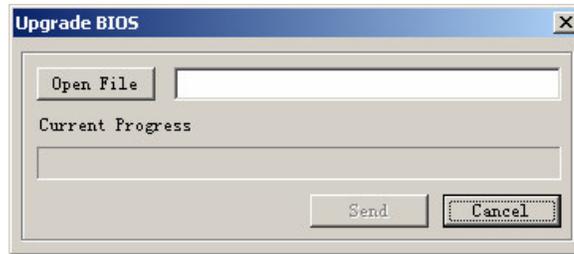
6-30

**Channel name:** Cameras can be named for each channel. No more than 12 Characters. The revised channel names will be displayed on the screen. The default setting of the channel name is Channel No.1 thru Channel No.8.



6-31

**Upgrade BIOS:** Administrator can upgrade the BIOS program remotely. A Browse window will pop up for File Information. Open the related BIOS or Web file (example: DVR0800.BIN or Multi-webfile.bin, and click on Send. After the upgrading, system will automatically reboot to take on the new system software.



6-32

**About:** Version information – This palette displays information about the DVR and may be vital when contacting MACE Support.

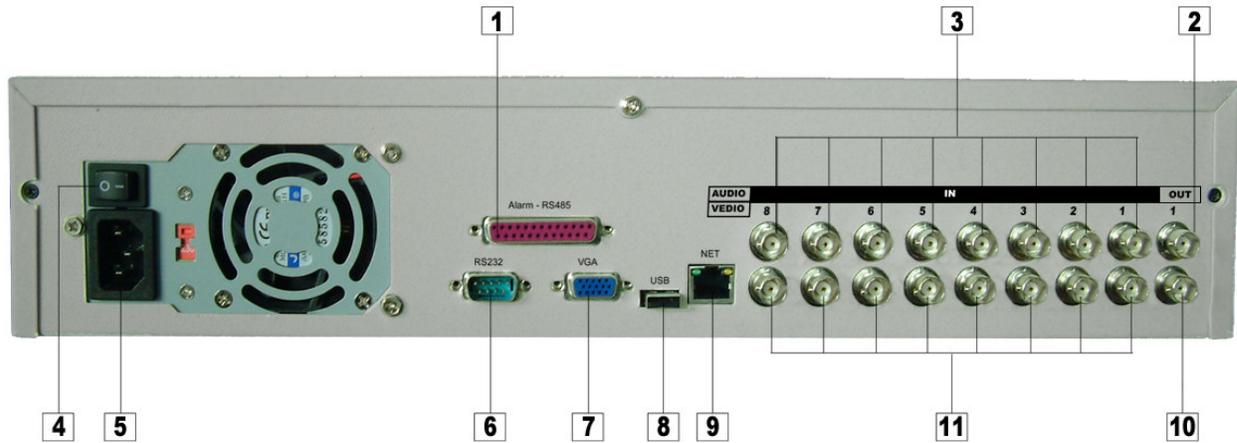


6-33

## Chapter 6 System Connections

1. **DVR Rear View**
2. **RS232 Port Connection**
3. **25 PIN Alarm Transfer Box**
4. **RS-485 Port Connection**

