

MDR-304A

Digital Video Recorder

Instruction Manual



SAFETY PRECAUTIONS









All the following safety and operation instructions which will prevent harm or damage to the operator or other persons should be read before the unit is operated.

INFORMATION



This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING

-  To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.
-  Do not block ventilation openings.
-  Do not place anything on top of the unit that might spill or fall into it.
-  Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Please refer all servicing to qualified service personnel.
-  Do not use liquid cleaners or aerosols for cleaning.
-  This installation should be made by a qualified service person and should conform to all local codes.
-  To prevent fire or electric shock, do not overload wall outlets or extension cords.
-  This unit must be grounded to reduce the risk of electric shock hazard.

CAUTION

-  Danger of explosion if battery(RTC 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 instructions.
-  Risk of explosion if replaced by an incorrect type. Dispose of used batteries according to the instructions.

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1. INTRODUCTION





Product Features

- Quad-based operation: real-time operation and playback (30 FPS/ per channel).
- MPEG4 compression with resolution up to 720X480 (NTSC) / 720X576 (PAL).
- 4x Elite/Extreme connectors for AV inputs.
- 4 camera audio inputs, 2 auxiliary audio inputs, 1 audio output (1 channel record).
- Pre-alarm image recording.
- USB interface showing video records on a Laptop/PC.
- GPIO: 4 inputs and 2 outputs.
- Operating temperature: 0°C to 50°C .
- Time-lapse and real-time recording.
- Refresh rate up to 30 IPS (25 IPS for PAL).
- Image quality selectable at 4 different levels for recording.
- Alarm recording mode.
- Quick search by time, alarm, event, and recording list.
- Fast and slow playback of video recorded at various speeds.
- Single-picture playback.
- On-screen setup menu, title and system timer.
- Password protection.
- Disk-full warning.
- Operation-status record log.
- Automatic detection of voltage.
- Built-in SD card slot for copying images to an SD card.
- Watermark.
- Window Division.
- Vibration and mechanical shock protection.
- By taking advantage of the optional G-Sensor, the MDR-304A will register and record X, Y & Z impact data in the event of an accident and can be used as an alarm trigger.
- If the voltage is less than 10.4/17.5 volts, the MDR-304A recorder will display a message “Low Voltage” and then automatically power off after beeping for 3 -5 seconds.

Accessories

The kit contains the following items:

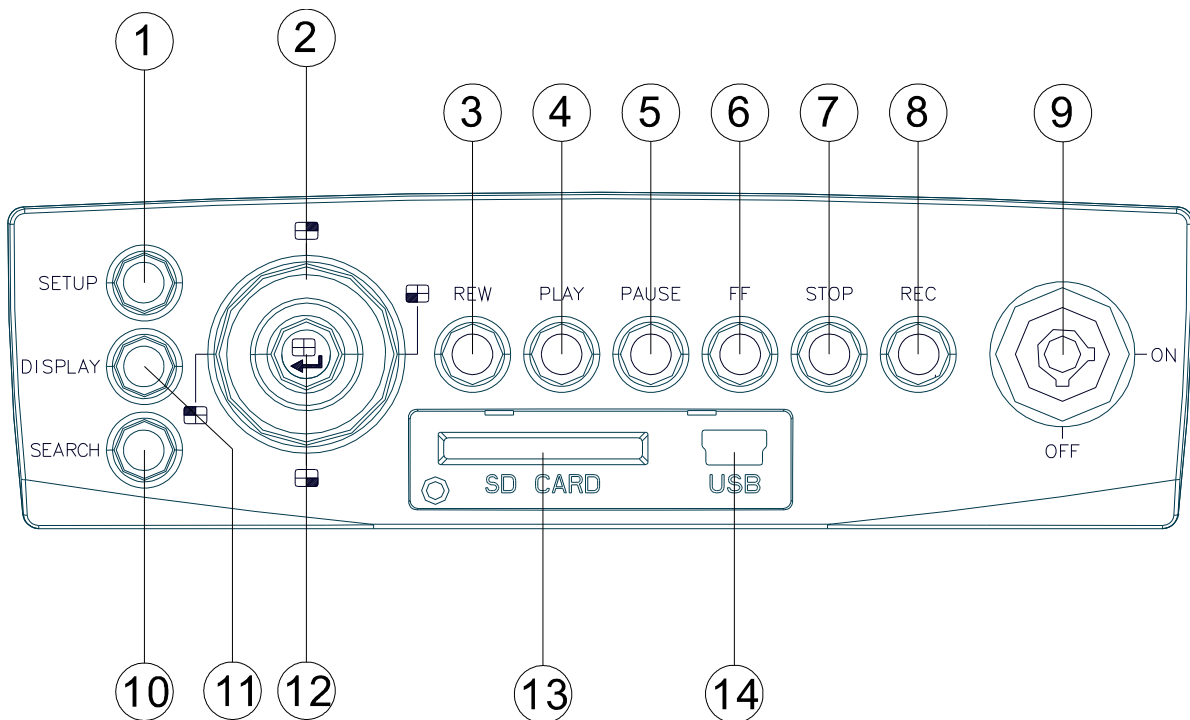
Sub-System	Qty	Sub-system Description
	1	MCU-304A-XXX (Mobile Caddy Unit)
	1	MDR-304A-DS (Docking Station) (2798A)
	1	AVM-304 (Anti-Shock/Vibration Mounting) (2917)
	1	MDR-304A-MAN (Instruction Manual) <u>(2919A)</u>
	1	CD-304A-01 (Installation CD) <u>(2920A)</u>
	1	PV-12 (12V MCU Power Supply) <u>(3973)</u>
	1	MDR-304A-PC (Power Cable) <u>(3972)</u>

	<p>1</p>	<p>USB-001 (USB Lead) <u>(2918)</u></p>
	<p>1</p>	<p>MDR-304A-TRIG (Trigger Cable) <u>(2997A)</u></p>
	<p>1</p>	<p>MDR-304-SK (2x Security Keys) <u>(2994)</u></p>
	<p>1</p>	<p>MDR-304-STS (4x Self Tapping Screws) <u>(2995)</u></p>



Notes: The MDR-304A should not be operated without the anti-shock/vibration mounting unit.
Stock codes that are underlined are not available separately.

Front View



- ① **SETUP** button:
Press this to enter the setup menu. Press again to exit the setup mode.
- ② **Left/ Right/ Up/ Down (CH1/ CH2/ CH4/ CH3)** buttons:
In the menu setup mode / search mode, press the four buttons on the dial to highlight desired items in the menu setup mode. In the live / play mode, press the four buttons on the dial to select a channel for display.
- ③ **REW** button:
Press this to play a recorded video in the reverse direction at a speed that's faster or slower than the recorded speed in the play mode.
- ④ **PLAY** button:
Press to play back a recorded video from the hard disk. (A light glows red in the

- PLAY mode.)
- ⑤ **PAUSE** button:
In a playback display, press this to freeze the display. During the freeze, press to display one frame of a picture at a time in the forward direction (A light glows red in the PAUSE mode.)
- ⑥ **FF** button:
Press this to play a recorded video in the forward direction at a speed that's faster or slower than the recorded speed in the play mode
- ⑦ **STOP** button:
Press to stop playing back a recorded video. (A light glows red in the STOP mode.)
- ⑧ **REC** button:
Push to start recording video into a hard disk while in the live display mode. (A light

glows red in the REC mode.)

⑨

MCU Lock:

This key lock secures the MCU with the hard disk in place. When you lock it in, it powers on the device. When you unlock this key and take out the inner case, the power turns off automatically.

⑩

SEARCH button:


Press to enter the search mode to access the recorded video.

⑪

DISPLAY button:

Press to show the system operation status on the screen.

⑫

Enter /  (**Quad**) button:

Press to enter a selected item and save the setting in the menu setup mode. In the live/ play mode, use this button to show a quad display.

