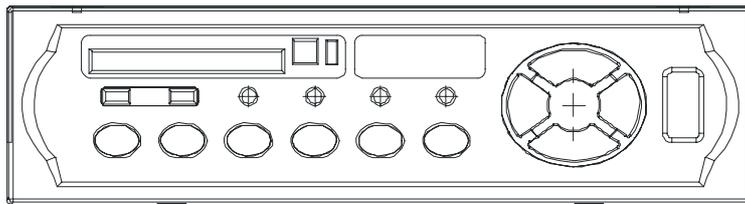


Thank you for purchasing our product.
Please read this User's Manual before
using the product.
Change without Notice

Mobile Digital Video Recorder

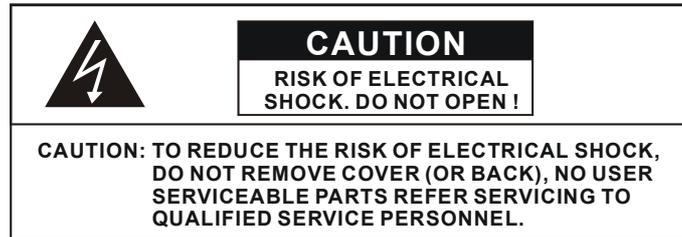
User's Manual



e4
020764



Safety Precautions



This label may appear on the bottom of the unit due to space limitations.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of insulated dangerous Voltage within the product's enclosure that may be sufficient magnitude to constitute risk of electrical shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operation and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE UNITS NOT SPECIFICALLY DESIGNED FOR OUTDOOR USE TO RAIN OR MOISTURE.



Attention: installation should be performed by qualified service Personnel only in accordance with the National Electrical Code or applicable local codes.



Power Disconnect. Units with or without ON-OFF switches have power supplied to the unit whenever the power cord is inserted into the power source; however, the unit is operational only when the ON-OFF switch is the ON position. The power cord is the main power disconnect for all unites.



“CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instruction.”

Content Table

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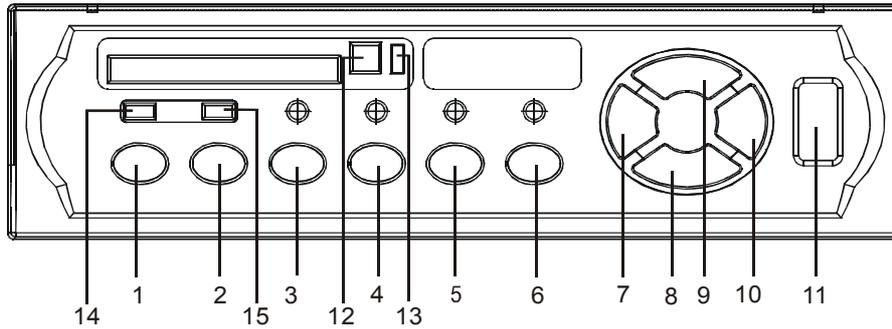
1. Hardware

- 1 X DVR Machine
- 1 X Power Core (Power core type depends on your order)
- 1 X Protection case
- 1 X User Manual
- 2 X Immovable rack
- 4 X Screws
- 4 X S-Video line (male jack)
- 1 X S-Video line (Female jack)

Optional product

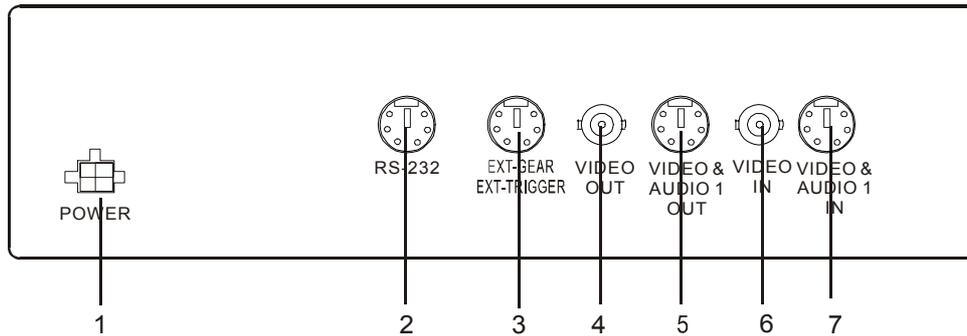
- 1. Hard Disk
- 2. Power cord converter