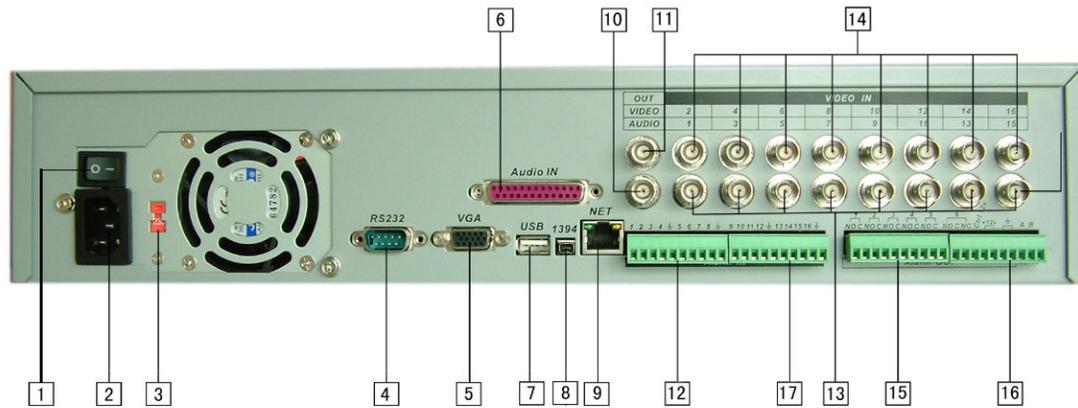
1. DVR Rear View



1- Alarm – RS485 (DB-25)	2- Audio Out (BNC)	3- Audio In (BNC)
4- Power Switch	5- Power Plug-in	6- RS232 (DB-9)
7- VGA out (HD-15)	8- USB port	9- RJ45 (10 Base-T)
10- Video Out (BNC)	11- Video In (BNC)	

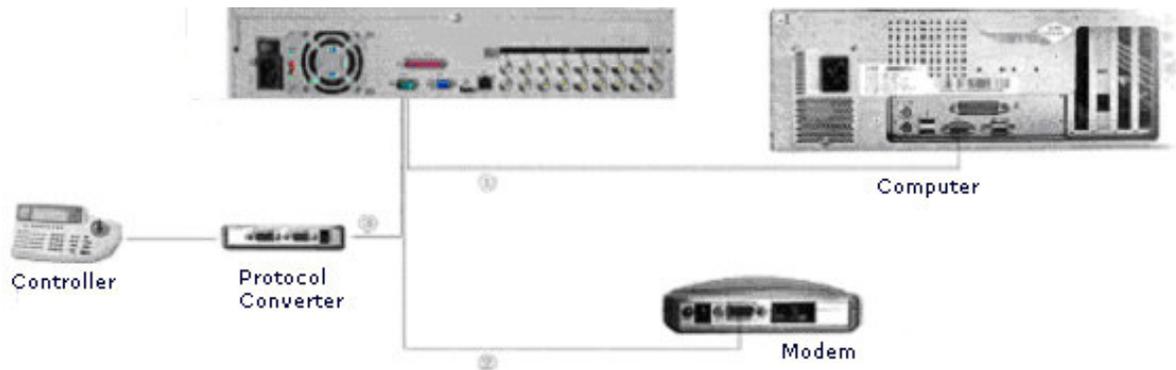
**Network connection note:** When connecting directly to the network card of a computer, please use CAT-5 Crossover Cable; when connecting to a LAN or Router use CAT-5e cable.

## DVR1604RW Rear View



- 1、 power switch    2、 power plug    3、 220V/110V shift switch    4、 RS232 connection  
 5、 VGA connection    6、 Audio input    7、 USB port    8、 1394 connection  
 9、 NET network connection (RJ45)    10、 Audio output    11、 Video output  
 12、 Alarm-RS485 connection    13、 Video input    14、 Video input    15、 Alarm output  
 16、 Alarm output & control connection    17、 Alarm input

## 2. RS232 Port Connection



**Note:** The connection for DVR system software upgrading or debugging through the serial port

The connection for dial-up login through MODEM

The connection for DVR control through keyboard

## 3. 25 Pin Alarm Transfer Box

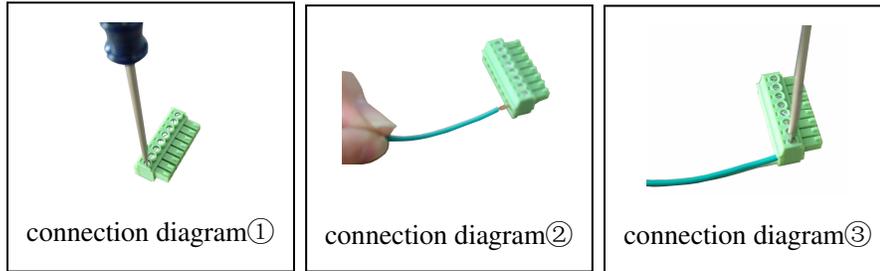
Connect 25 pins of the transfer box directly with the 25 pins alarm input output connection of the DVR

Fasten the transfer box on the back panel of DVR with two screws

Pull out 6 connection terminals of the transfer box, corresponding connection marks can be clearly noticed.