⑬

SD CARD slot:

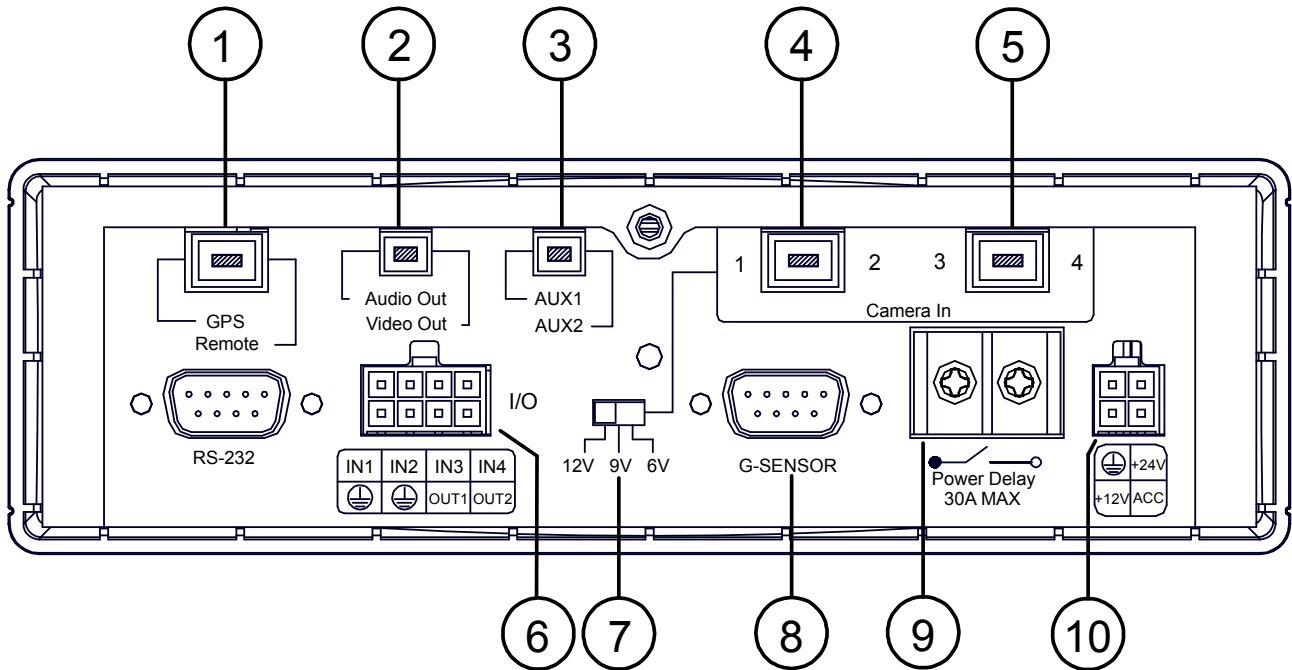
This is used for system software updating, saving and loading of user settings as well as the saving of JPEG still images or short AVI clips.

⑭

USB port:

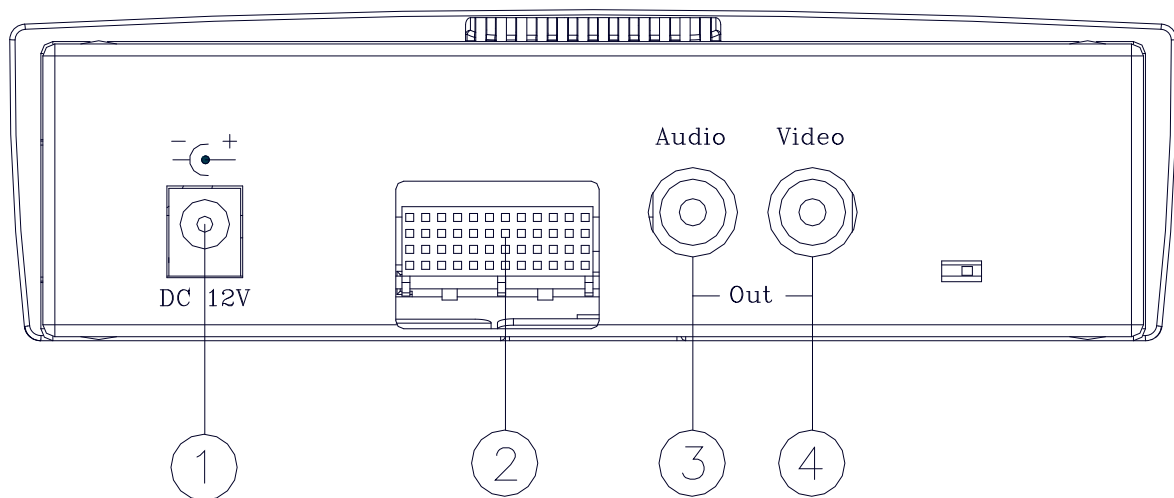
- Allows the recorder to be connected to a PC or laptop for viewing of recorded files using HDD Viewer Software.
- Also can be used to quickly transfer larger quantities of raw video data for storage onto a PC or laptop Hard Disc when converted to FAT32 format. HDD viewer software is still needed to view these files.

Rear View



- ① **GPS & Remote Controller Connector:**
The left side connector links up with the optional GPS receiver to capture local position information data. The right side connector links up with the optional remote controller.
- ② **Audio Out / Video Out:**
Main output for connecting to an LCD monitor, or any display with Audio & Composite Video inputs.
- ③ **AUX 1 / AUX 2:**
Individual line level inputs for external audio sources. Only one of these inputs can be selected at a time. Note that are line level inputs and may not be suitable for low level microphones.
- ④ ⑤ **Camera In:**
Combined video and audio inputs. These connectors also deliver supply voltage to the camera.
- ⑥ **I / O port:**
Input and output port for connecting to external devices.
- ⑦ **Voltage Selector Switch:** Please select the required output voltage according to the camera specification. There is a choice of 6V, 9V or 12V. (12V Should be used for Brigade cameras)
- ⑧ **G Sensor port:** For the connecting of an optional G Sensor.
- ⑨ **Power Delay:**
For delaying the powering up of other vehicle devices.
- ⑩ **Power Input:**
For connecting to either a 12V or 24V supply (These should be fused suitably).

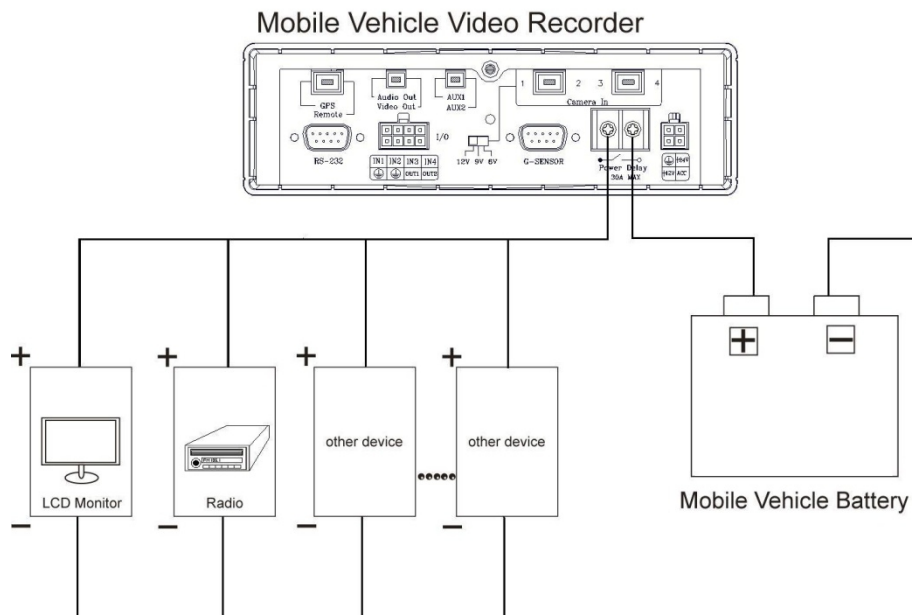
MCU Rear View



- ① **Plug Inlet:**
The inlet connects to an external power supply. Connect to 12V DC UL Listed Class 2 Power Supply.
- ② **Hard Metric Connector (Male):**
This connector links up with the outer casing.
- ③ **Audio Connector:**
Line level audio output for when the host is powered independent of the outer case.
- ④ **Video Connector:**
Composite video output for when the host is powered independent of the outer case.

Power Delay Connection

The diagram here illustrates the power delay connection structure. If a device needs to work with our MDR-304A, it needs to start operating **after** our MDR-304A has begun operating. See the diagram below to help you with the mobile vehicle video recorder's power delay connector on its rear panel.



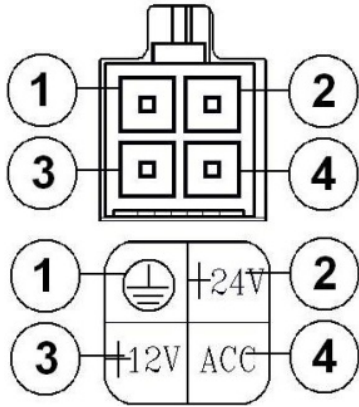
Enter the MDR-304A's **"MAIN MENU"** page and choose the third item, **"CLOCK / TITLE"**. Now enter the **"CLOCK / TITLE"** page, and you will see two items, **"DELAY ON"** and **"DELAY OFF"**. For both these items, the default setting is **"OFF"**. You can set the delay time of the relay by choosing one of the following options.
DELAY ON: This entry sets the delay time of the function activation of the relay connector after the MDR-304A powers up.

DELAY OFF: This entry sets the delay time of the function activation of the relay connector after the ACC is powered off. The relay connector will function as per the delay time you set by your chosen option. After the relay connector's delay time duration is over, the relay connector will automatically turn off, followed by the MDR-304A. (The MDR-304A which is connected with the cigar-lighter of the vehicle for its power supply will stop working when the ignition is switched off.)