2. Unit Description of Front Panel



1. MENU/ENTER: Enter OSD Menu
2. STOP: Exit Record /Playback mode into Display only mode
3. MANUAL TRIGGER
4. PAUSE/FREEZE: In playback mode, play will be paused or/and playback next frame
5. PLAY: Enter playback mode and playback the last image file
6. REC: Enter Recording mode
7. LEFT/BW: Change the current menu item value or backward in Playback mode
8. DOWN: Select next menu item
9. UP: Select previous menu item
10. RIGHT/FF: Change the current menu item value or fast forward in Playback mode
11. UBS PORT: For computer to access video data inside DVR
12. Flash Card Reject Stick
13. Flash Lock / Unlock light
14. Power ON / OFF Light
15. V-Loss: Video loss light

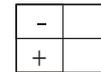
3. Unit Description of Rear Panel



1. POWER : DC 12V~40V, 1Amp

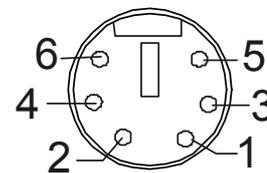
2. RS-232:

- 1 : NC
- 2 : TXD
- 3 : RXD
- 4 : DC 12V
- 5 : GND
- 6 : NC



3. EXT-TRIGGER

- 1 : 12V
- 2 : GEAR
- 3 : NC
- 4 : SGRTN
- 5 : GND
- 6 : TRG

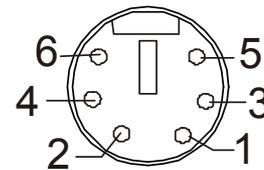


RS-232

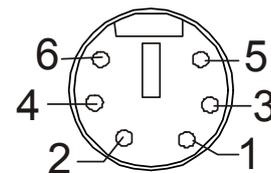
4. VIDEO OUT

5. VIDEO & AUDIO 1 OUT

- 1 : NC
- 2 : NC
- 3 : AUDIO
- 4 : GND
- 5 : DC 12V (Spare)
- 6 : VIDEO



EXT-TRIGGER

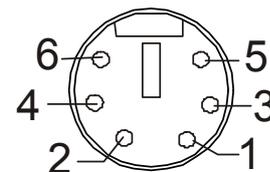


VIDEO & AUDIO OUT

6. VIDEO IN: Standard composite video single input 1Vp-p

7. VIDEO & AUDIO IN

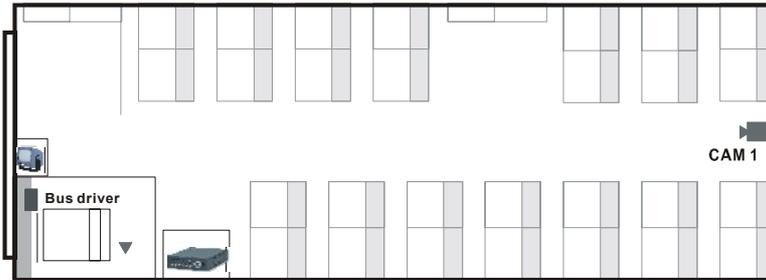
- 1 : NC
- 2 : NC
- 3 : AUDIO
- 4 : GND
- 5 : DC 12V
- 6 : VIDEO