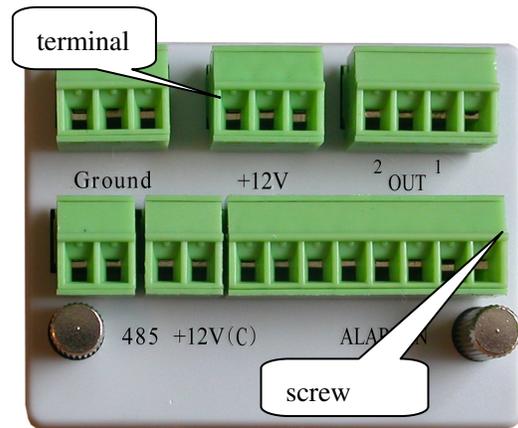
Connect function line according to connection marks

- ① Loosen the screws on the connection terminal; (connection diagram①)
- ② Insert lines needed to corresponding terminals ; (connection diagram②)
- ③ Fasten the screws on the terminals after insertion of the lines.(connection diagram③)



Notes:

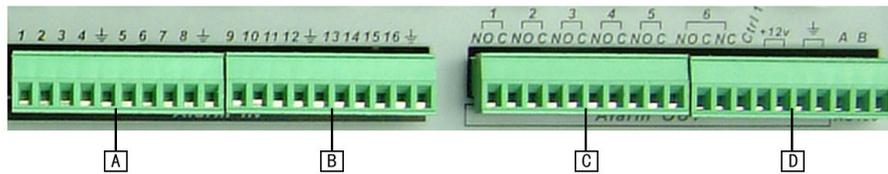
- a) “Ground”: ground line;
- b) “+12v”: provide the power to alarm device with current less than 2A
- c) “OUT 1、2” is two alarm outputs switch. Nomal open type;
- d) “485 A、B” is communication connection, used to connect such recorder control device such as control decoder
- e) “+12(C)” is control power output, is used for standby power for smoke sensor alarm device.. dismiss of the alarm needs the device to turn off the power.
- f) “ALARMIN 1...8” is alarm input. High level voltage input. Input voltage is 6-24V (12V is recommended) 。



## 10-Pin connection for DVR1604RW

If you want to control pan-tilt, lens and process the relay of the alarming signals by the DVR, the 10-pin port can realize. The

four 10-pin port can control various pan-tilt decoders, and the specific type of the decoder can be selected from the Control of the System setting in the menu. On plug the foot's serial number is marked.



A: Alarm input: ALARM1~ALARM8

B: Alarm input: ALARM9~ALARM16

C: Alarm OUTPUT: ALARM1~ALARM5

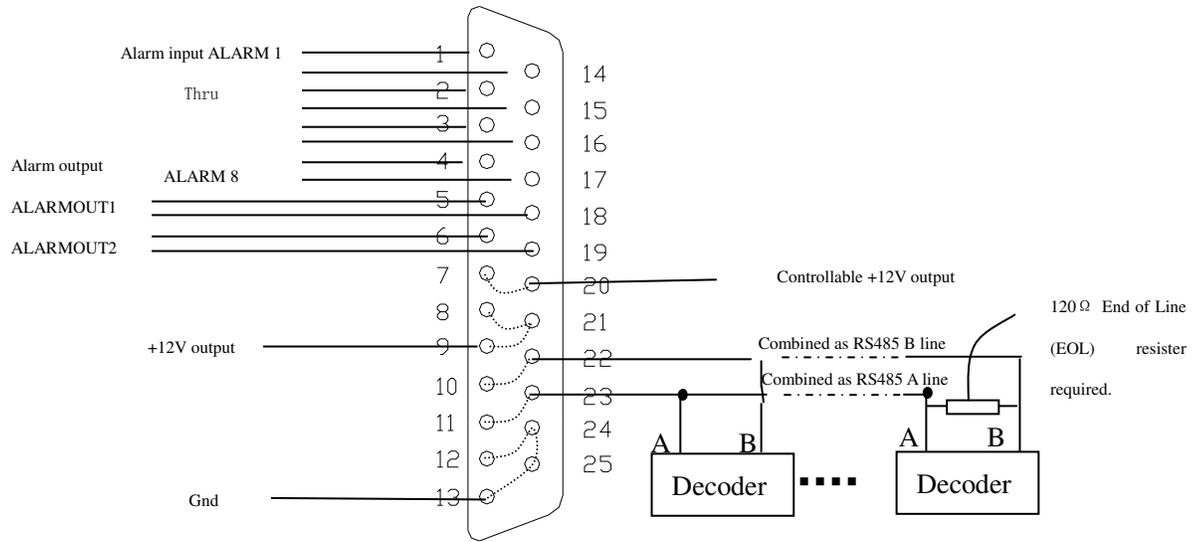
D:ALARM6 output and 12V controllable pressure AB line port