Note: The relay connector's electric current range goes to a maximum of 30 amperes.

Note: Our **"POST REC DURATION"** function also sets the time as per any of the six options available after the ACC has been turned off. Please always be mindful of the fact that, if the time duration set for either **"DELAY OFF"** or **"POST REC DURATION"** is longer than the other one, the MDR-304A will wait for the longer setting to end before shutting down.

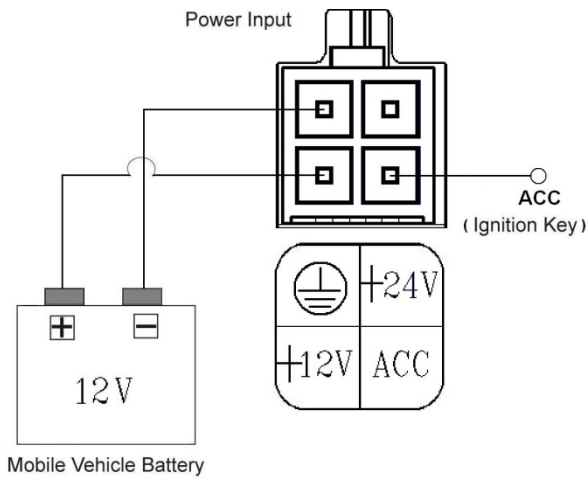
The Power Connector



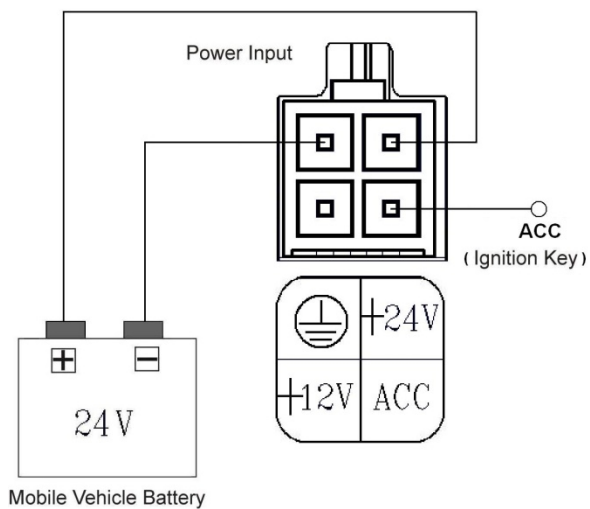
Connect either pin 2 (24V) or pin 3 (12V) depending on vehicle voltage.

Pin connections with the ignition key

12V:

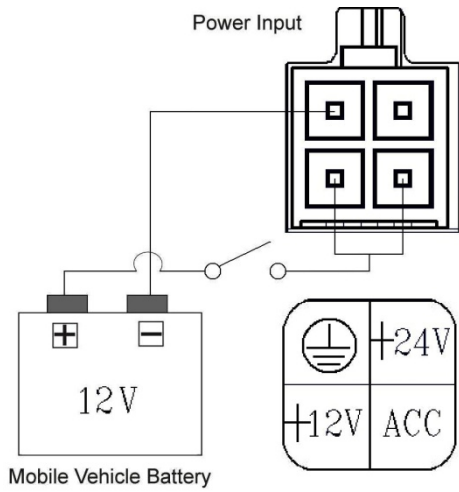


24V:

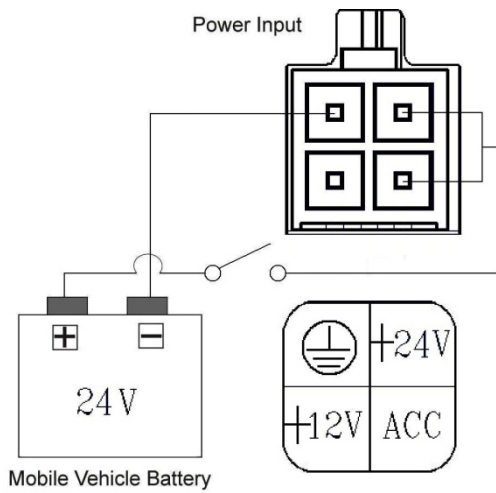


This method of connection is the most accepted and is recommended for permanent vehicle installations where either the post record duration or motion detection features will be used. (12/24V inputs should be fused).

Pin connections without the ignition key.

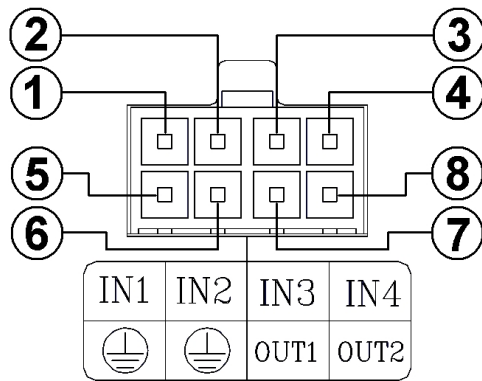


24V:



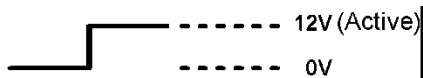
This method of connectivity is recommended for temporary installations only. Post record or motion detection is not possible.

I/O Port

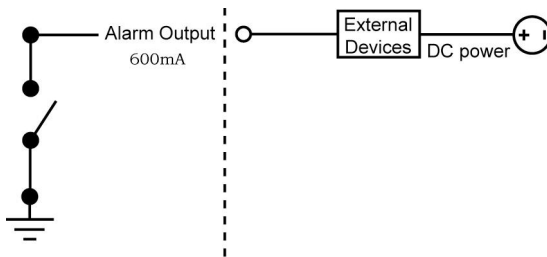


This figure is seen from the rear view.

1. **I/O IN1 (INPUT):** This is an alarm input which can be programmed in the menu system to Normally Open or Normally Closed.



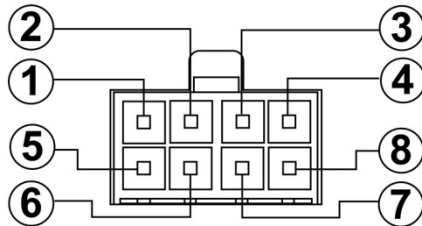
2. **I/O IN2 (INPUT):** same as above.
3. **I/O IN3 (INPUT):** same as above.
4. **I/O IN4 (INPUT):** same as above.
5. **GND:** Ground Contact.
6. **GND:** Ground Contact.
7. **I/O OUT1 (OUTPUT):** This is a "normally open" switched ground output that becomes closed when INPUTS 1-4 go active. Connect this to the negative terminal of an external devices such as a buzzer or light. Maximum load current is 600mA.



8. **I/O OUT2 (OUTPUT):** Same as above.

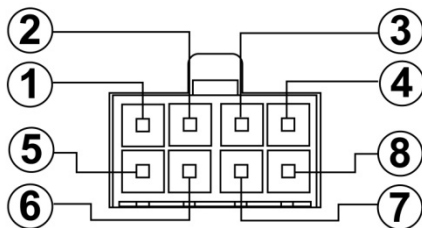
I/O Connection

ALARM:



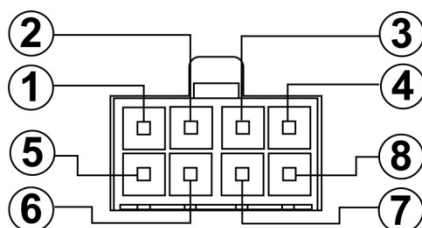
In the "MAIN MENU" page, click "ALARM" to enter the "ALARM" page and then go to the "I/O CONNECTION" item which has three options, "ALARM", "VEHICLE SIGNAL T" and "VEHICLE SIGNAL A". If you choose "ALARM" pins 1, 2 and 3 will become alarm input triggers which can receive a 12v-24v trigger voltage. Pin 4 is a "Reset" trigger; pins 5 and 6 are permanent ground contacts; pin 7 and 8 are normally open switched grounds for connecting to external devices like buzzers or lights. Alarm Operation must be set to ON in the Alarm Setting Menu.

VEHICLE SIGNAL T:



In the "MAIN MENU" page, click "ALARM" to enter the "ALARM" page and then go to the "I/O CONNECTION" item which has three options, "ALARM", "VEHICLE SIGNAL T" and "VEHICLE SIGNAL A". If you choose "VEHICLE SIGNAL T" pins 1, 2, 3 & 4 will become input triggers which can receive a 12v-24v trigger voltage. These can be connected to left or right indicators, brake lights or other 12v-24v vehicle signal lines. The time and duration of these signals will be imprinted as a marker on the recording as T1, T2, T3, T4. Pins 5 and 6 are ground contacts. Pin 7 and 8 are not used.