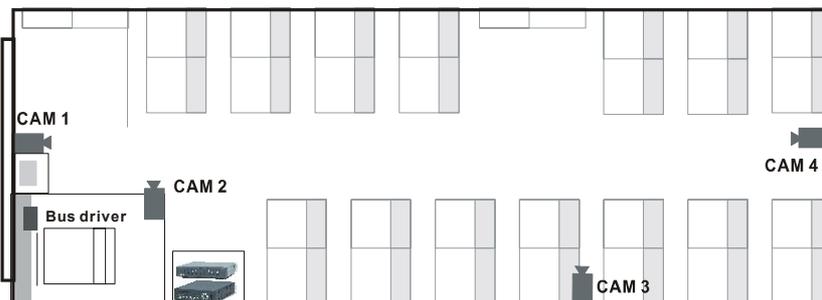
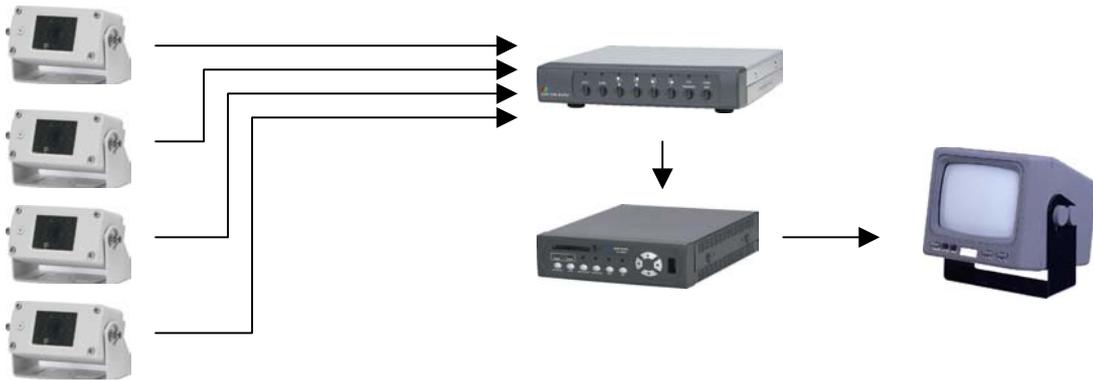
VIDEO & AUDIO IN

4. Configuration

1. System Architecture



2. System: 4 B/W Camera, 1 B/W Quad, 1 DVR and 1 Monitor



5. Image Record:

5.1 Record mode:

Normally, the recorded images are stored in H.D. However, if Alarm input is triggered or MANUAL TRIGGER key is pressed, 2MB images before this event and 5.5MB images after this event will be saved into Compact Flash Card. And the card will be locked (no more writing) until unlock action is performed.

1. Compression : Motion JPEG, (20K byte/picture base on 720 X 240)
2. File format : FAT32/ AVI file
3. Function :
 - a. Resolution : NTSC:360*240 / 720*240
PAL: 352*288 / 704*288
 - b. Compression frame rate changeable
NTSC: ■360*240 : 1 ~ 15 fps ■720*240 : 1 ~ 10fps
PAL: ■360*240 : 1 ~ 12 fps ■720*240 : 1 ~ 8fps
 - c. Audio recording can be turned ON or OFF.

Ex 1: We intend recording a video with audio base on 360 x 240 resolution and the frame rate is 15 frame/sec. And, the video data will be stored in hard disk.

Step 1 : Press “Menu Enter”, then there is a OSD Menu show up as following.

MENU PAGE 1	
TIME SET	Y00 / M00 / D00 H00 : m00 : s00
TIME DISPLAY	ON
AUDIO RECORD	ON
AUDIO OUT	ON
MOTION DETECT RECORD	OFF
MOTION DETECT SENSITIVITY	HIGH

Step 2 : Turn on audio recording

Step 3 : Press ↓ button to select on item “ RESOLUTION”, and press ← or → button to select 360 x 240.

MENU PAGE 2	
RESOLUTION	360*240
HDD RECORD FRAME RATE	15
HDD RECORD RECYCLE	ON
RS232 BAUD RATE	9600
VIDEO TYPE	NTSC
FLASH STATUS	LOCK
BUZZER WARNING	ON

Step 4 : Press ↓ button to move down the select mark. Then use ← or → button to change frame rate to 15 frame/sec.

MENU PAGE 2	
RESOLUTION	360*240
HDD RECORD FRAME RATE	15 Frame/sec.
HDD RECORD RECYCLE	ON
RS232 BAUD RATE	9600
VIDEO TYPE	NTSC
FLASH STATUS	LOCK
BUZZER WARNING	ON

Ex2: We intend recording a video with audio base on 720 x 240 resolution and frame rate is 10 frame/sec. And, the video data will be stored in flash card.

Step 1 : Press “Menu Enter”, then there is a OSD Menu show up as following.

MENU PAGE 1	
TIME SET	Y00 / M00 / D00 H00 : m00 : s00
TIME DISPLAY	ON
AUDIO RECORD	ON
AUDIO OUT	ON
MOTION DETECT RECORD	OFF
MOTION DETECT SENSITIVITY	HIGH

Step 2 : Turn on audio recording

Step 3 : Press ↓ button to select on item “ RESOLUTION”, and press ← or → button to select 720 x 240.