#### 4. RS-485 port connection

If you want to control Camera pan-tilt-zoom (P/T/Z) or activate the DVR Output relay, the 25-pin RS485 connection must be used. See detail below.

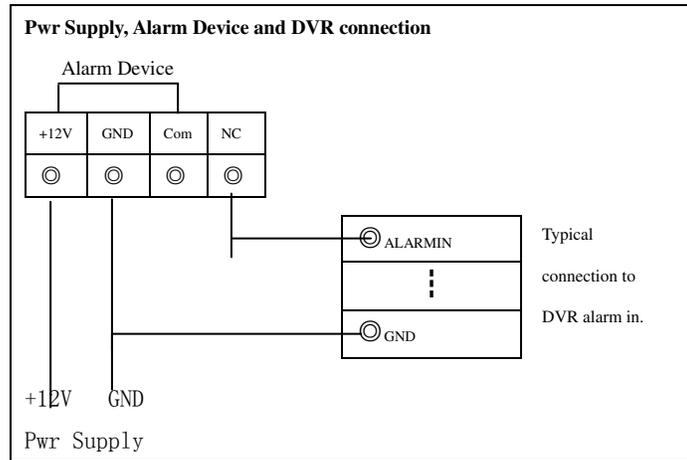
The RS485 port connection can control various (P/T/Z) Cameras, and the specific model or protocol can be selected from the Control Menu in System settings.

The DB25 pin outs are marked below. The definition of the pin outs are as follows: The broken line in the graph indicates inside connection)



- a) Pins 1,14,2,15,3,16,4,17 connects to alarm input: ALARM1~ALARM8
- b) Pins 5 & 18 = OUTPUT Relay 1 - 6 & 19 = OUTPUT Relay 2 Each Relay (normally open):
- c) Pins 7&20 = OUTPUT 3 is a controllable +12V output.
- d) Pins 8, 9 & 21 are +12V power output, Use for Low current items only such as Relays and Alarm Devices.
- e) Pins 10 & 22 are the B line of RS485, Pins 11 & 23 are the A line of RS485;
- f) Pins 12, 13, 24 & 25 are Ground (Gnd).

- Connection of the alarm input:



• Instruction of the alarm input end:  
8 channel alarm inputs with NO or NC alarm(normally open or normally

close type). The power out of the alarm sensor can be provided by the DVR(Low current only) or (External alarm power supply)

·Instructions for alarm device power from DVR:

N/O or NC alarm outputs refer to information below..

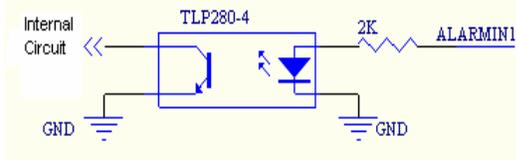
·Instruction of the controllable +12V

Available for Low Current Power to Alarm devices.

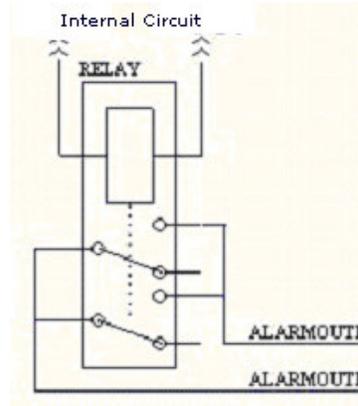
·Instruction of RS485 A & B line:

Used to connect the A and B line of the PTZ units.