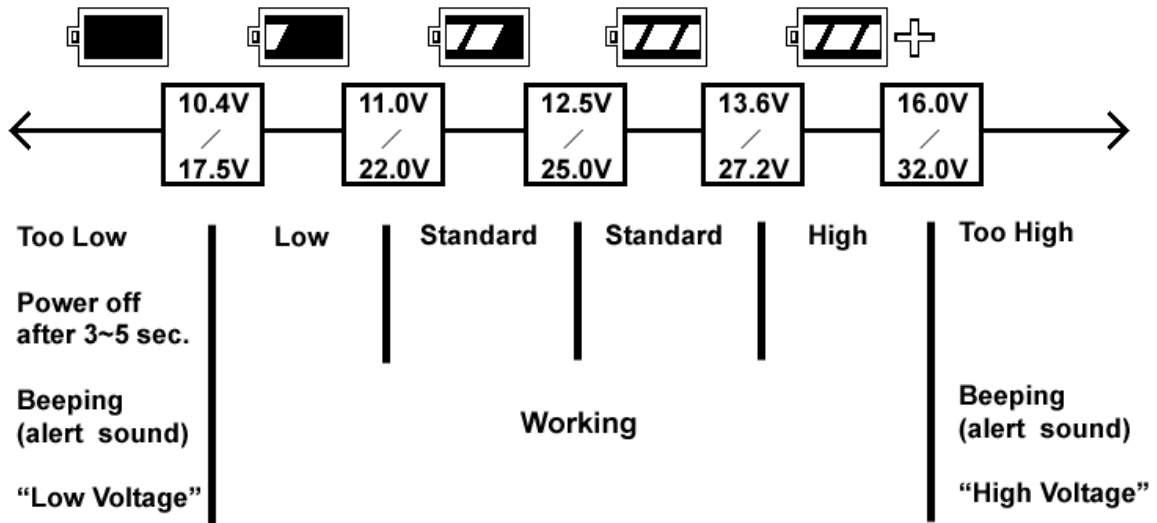
VEHICLE SIGNAL A:



If you select option "VEHICLE SIGNAL A", pins 1, 2, 3 & 4 will become 12v-24v input triggers for switching the recorders video output from a quad image to individual full screen images for each cameras when required. One practical application would be to connect the appropriate trigger for the reversing camera to the reverse light circuit so when the driver engages reverse the display will show the reverse camera as a full image rather than one of 4 smaller quad images. Pins 5 and 6 are ground contacts; pin 7 and 8 are not used. (Indicator triggers will require TS-001ECU).

Voltage Management

Voltage detection while the MDR-304A is working:



You can display the system-setting information after you press the "DISPLAY" button on the front panel. On this screen you can see the battery voltage icons. Please consult the above diagram to know the battery voltage status.

Note: The MDR-304A will not beep when the Buzzer function is disabled.

Warning: If the supply voltage exceeds 36 volts the recorder will be damaged and the warranty may be void.

2. INSTALLATION

System Information and Channel Selection

System information

You can display system settings information as shown in **Figure 2.3 A** by pressing the **Display** button. In playback mode, recorded video information is displayed. In the live or recording mode, current recording information is displayed. Each sequential press of the **Display** button displays a different message detailed in the following example. By default, the unit displays time, date, and an indicating bar of capacity status on a monitor as shown.

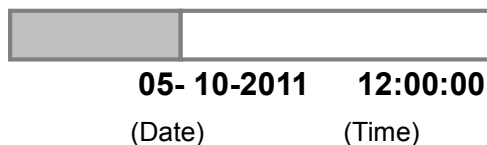
Default Display

CH1	CH2
CH3	CH4 01/01/2006 12:00:00

CH1, CH2, CH3, CH4 are titles for each channel, changeable in the Setup menu.

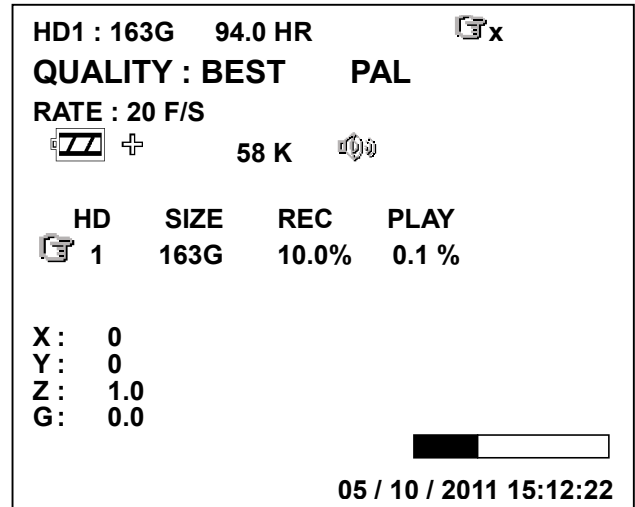
Capacity Status :

(Capacity Used) (Capacity Remaining)



Pressing the **Display** button once, will display the figure 2.3A. Press the **Display** button again; the unit will not display any OSD message. Press the button one more time to go back to the default display.

Figure 2.3 A.



(**HD1: 163G**): Total capacity of installed hard disk, 163 GB.

(**94.0 HR**): Total 94.0 hours recording time available.

(): Alarm record activated.

(**QUALITY: BEST**): Record quality setting, BEST.

(**NTSC**): NTSC system.

(**RATE 20 F/S**): Record speed setting, 20 frames/sec.

(+): The current voltage status.

(): Audio function activated.

(**58K**): The image file size.

(**163G**): The capacity of the installed hard disk.

(**REC**): Percentage of system recording position.


(**PLAY**): Percentage of the system playback position.







(): External signal.

(X): Cannot operate now. For example, press the SETUP, SEARCH, REW and FF buttons during the recording mode, and this icon will appear.

(**X, Y, Z, G**): The value "G" is only used when the MDR-304A connects with a G sensor, which can detect the vehicle acceleration force or G force.

Channel Selection

The CH1, CH2, CH3, CH4, and Quad () buttons are used to select single video channels and the quad mode. The following table shows the functions under a different mode.

Mode	Split	Key	Result Display
Live / Record / Playback	4 CH	Quad ()	
		CH1/ CH2/ CH3/ CH4	<input type="checkbox"/> (Single channel)
	3 CH	Quad ()	
		CH1/ CH2/ CH3	<input type="checkbox"/> (Single channel)
	2 CH	Quad ()	
		CH1/ CH2/	<input type="checkbox"/> (Single channel)

Updating System Software

To safely update the system software:

1. Turn off the MDR-304A.
2. Insert the SD card into the built-in SD slot.
3. Turn on the MDR-304A.
4. The MDR-304A sounds a tone and displays the message " XXXXXX BYTES READ". Now the MDR-304A is updating the system software, which will take approximately 90 seconds to process.
5. The MDR-304A displays the message "PLEASE REMOVE SD CARD". The process is complete. Please remove the SD card, and the MDR-304A will

restart automatically. (If you have already followed procedures 1 ~ 5 and the unit is still unable to turn on, then please first check if the SD card you are using is functioning and the file is intact. And then start procedures 1 ~ 5 all over again.)

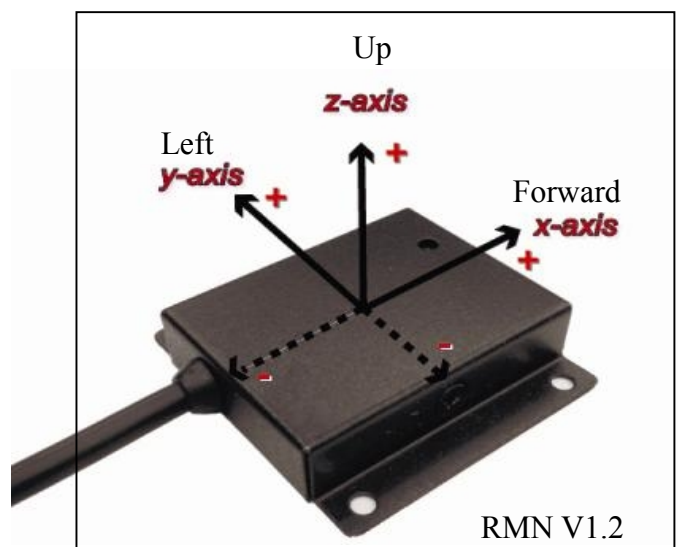
6. Verify the version of the system software.

Caution:

1. Before carrying out the updating procedures, please ensure the SD card is working and the file of the system software is intact.
2. Don't interrupt the process while the unit is updating itself, as this will cause the unit to crash.
3. Contact Brigade Electronics for latest software version.