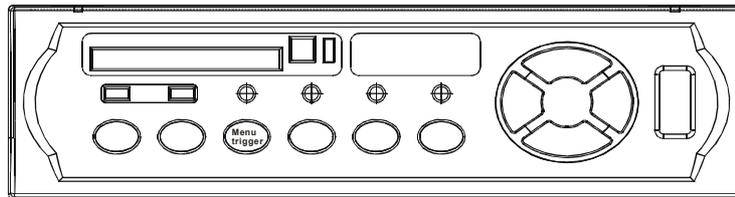
MENU PAGE 2	
RESOLUTION	720*240
HDD RECORD FRAME RATE	15
HDD RECORD RECYCLE	ON
RS232 BAUD RATE	9600
VIDEO TYPE	NTSC
FLASH STATUS	LOCK
BUZZER WARNING	ON

Step 4 : Press ↓ button to move down the select mark. Then use → or ← button to change frame rate to 15 frame/sec.

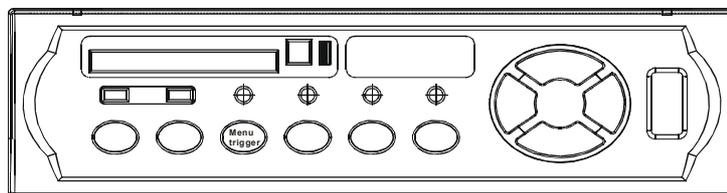
Step 5: Press ↓ button to move down the select mark. Then use ← or → button to unlock (erase) flash card.

MENU PAGE 2	
RESOLUTION	720*240
HDD RECORD FRAME RATE	10 Frame/sec.
HDD RECORD RECYCLE	ON
RS232 BAUD RATE	9600
VIDEO TYPE	NTSC
FLASH STATUS	UNLOCK
BUZZER WARNING	ON

Step 6: Press “ MANU TRIGGER”, then the video data start to store in flash card.



After the flash card is filled, the flash card lock light will be turn on.



And please check OSD MENU page 2.

MENU PAGE 2	
RESOLUTION	720*240
HDD RECORD FRAME RATE	10 Frame/sec.
HDD RECORD RECYCLE	ON
RS232 BAUD RATE	9600
VIDEO TYPE	NTSC
FLASH STATUS	LOCK
BUZZER WARNING	ON

FLASH STATUS NOTICE:

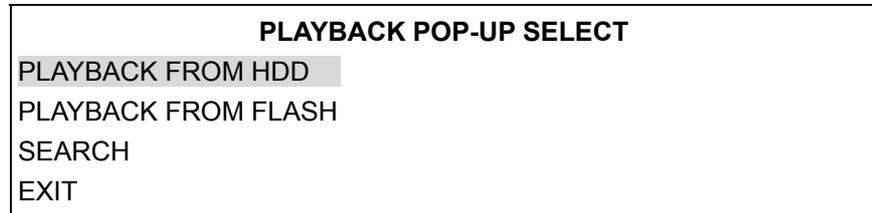
When Hard Disk is full and HDD RECORD RECYCLE mode is off, this function mode will be on. Otherwise, if the capacity of Hard disk has 8MB at least, the image data will save to Hard disk and Flash card.

6. Image Playback:

1. Playback mode : Playback from H.D. or Compact Flash Card
2. Date/Time searching supported
3. Record Date/Time display
4. Fast forward (X2, X4)
5. Backward (X1, X2, X4)
6. Freeze function
7. Audio output can be turned ON or OFF

Ex 1: Playback from hard disk.

Step 1 : Press “Play”, then there is a OSD Menu show up as following.



Step 2 : Press “ Enter”, then start to playback image data from hard disk.