·Module sketch of the alarm input end



·Module sketch of the alarm output end



• Relays' parameter of the alarm output end

Model: G6H		
Relay Material	Silver	
Rating, resistance & load.	Rated switch capacity	30VDC 1A, 125VAC 0.5A
	Maximum switch power	62.5VA 33W
	Maximum switch voltage	125VAC, 110VDC
	Maximum switch Current	1A
Insulation	Pins with same polarity	750VAC 1minute 50/60Hz
	pins with different polarity	1000VAC 1minute 50/60Hz
	between relay and loop	1000VAC 1minute 50/60Hz
Surge voltage	between relays with same polarity	1500V (10×160us)
Length of open time	3ms max	
Length of close time	3ms max	
Longevity	Mechanical	100×10 <sup>6</sup> 次 (10Hz)
	Electric	200×10 <sup>3</sup> 次 (0.5Hz)
Temperature	-40~+70℃	

## Chapter 6 Serial Port Operations

1. System Setting
2. Software Upgrade

## 1. System Setting of the Terminal

The system's operation can also be controlled through the RS232 port. The specific operation is as follows: First, copy "Terminal" and new DVR system software to the computer. Connect the computer with the DVR via the RS232 port. Run "Terminal" program and create the connection between the computer and the DVR.

The settings information for the connection is: Baud rate— 115200bps

Data bit— 8 bits

Stop bit— 1 stop

Check — no parity

Control on data flow— no

You can log in by username **admin** (default user with administrator ) for the serial port login.

### Login steps:

Press any key to enter the login interface which displays the following:

**Username: admin**

Input the name; press the "enter" key. Then, input the password as follows:

**Password: admin**

If the username and password are correct, the system will allow entry via the serial port. The detailed functions are the same as the menu setting.

## 2. Serial port upgrading operation

After connecting with the above operations, please continue with the below operation:

Press any key to enter login interface as following:

Username - **admin**

Enter username and press Enter. Enter the password as follows:

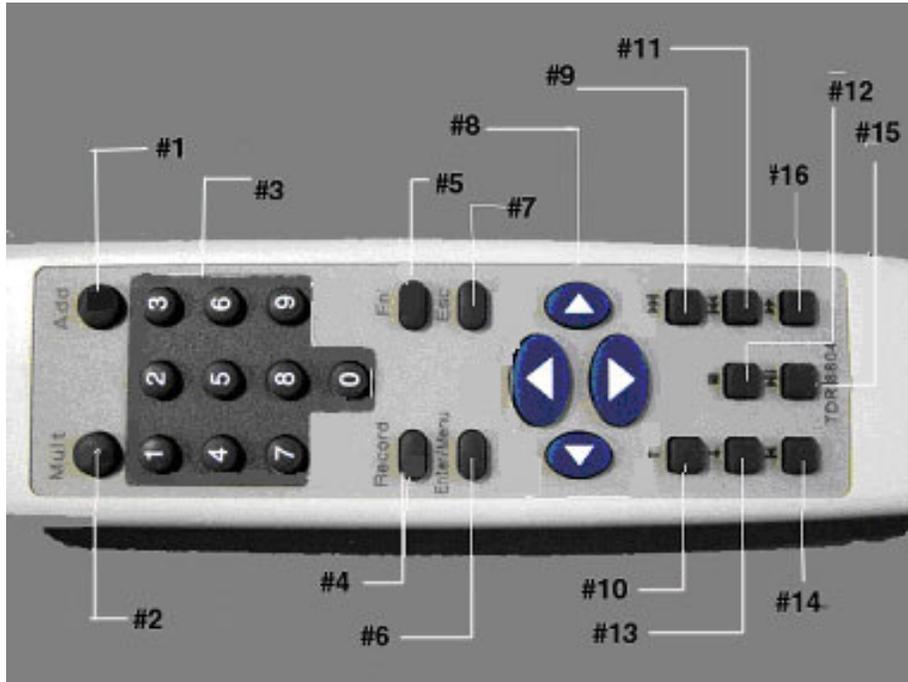
Password - **dahua**

System enters into **DEBUG** state, and input BIOS. Press Enter.

Click Communication in the menu Field—Send file, and open upgrading program file (DVR0804\_NTSC.BIN—8 Channel DVR BIOS program, please complete this operation within 20 seconds, otherwise a Time out occurs). System begins to upgrade automatically and after the upgrading is completed, a system reboot will occur.