The G-sensor

When installing the G sensor it is important to correctly orientate it as shown in the diagram below. When stationary the G sensor measure 0 g in the X axis, 0 g in the Y axis, 1 g in the Z axis. The total G value will be approximately "0" when a vehicle remains stationary or moves at a constant speed.



3. SET UP

Configuring Recording Settings

Recording time will vary depending on the image size, recording rate, and the capacity of the hard-disk drive (HDD). The table below shows the possible recording times per 80GB at different refresh rates and image quality.

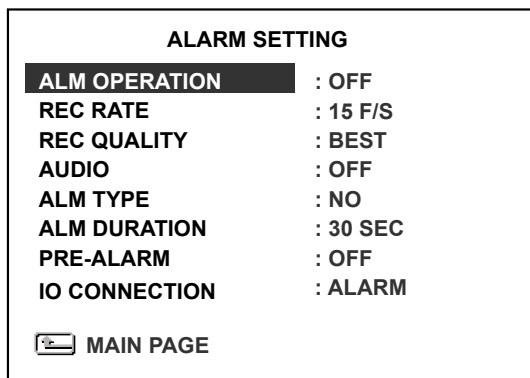
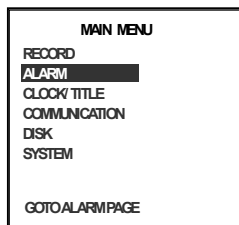
NOTE:

Recording times are estimated in the tables below. For the actual available recording time of a recording configuration, please refer to the system information of the MDR-304A. (Please refer information for more details.)

		Possible Recording Time per 500GB (hour)			
Image Quality	BEST	205.6	249.7	464.8	876.0
	HIGH	249.7	321.9	561.5	1137.9
	STANDARD	321.9	464.8	786.8	1632.0
	BASIC	464.8	604.6	1137.9	2921.9
Refresh Rate (FPS)		NTSC 30 / PAL 25	NTSC 15 / PAL12.5	6	2

Alarm Recording

- (1) Press the **SETUP** button to enter the **MAIN MENU**.
- (2) Select **ALARM** and press the **Enter** button to enter **ALARM**.
- (3) Set the desired **REC RATE**, **REC QUALITY**, **ALM TYPE**, and **ALM DURATION** for use. If the audio function is required, set **AUDIO** to **ON**. If pre-alarm recording is required, set **PRE-ALARM** to **ON**.
- (4) To activate/deactivate the alarm recording, set **ALM OPERATION** to **ON/ OFF**.



Externally Triggered Recording

By connecting the **ALARM IN** of ALARM I/O on the rear panel of the MDR-304A, you can activate / deactivate the alarm recording function of an MDR-304A. The file will be kept with a prefixed **"A"**.

Menu

Press the **Setup** button to access the setup menu. Once inside the menu system, the on-screen menu allows you to set up the key features of the unit. The functions of various buttons within the menu-setup mode are described in the paragraphs below.

KEY FUNCTIONS

Setup button:

Press to enter the setup menu. Press again to exit the setup mode.

"▲" and **"▼"** buttons:

Press to select the desired item or entry for setting.

"<" and **">"** buttons:

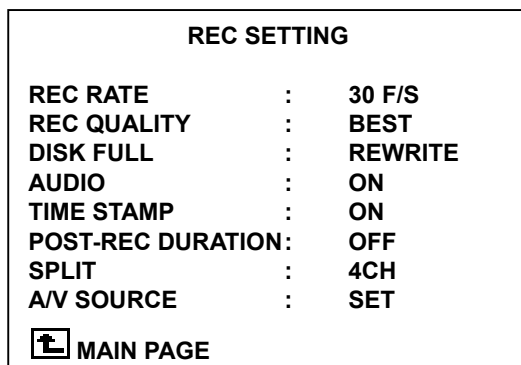
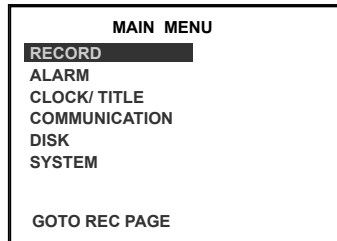
Press to highlight the desired option or to select the context for setting.

Enter button:

Press to enter the selected item and to save the setting.

REC Setting

This page allows you to set the recording rate and recording quality, and enables you to continue recording when the disk is full.



REC RATE:

This option is for adjusting the number of pictures recorded very second.

- For an NTSC unit, there are 4 different recording rates you can select from: **30F/S (30 frames per second)**, **15F/S**, **6F/S**, and **2F/S**.
- For a PAL unit, there are 4 different recording rates you can select from: **25F/S (20 frame per second)**, **12.5F/S**, **6F/S** and **2F/S**.

REC QUALITY:

You can select from 4 levels of image quality: **BEST**, **HIGH**, **STANDARD**, and **BASIC**. Selecting the BEST image for use provides higher-resolution recorded images, and normally takes up more storage space than a HIGH, STANDARD or BASIC image does.

DISK FULL:

This option determines the way to utilize storage media in case of a full disk.

REWRITE: When the hard disk is full, the device continues recording by displacing the old data.

STOP: When the hard -disk is full, the device will stop recording.

AUDIO:

OFF: Disables AUDIO recording.

ON: Enables AUDIO recording.

NOTE: The audio function can only be activated in the following refresh rates in NTSC(PAL): **30(25)**, **15(12.5)**, **6(6)** and **2(2)** frames/sec.

TIME STAMP:

Select "**ON**" to add a timestamp to the recording files. Select "**OFF**" to deactivate this function.

POST-REC DURATION:

After the ACC is powered off (ACC OFF), the MDR-304A will continue recording for the time which is set in the "**POST-REC DURATION**" time. This option determines the duration of the post-recording time after the ACC is turned off. There are 9 options you can select from: **OFF**, **1 MIN**, **5 MIN**, **10 MIN**, **30 MIN**, **60 MIN**, **90 MIN**, **120 MIN** and **NON STOP**.

OFF: The recording will stop automatically when the vehicle motor is turned off.

NON-STOP: This option allows for continuous recording after a vehicle has been switched off. However, this depends on the amount of battery power available, as it can run only as long as there is power. Enough power will be left untapped by this option to turn the vehicle engine on the next time the user starts it.

Note: If the voltage is less than 10.4 volts, the battery is in the "Too low" mode", and the MDR-304A will automatically power off and there may be a problem in starting the engine.

SPLIT:

This option determines the layout of the screen. You can select from **4CH**, **3CH**, and **2CH**. The resulting layout on the screen will be as follows.

4 CH:

CH1	CH2
CH3	CH4

3 CH:

CH1	
CH2	CH3
01/01/2006 12:00:00	

2 CH:

CH1	
CH2	
01/01/2006 12:00:00	

A/V SOURCE:

A/V SOURCE			
CH1	CH2	CH3	CH4
CAMERA1	CAMERA2	CAMERA3	CAMERA4
AUDIO 1			
AUX 1			
LIVE OUTPUT VOL.			
10			
<> MOVE		^ v CHANGE	

This page allows you to configure the video output and the audio source from the auxillary or one of the camera inputs. Select which view you require then position the cameras accordingly.

LIVE OUTPUT VOL.: This item determines the output volume levels in the live mode. The options

range from "00" (mute) to "10" (full).

Alarm

Recording program settings for when an alarm input is activated. The device will record at these settings for as long as the alarm input is activated.

MAIN MENU	
RECORD	
ALARM	
CLOCK/ TITLE	
COMMUNICATION	
DISK	
SYSTEM	
GOTO ALARM PAGE	

ALARM SETTING	
ALM OPERATION	: OFF
REC RATE	: 15 F/S
REC QUALITY	: BEST
AUDIO	: OFF
ALM TYPE	: NO
ALM DURATION	: 30 SEC
PRE-ALARM	: OFF
IO CONNECTION	: ALARM
MOTION SETTING	
MAIN PAGE	

ALM OPERATION:

ON: The device activates the alarm recording when it detects an alarm input.

OFF: The device ignores the alarm signal when it detects an alarm input.

REC RATE:

Choose the number of pictures recorded every second when an alarm input is activated. For an NTSC unit, there are 5 different recording speeds you can select from: **30F/S (30 frames per second)**, **15F/S**, **6F/S**, **2F/S**, and **REMAIN**. For a PAL unit, there are 5 different recording speeds you can select from: **25F/S (25 frames per second)**, **12.5F/S**, **6F/S**, **2F/S**, and **REMAIN**. If you select **REMAIN**, the device will record images at the same speed as set on the **REC** page.

REC QUALITY:

Choose the image quality to be recorded when an alarm input occurs. There are 4 levels of image quality to choose from: **BEST**, **HIGH**, **STANDARD**, and **BASIC**. The table below shows the level of image quality with the corresponding compression ratio and image size.

REC Quality	Best	High	Standard	Basic
Image Size	60KB	50KB	40KB	32KB

AUDIO:

OFF: Disables the AUDIO recording.