Step 3 : Press “ → ” button to active fast forward X 2

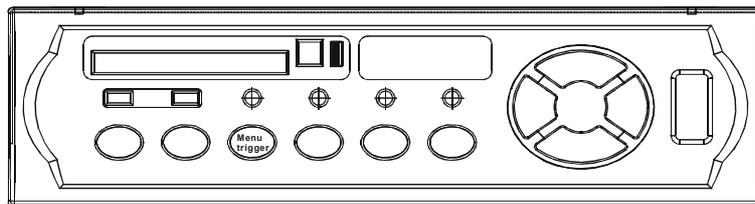
Step 4 : Press “ → ” button again to active fast forward X 4

Step 5 : Press “ ← ” button to active backward X 1

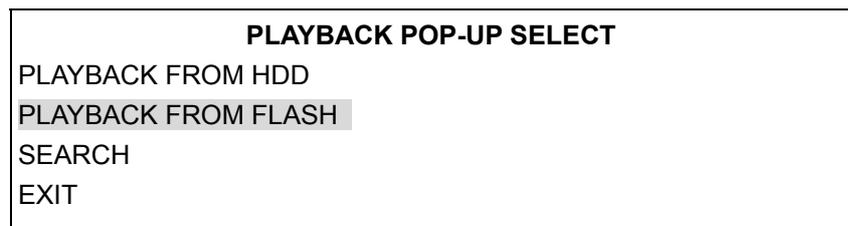
Step 6 : Press “ Freeze “ button to freeze desired image.

Ex 2: Playback from compact flash card.

Step1: Press Play

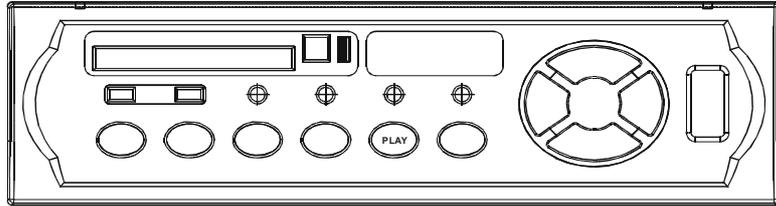


Step2: Move down the select mark, then press Enter.

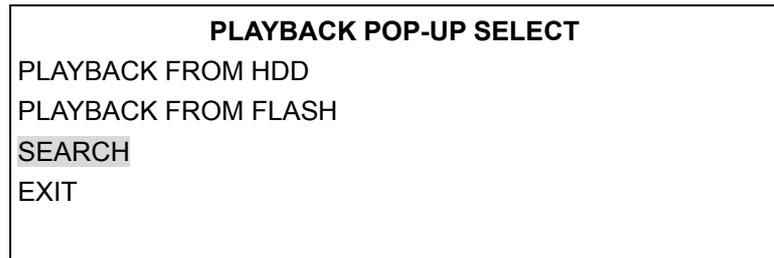


Ex 3: Playback image data from searching point.

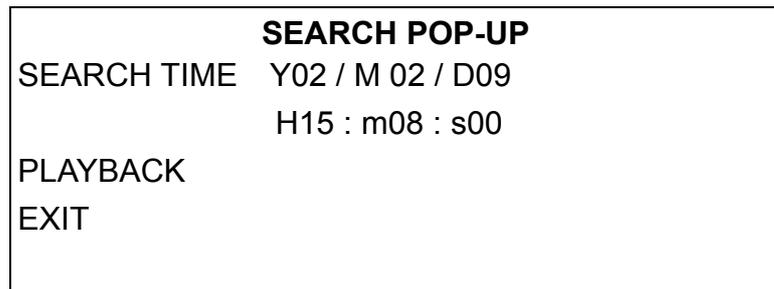
Step1: Press play



Step 2. Move down the select mark to " search", then press enter.



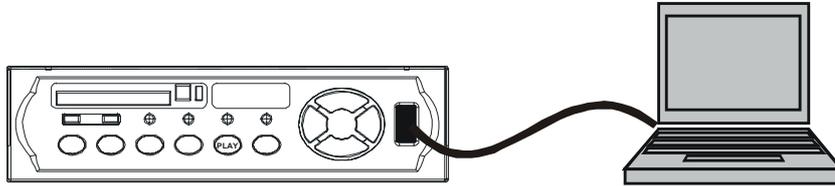
Step3: Use     to change searching item, then move down select mark on "PLAYBACK". Press "Enter" button start to play.



7. Extract image data from DVR:

User can extract image data from the HD inside DVR. Then, use AVI format supported software to play locks the image data.

Step 1: Connect USB ports between DVR and PC



Step 2: A windows screen will display a new mobile HD driver is installed.

Step 3: User can use AVI format supported software to playback the image data, ex: Quick Time.