## Appendix 1 Remote Control Unit

Remote controller – Operates like On-Screen Buttons



1. Address	2. Multi Screen	3. Camera Select	4. Record
5. Function Key	6. Enter/Menu	7. ESC (Cancel)	8. Direction Arrows
9. Jump to Next	10. Previous Selection	11. Jump Backward	12. Stop
13. Next Selection	14. Reverse	15. Play/Pause	16. Fast Forward

## Appendix 2 Frequently Asked Questions

### 1. After Power up, "No HDD" message is flashing on the local monitor

This is an indication that either the harddisks are not installed correctly or no harddisk is installed at all. Refer to Appendix 2 **Hard disk installation**. Also inside the DVR there is a yellow sticker with instructions on harddisk installation.

### 2. When I power down the DVR, why do I have to press and hold the power button for 4 seconds?

First of all, using the front orange power button to shut down the DVR will make sure the DVR properly finish and close all it operation and file system, thus eliminate many possible causes for harddisk errors leading to data loss. This is the correct way of powering down a DVR.

Secondly, requiring holding the button for over 4 seconds is to avoid accidental shutdown of the DVR due to unintended touch of the button. You can make the shutdown more secure (i.e. avoid unauthorized shutting down) by activating the shutdown password protection feature. (MENU->ADMIN SETTING->OTHERS->SHUTDOWN PASSWORD)

### 3. What does the sound of the buzzer mean when normally starting the machine

When the machine is started successfully, it will tone out a short ring.

When the HD can not be identified, it would tone out a longer ring.

When communication with the controller panel is abnormal, it sends out a tone of one long ring and two short in series.

### 4. Can I control the recording time?

The recording time unit is per day. Besides timing recording, there are other recording methods such as motion detection recording, manual recording, external event triggering recording. Confirm that each of the settings is correct.

### 5. The indicator light is flashing while recording?

Check the external video input signal first. Such phenomena would happen when the input signal is not standard. If it is not the input signal, it must be caused by that the reading speed of the HD is too slow. In this situation, the current HD should be changed.

**6. Why the screen is black after I switch off and on the power?**

The power supply comes with the DVR has a built-in protection mechanism. After the power is shut down, you have to wait for at least 5 seconds before turn it on again. Turn off the power, wait for 5 seconds, and turn it on again. If this does not correct the problem, contact your Mace technical support hotline.

**7. What kind of external equipment could be connected to the Recorder?**

It can work together with various matrix units, multiplexers, switchers, quads and PTZ Domes.

## Appendix 3 Hard Disk Installation

### Hard disk installation

There is one 80G hard disk (HD) preinstalled in the Mace DVR, unless you ordered a special configuration. So normally you DO NOT have to go through these steps. This procedure only applies to cases where there is no built-in hard disk in the DVR or additional hard disks need to be installed.

In total, a maximum of 8 large capacity hard disks can be installed inside the machine if a CD burner is not needed. With a CD burner, there can be a total of 5 internal large capacity hard disks. User can decide the number of hard disks according to required image quality, recording time and recording length.

### Installation steps



Dismantle the top cover,  
open the cabinet



Dismantle the HD  
bracket



Separate the up and  
down part of the bracket



Install HD



Combine the two parts of  
the bracket



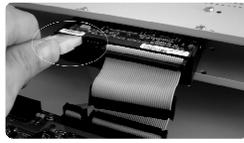
Set the master-slave jumper wire  
(refer to the clue on the back of the  
HD)



Connect the HD bracket



Connect HD data line to IDE port



Plug in HD power line



Close the cover and install the screws

### LIMITED WARRANTY

Mace Security Products, Inc. (MACE) warrants to the original purchaser of this product that it shall be free of defects resulting from workmanship or components for a period of one (1) year from the date of sale. Defects covered by this Limited Warranty shall be corrected wither by repair or, at MACE's discretion by replacement. In the event of replacement, the replacement unit will be warranted for the remainder of the original one (1) year period or thirty (30) days, whichever is longer. THERE ARE NO OTHER ORAL OR WRITTEN WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

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