ON: Enables the AUDIO recording.

NOTE: The audio function can only be activated in the following refresh rates in NTSC(PAL): 30(25), 15(12.5), 6(6) and 2(2) frames/sec.

ALM TYPE:

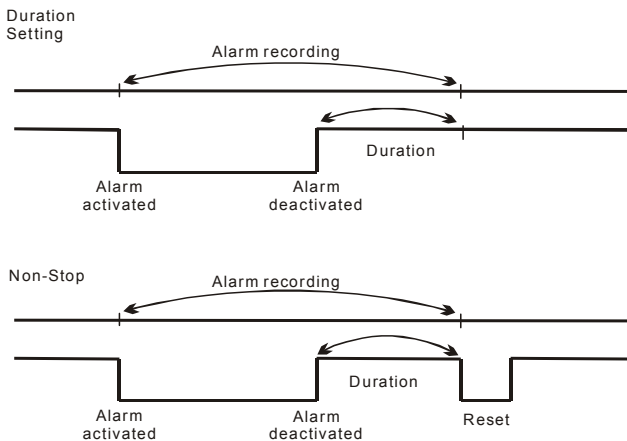
Choose a type of alarm input corresponding to the sensor signal in use.

NO: Normally Open. This is to be used with the type of alarm sensor whose contact remains open in normal conditions and closes in case of activation.

NC: Normally Closed. This is to be used with the type of alarm sensor whose contact remains closed in normal conditions and opens in case of activation.

ALM DURATION:

You can select one of the six following options: 0 SEC, 30SEC, 1 MIN, 5 MIN, 10 MIN, and NON-STOP.



PRE-ALARM:

This option determines that images before an alarm occurs will be recorded in the hard-disk drive. When an alarm is triggered the device will record the image prior to the alarm for 5 seconds.

ON: Enables this function.

OFF: Disables this function.

NOTE: If the device is already in the recording mode before an alarm occurs, the pre-alarm recording will not take effect.

I/O CONNECTION:

Can be connected to a trigger/alarm sensor which is for the setting of the I/O connections. There are three options:

ALARM: Sets the 4 inputs of the I/O connection as ALM1/ ALM2/ ALM3/ according to.....RESET. The Alarm signals are used to trigger the alarm recording (3.2.2).

VEHICLE SIGNAL T: Sets the 4 inputs of the I/O connection as T1/ T2/ T3/ T4 according to the user's definition. For example, if the user gives the definition of "T1" as "rear passenger door open", "T1" is displayed on the screen and imprinted onto the recording.

VEHICLE SIGNAL A: Sets the inputs of the I/O connection to full screen displays for CH1/ CH2/ CH3 / CH4. When each input is triggered the corresponding channel will be displayed as a single full-screen image on the display .

MOTION SETTING:

Motion detection is only active in the mode "ACC OFF".

When **motion detection** is enabled, post-record is disabled and the MDR-304A will only start recording when motion has been detected. The duration of recording will depend on the "ALM DURATION" setting. The length of time the MDR-304A will remain in a state of "watch" will depend on the "Post Record" setting.

MOTION SETTING

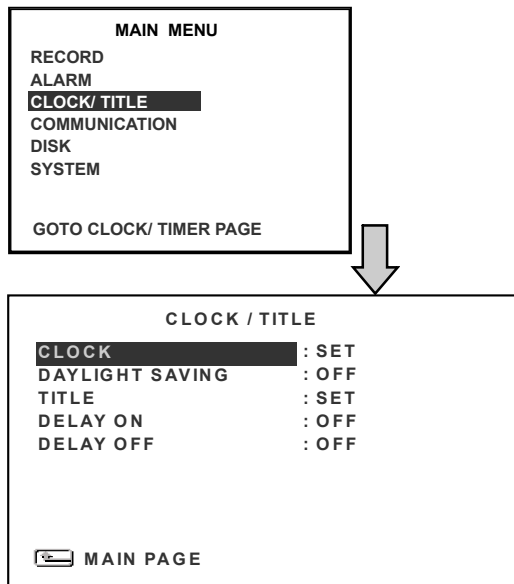
CH1 : ON
 CH2 : OFF
 CH3 : OFF
 CH4 : OFF
 SENSITIVITY : 3

☑

SET CH1 MOTION DETECTION ON/OFF

CLOCK/ TITLE Settings

Allows you to set the system time, the daylight saving time and the power delay time. Also allows users to set the titles for each video source or camera, in live or recording mode.



CLOCK:

Allows users to set the system time and decide whether to start using the GPS time.

NOTE: The clock data is retained for about 3 months after the 15-hour power supply is used up (in the Operation mode).

DAYLIGHT SAVING

Allows users to set the daylight saving time.

OFF: Disables the daylight saving time.

US: Daylight saving time begins at 2:00 a.m. on the first Sunday of April. The time reverts to standard time at 2:00 a.m. on the last Sunday of October.

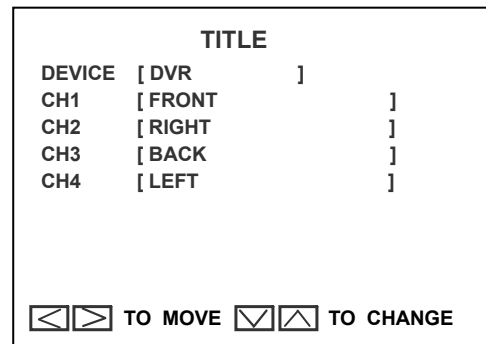
EUROPE: (Except the UK) Daylight saving time begins at 2:00 a.m. on the last Sunday of March. The time reverts to standard time at 2:00 a.m. on the last Sunday of October.

UK: Daylight saving time begins at 1:00 a.m. on the last Sunday of March. The time reverts to standard time at 1:00 a.m. on the last Sunday of October.

SET: This sets the beginning and the end of the daylight saving time.

TITLE:

Allows users to set the titles for each video source or camera, in live or recording mode; press the DISPLAY button to switch on the display status to show the titles. The maximum length for each title is 24 letters.



OPTIONAL RELAY

Located on the rear of the MDR-304A, can be used to make an electrical connection to supplementary device when the MDR-304A is powered up. The relay is normally open (NO).

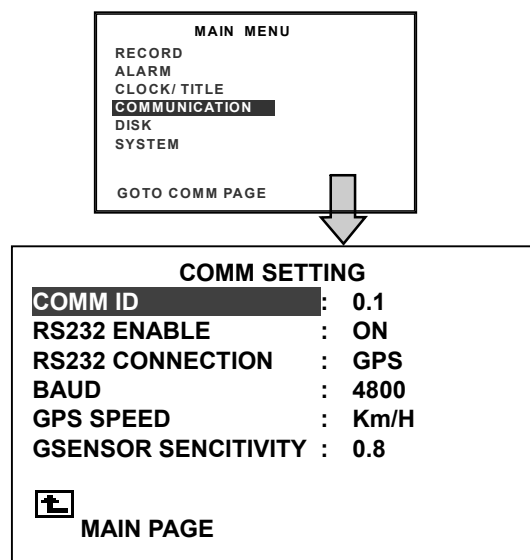
DELAY ON ENERGISE OF THE RELAY:

Adds a time delay before the relay is activated. The options are **OFF, 0 SEC, 1 MIN, 5 MIN** and **10 MIN**

DELAY ON DE-ENERGISE:

Adds a time delay before the relay is deactivated. The options are **OFF, 1 MIN, 5 MIN, 10 MIN, 60 MIN** and **NON STOP**.

COMMUNICATION Settings



COMM ID: This function is disabled and not supported on the current MDR-304A.

RS-232 ENABLE:

This function is disabled and not supported on the current MDR-304A.

RS-232 CONNECTION: This function is disabled and not supported on the current MDR-304A.

BAUD:

This entry selects the baud rate of the GPS Antenna (RS232 port). This should be left at **4800**.

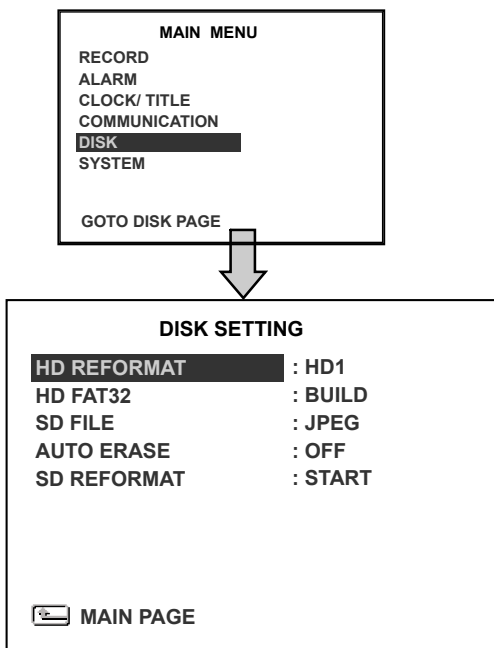
GPS SPEED:

Select either **Km/H** (kilometers per hour) or **MPH** (miles per hour).