- Quick Time software can be download from <http://www.quicktime.com>

Notice:

1. Operating only Windows 2000 System
2. Please turn on the DVR power before connect to PC client.
3. On the PC windows program folder finds a new main folder under the new mobile HDD. It displays "\year\month. Under the main folder is others vice-folder. It displays :\day. When the HDD RECORD RECYCLE mode is off, DVR system still made :\day folders.
4. Every 3 minutes image data will be record to Hard disk and become a data folder. If when record mode is running, user stop recording, the image data will be not become a folder data.

8. System software update:

1. Turn the DVR power on
2. DVR USB and PC client USB interface make the connection.
3. Copy HSBIOS.BIN to DVR hard disk.
4. Make sure the HSBIOS.BIN has saved to DVR hard disk
5. Press "MENU" button to begin main menu.
6. Follows the steps "PLAY", "PLAY", "PLAY", "PAUSE", "PAUSE", "PAUSE". At this time the update firmware will show up.
7. Press "PAUSE" to choose hard disk
8. Waiting the update processing. After the program is installed, DVR will re-start power on.
9. After DVR power on, please check all the functions are correct.
10. If not correct, please repeat updating step.

9. OSD Menu Structure:

1. Press key MENU/ENTER to enter or exit MENU SETUP mode
2. Press key UP/DOWN to select current setup item
3. Press key RIGHT/LEFT to select setup data

MENU PAGE 1	
TIME SET	Y00 / M00 / D00 H00 : m00 : S00
TIME DISPLAY	ON (OFF)
AUDIO RECORD	ON (OFF)
AUDIO OUT	ON (OFF)
MOTION DETECT RECORD	ON (OFF)
MOTION DETECT SENSITIVITY	HIGH (MID, LOW)

Functions:

TIME SET: No date and time display at live mode, only at playback mode.

TIME DISPLAY: Date and time display mode on or off.

AUDIO RECORD: Audio record mode on or off.

AUDIO OUT: Audio playback mode on or off.

MOTION DETECT RECORD: Motion detection record mode on or off.

MOTION DETECT SENSITIVITY:

Set up the motion detect sensitivity to HIGH/MID/LOW.

Setup to HIGH mode, compare the current image difference also even the light image is different, DVR starts to record.

Setup to low mode, must happen in serious action, DVR starts to record.

Notice:

When the motion detection mode is on, the DVR system will not doing manual recording. Unless cancel the motion detection.

MENU PAGE 2	
RESOLUTION	720*240; 360*240
HDD RECORD FRAME RATE	1~10; 1~15 Frame/sec.
HDD RECORD RECYCLE	ON (OFF)
RS232 BAUD RATE	9600 (1200, 2400, 4800)
VIDEO TYPE	NTSC (PAL)
FLASH STATUS	LOCK (UNLOCK)
BUZZER WARNING	ON

Functions:

RESOLUTION and HDD RECORD FRAME RATE:

- NTSC:** Resolution: 360*240 Frame rate: 1 ~ 15 fps
720*240 Frame rate: 1 ~ 10 fps
- PAL:** Resolution: 352*288 Frame rate: 1 ~ 12 fps
704*288 Frame rate: 1 ~ 8 fps

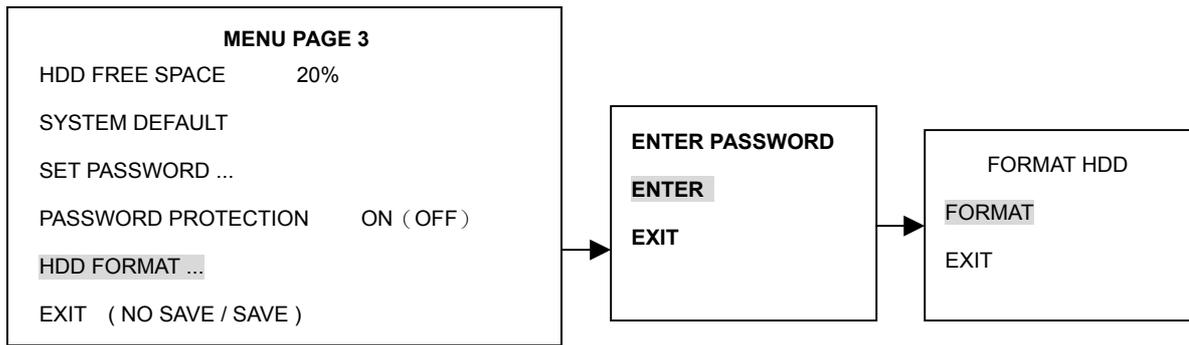
HDD RECORD RECYCLE: Keep recycle recording when hard disk is full.