G-SENSOR SENSITIVITY:

Increases or decreases the point where an alarm activated recording is triggered by the G-sensor.

DISK Settings



HD REFORMAT:

Allows you to clear out all the data in the hard-disk drive. You will be required to enter a pre-set password before clearing out the data. Enter the standard password "9999" if you haven't set your individual password.

HD 1: Clears out all the data stored in HD 1.

HD FAT32:

This function builds the FAT32 file system in the

hard disk, so files can be transferred to and stored on a PC. HDD Viewer will be required to view these files.

SD FILE:

This option determines the format in which to save important image files in an SD card.

JPEG: Archives images in the JPEG format, to save a single picture in every file.

AVI: Archives images in the AVI format, to save a sequence of images in a file, the maximum limit being 300 images for every file. You can stop recording whenever you want, and if you don't, recording will automatically stop at the maximum of **300** images.

AUTO ERASE:

There are two options.

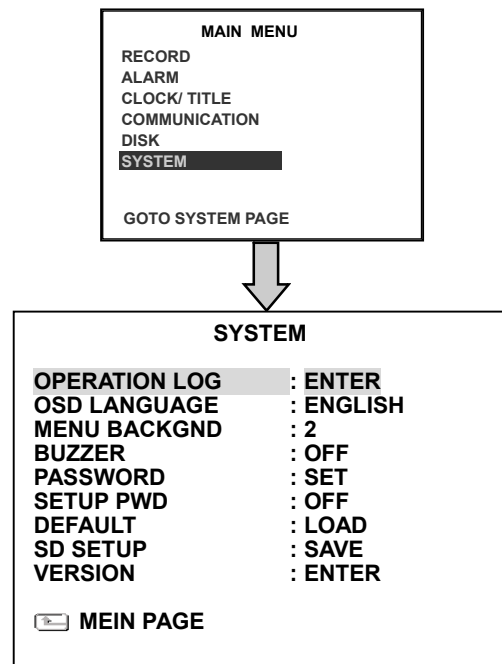
OFF: Disables the "AUTO ERASE" function.

SET: Enables the "AUTO ERASE" function. Select "SET" and press the **ENTER** button to enter the "AUTO ERASE SETTING" page, where you can enable the settings to save data for storage for any period of time from **1** to **365** days. After the expiry of the time period you set, the data will be erased automatically.

SD REFORMAT:

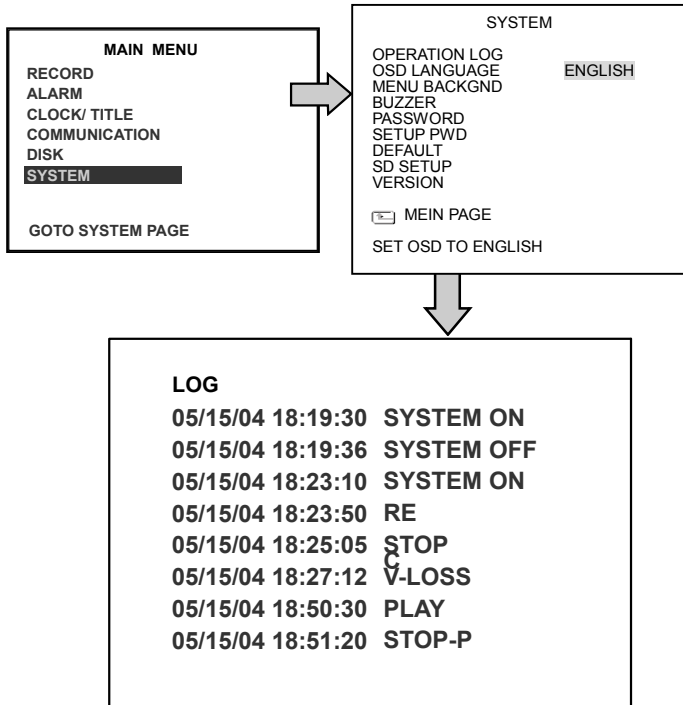
Allows you to clear out all the data in the SD Card.

SYSTEM Settings



OPERATION LOG:

This page is used for accessing the history of the operation status, setting the password, resuming factory default, and determining the menu display background.



This log shows the history of the operation status in chronological order. What the following entries represent is detailed in **APPENDIX 1**.

Note: When the log is full, the newly registered record of an operation will replace the existing records starting with the oldest record.

Backup the operation status log:

1. Insert the SD card into the built-in SD slot of the unit.
2. Hold down the STOP and SETUP buttons simultaneously in the live mode.
3. The MDR-304A displays the message "SAVE OK". The process is complete.
4. The operation status log will be saved into the SD card (log.txt).

OSD LANGUAGE (optional):

Choose which language to use.

MENU BACKGND:

There are **3** levels of background color transparency you can choose from: level 1 is totally transparent, level 3 is opaque, and level 2 is

between levels 1 and 3. The background color is used in the setup menu and search functions.

BUZZER:

Enables or disables the embedded buzzer to sound a 2 seconds long tone to signal the following situations.

ON: Enables the buzzer.

OFF: Disables the buzzer.

Situation

Alarm occurs
Video loss occurs
Disk is full
Loading factory default
Buzzer is set to ON
Key lock function is enabled/disabled
Powering on /off the mobile rack HDD

PASSWORD:

Allows you to set a password to prevent any unauthorized re-formatting of the hard disk drive and to unlock the entire front panel button controls. The standard password is "9999".

OLD PASSWORD: Enter the pre-set password (or the standard password if this is the initial setting) to access the password setting system.

NEW PASSWORD: Enter a 4-digit-number password of your choosing which will replace the pre-set password (or the standard password of "9999").

SETUP PWD:

When this option is on, the user must enter the correct password before entering the setup menu.

ON: Enables password protection.

OFF: Disables password protection.

DEFAULT:

This option allows you to reload the factory default setting. Please note that the password cannot be changed in the factory default setting.

SD SETUP:

The MDR-304A offers a quick setup method by using an SD card. To set up a number of MDR-304As with the same settings, simply save the desired settings from one MDR-304A onto

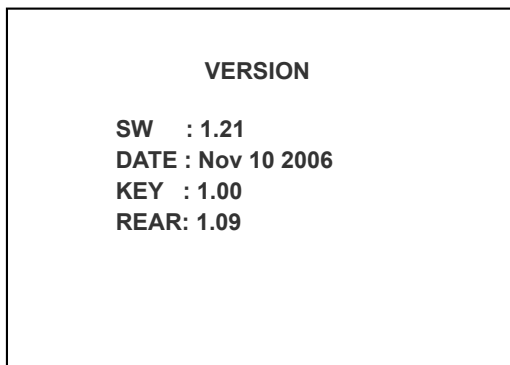
an SD card, and then transfer these settings to any number of MDR-304A recorders.

SAVE: Saves the whole setting to the SD card.

LOAD: Loads the whole setting from the SD card.

VERSION:

This item is in the setup menu: it shows the BIOS version, the software version and last updated date, and the rear board version.



Alarm and Motion Settings

ACC IGNITION ON:

In this mode a recording can be activated both manually or automatically according to the auto start record setting. To activate an alarm recording, set the auto start record setting to "off" and "**ALM OPERATION**" to "**ON**" in the "**ALARM SETTING**" page. When an alarm is triggered, the device will record in the set alarm-recording rate.

ACC IGNITION OFF:

1. After the ACC is powered off (ACC OFF), the MDR-304A will record continuously for the time set in the "**POST-REC DURATION**" time. If the user enables both "**ALM OPERATION**" and the "**MOTION DETECTION**" functions the MDR-304A will not start recording until motion alarm is triggered during the "**POST-REC DURATION**" period. The length of recording will depend on the Alarm Duration setting.
2. **Motion detection** can only be activated in the "**ACC OFF**" mode..
3. Please take note that if the "**POST-REC DURATION**" time is over, the MDR-304A will stop recording even if the "**ALM DURATION**" is set for a longer time period than the "**POST-REC DURATION**" time.)
4. With "**ACC OFF**" any externally triggered alarm will not influence the recording mode which you set. But the MDR-304A will calculate the time of the "**POST-REC DURATION**" anew in this situation.
5. If the "**POST-REC DURATION**" time ends while the "**DELAY OFF**" time is still active, the MDR-304A will not start a post-recording or a motion recording, and the external triggers will have no effect.

4. OPERATIONS

Recording


How to record video images. Before commencing, please configure the recording settings according to your needs.

Manual Recording

- (1) Press the **REC** button to start recording.
The **REC** button will light up.
- (2) Press the **STOP** button to stop recording.