RS232 BAUD RATE: The baud rate setup: 1200, 2400,4800,9600

VIDEO TYPE: Set up the local system is NTSC or PAL

FLASH STATUS: Flash card record mode is on or off. Lock/Unlock. When flash card is full, it will not record until users unlock the flash status

BUZZER WARNING: Video loss buzzer setup. User can press "STOP" button to stop buzzer warning when no video input buzzer



Functions:

HDD FREE SPACE: check the hard disk space. When hard disk recycle record mode is on, it displays 0%.

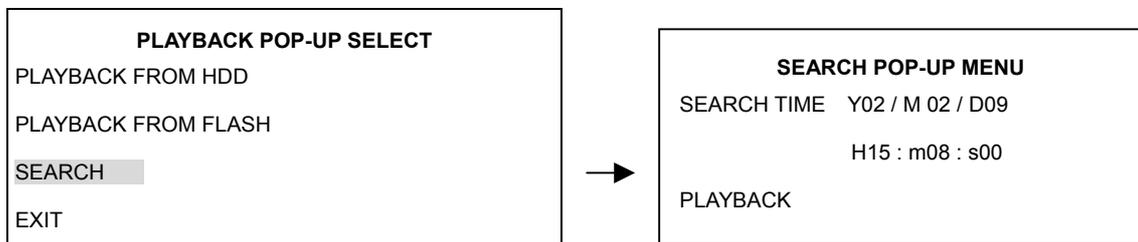
SYSTEM DEFAULT: The factory values

SET PASSWORD: Set up the system password. The factory password is 0000

PASSWORD PROTECTION: The password protection mode is on or off.

HDD FORMAT: Format hard disk mode is on or off

Exit: To exit menu. User needs to save data before exit



Functions:

PLAYBACK FROM HDD: Playback from hard disk

PLAYBACK FROM FLASH: Playback from flash card

SEARCH: Date and time chosen playback

Exit: exit menu

10. Remote Control Command (RS-232 : RXD/TXD/GND):

1. I/O

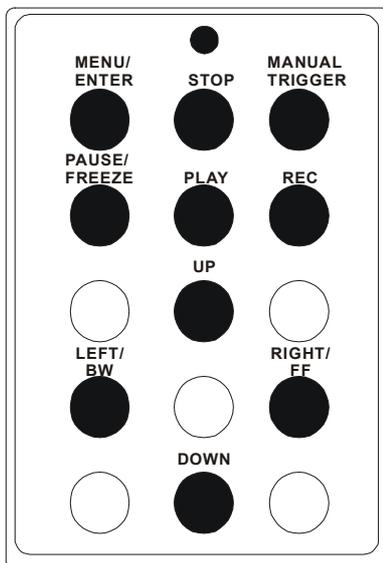
Vcc (+12 V)

RS-232 (9600 bps, 8 bit, 1 start bit)

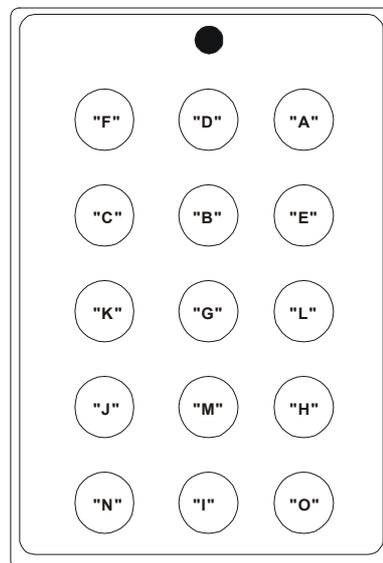
2. Command Code Table

Command	Code (ASCII)	Code (Hex)
Manual Trigger	'A'	0 x 41
Play	'B'	0 x 42
Pause/Freeze	'C'	0 x 43
Stop	'D'	0 x 44
Rec	'E'	0 x 45
Menu/Enter	'F'	0 x 46
Up	'G'	0 x 47
Right/FF	'H'	0 x 48
Down	'I'	0 x 49
Left / BW	'J'	0 x 4A

3. Key Placement



4. ASCII Code of button



Note: The remote control buttons functions are same as DVR front panel. (see page 5)

11. Recording Data :

NTSC :

Resolution: 360*240															
Frame	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Hrs.	582	291	194	145	116	97	83	72	64	58	52	48	44	41	38

Resolution: 720*240										
Frame	1	2	3	4	5	6	7	8	9	10
Hrs	291	145	97	72	58	48	41	36	32	29

PAL :

Resolution: 352*288												
Frame	1	2	3	4	5	6	7	8	9	10	11	12
Hrs	485	243	162	121	97	81	69	61	54	49	44	40

Resolution: 704*288								
Frame	1	2	3	4	5	6	7	8
Hrs	243	122	81	61	58	41	35	30

CFC Flash Card:

When on the normal recording mode, data image will record to internal hard disk, but when external events happen or user manual trigger record mode on, the 2MB image data before events and 5.5MB image data after events will record to flash card. At this time, the flash card will be locked no any image data could be record until user unlock flash status.

12. Appendix A: Installation Check List

Vehicle ID		Compact Flash#	
Mobile DVR Serial#		Hard Disk Serial#	
Driver ID		Technician	
Password			
Item	Verify	Date	Comments/Status
1.Power Core			
2.Remote Controller			
3.Hard Disk			
4.LED Indicators			
Power			
Video Loss			
MENU/ENTER			
STOP			
Manual Trigger			
Pause Freeze			
PLAY			
REC			
Flash Card			
Remote Controller			
5.Compact Flash Card			
6.RCA Camera Input			
7.RCA Video Output			
8.Mini-Din Camera In			
9.Mini-Den Video Out			
10.RS-232 Trigger In			
11.Housing Cage			
12.Video Loss Alarm Sound			
13.USB Port			
14.Password Enable/Disable			
15.KEY Lock			
16.HDD Format			
17.Flash Card Lock			

13. Appendix B: Program Configuration Check List

Vehicle ID		Compact Flash#	
Mobile DVR Serial#		Hard Disk Serial#	
Driver ID		Technician	
Password		Page	

Configuration Check List

ITEM	Setting 1	Setting 2	Setting 3	Setting 4
1.Camera Input: B&W/Color				
2.Time Display: On/Off				
3.Audio Record: On/Off				
4.Audio Out: On/Off				
5.Motion Detect Record: On/Off				
6.Motion Detect Sensitivity: Low/MID/High				
7.Resolution: 720x240/360x240				
8.HDD Record Frame Rate: 720x240: 1~10 N 720x240: 1~ 8 P 360x240: 1~15 N/P				
9.HDD Record Recycle: On/Off				
10.RS232 Baud Rate: 9600/4800/2400/1200				
11.Video Type: NTSC/PAL				
12.Flash Status: Lock/Unlock				
13.Buzzer Warning: On/Off				
14.System Default				
15.HDD Format				
16.Password Protection: On/Off				

14. Specification

Feature

- ◆ 1-channel video input and 1 channel audio input
- ◆ Real video display
- ◆ Video loss detection
- ◆ Event trigger input supported
- ◆ Motion detection
- ◆ Storage: 2.5" H.D. and Compact Flash Card (CFC)
- ◆ One audio recording supported
- ◆ OSD menu
- ◆ Remote control through RS-232 (one port)
- ◆ USB : Mass storage Class
- ◆ One drive at the same time, priority : H.D. > CFC
- Operation temperature range -10°C~60°C

SPECIFICATION		
VIDEO SYSTEM		NTSC/PAL
VIDEO	IN	RCA X 1, Mini-Din (6pin) X 1
	OUT	RCA X 1, Mini-Din (6pin) X 1
Compression		M-JPEG
Resolution (Recording)		NTSC 720x280, PAL 704x288
Backup Interface		UBS
Operation System Mode		Embedded System
HDD		20GB, 30GB (Optional)
Playback		Re-start, time search.
Playback speed		Forward speed, x1, x2, x4, Reverse speed, x1, x2, x4,
Time and date setup		YES
HDD re-write function		YES
Password		YES
Key lock		YES
Power		+12V/5A