Playback Operations

When playing a file, the monitor should display a flashing **PLAY** message and the **PLAY** button will light up indicating that the MDR-304A is in the playback status.

To switch between channels 1–4 and the quad view in the playback mode, please press the **CH1**, **CH 2**, **CH 3**, **CH4** and  buttons.

NOTE: When you press the "PLAY" button to enter the play mode, you then press the "SEARCH" button to change the two audio sources to any one or two of the cameras you have.

Normal Playback

Once the user presses the **PLAY** button, the MDR-304A will start to playback the recorded data at the recorded speed; the starting position must be fixed according to different operation sequences.

A. Play back from the latest record in the STOP position.

[**PLAY**] - [**STOP**] - [**PLAY**]

B. Play back from the latest recorded video.

[**REC**] – [**REC Stop**] – [**PLAY**]

C. Play back from a video clip in the Search List.

[**Search**] – [**PLAY**]

D. Play back from the beginning of a hard

disk's recorded data.

[**STOP** – press the key for 3 sec.] – **PLAY**

Once playback reaches the end of a HDD's recorded data, the MDR-304A will show the ending message (use the **SEARCH** functions or rewind to replay the file if required).

Fast Forward/Backward

There are **7** speeds available for playback: 1x, 2x, 4x, 8x, 16x, 30x and 100x.

While playing back recorded video at the recorded speed:

Forward: Press the **FF** button to view the recorded video in the forward direction at a speed faster than the recorded speed or to return to the normal speed of playback. Each subsequent pressing of the **FF** button to the right increases the forward rate, as 2x, 4x, 8x, 16x, 30x and 100x.

Backward: Press the **REW** button to view the recorded video in the reverse direction at a speed faster than the recorded speed or to return to the normal speed of playback. Each subsequent pressing of the **REW** button to the left increases the reverse rate, as -1x, -2x, -4x, -8x, -16x, -30x and -100x.

Slow Forward/Reverse

There are **4** speeds available for a slow playback: 1/2, 1/4, 1/8, and 1/16.

While playing back recorded video at the recorded speed:

(1) Press the **PAUSE** button for the slow playback mode.

(2) **Forward:** Press the **FF** button to view the recorded video in the forward direction at a speed slower than the recorded speed. Each subsequent pressing of the **FF** button to the right increases the forward rate, as 1/2, 1/4, 1/8, and 1/16.

- (3) **Normal:** Press the **PLAY** button to return to the normal speed of playback.

Play back picture-by-picture

While playing back recorded video at the recorded speed:

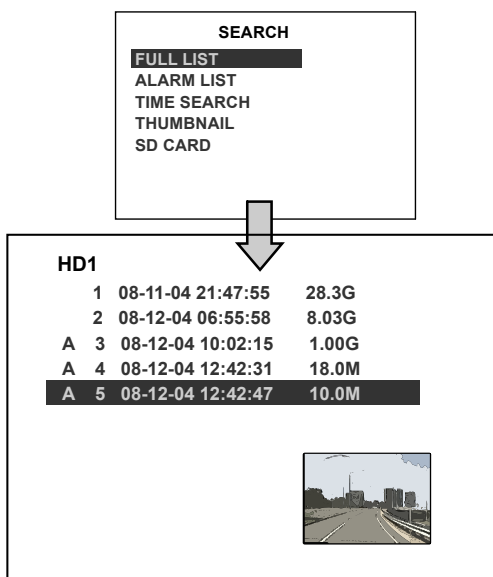
- (1) Press the **PAUSE** button for the pause mode.
- (2) Press the **PAUSE** button to display one frame of a picture at a time in the forward direction, but the **PAUSE** button can only function in a forward direction.
- (3) Press the **PLAY** button to return to the normal speed of playback.

Search Operations

FULL LIST Search

- (1) Press the **SEARCH** button to enter the search mode.
- (2) Select the **FULL LIST** and press the **Enter** button to access the complete list of recorded video.
- (3) Highlight the specific recorded video of your requirement and press the **Enter** button to display the selected video.

(Key Operation: Press the “^” and “v” buttons to select a video; press the “<” and “>” buttons to flip over a page.)



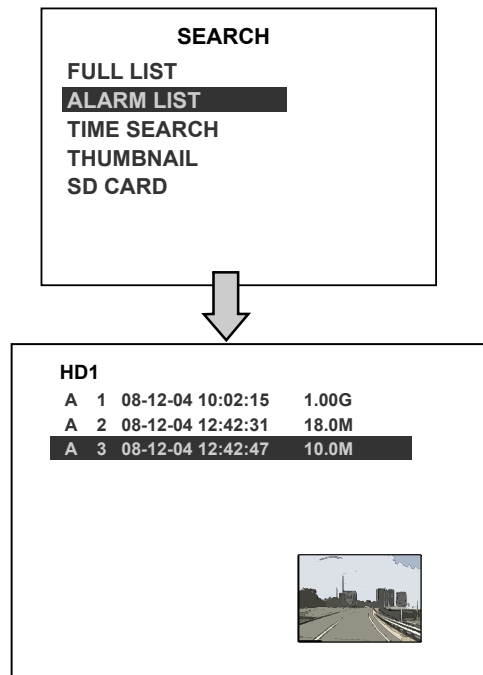
NOTE: A: Alarm recording.

NOTE: The maximum number of index items in the list in a hard disk drive is 3000.

ALARM LIST Search

- 1) Press the **SEARCH** button to enter the search mode.
- (2) Select the **ALARM LIST** and press the **Enter** button to access the complete list of alarm-event recorded video.
- (3) Highlight the specific recorded video of your requirement and press the **Enter** button to display the selected video.

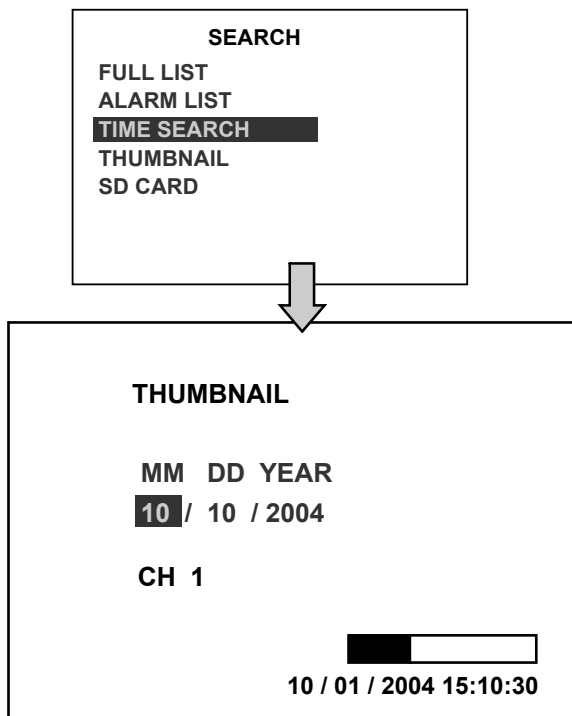
(Key Operation: Press the “^” and “v” buttons to select a video; press the “<” and “>” buttons to flip over a page.)



TIME Search

- (1) Press the **SEARCH** button to enter the search mode.
- (2) Select **TIME SEARCH** and press the **Enter** button to access the time-setting page.
- (3) Set the time period you wish to search for the recorded video.
- (4) Press the **Enter** button to start searching and displaying the concerned image.

- (5) If no video is found, please return to the time-setting page and repeat steps (3) and (4) for another search.



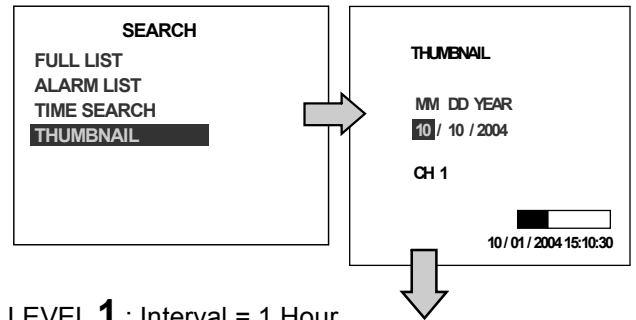
THUMBNAIL Search

- (1) Press the SEARCH button to enter the search mode.
- (2) Select THUMBNAIL and press the Enter button to access the thumbnail page.
- (3) Set the date you wish to search for the recorded video.
- (4) Press the Enter button to start searching for and displaying the concerned image.

Note: You can select the image by using the “<”, “>”, “A” and “V” buttons to move the focus.

- (5) There are 5 levels of recording time modes to choose from: 1 Hour, 10 Minutes, 1 Minute, 10 Seconds and 1 Second. Select the specific frame of your requirement and press the Enter button to enter the next level. If you want to return to the previous level, please press the Setup button.
- (6) Once you reach the critical point at any level, you can start to playback by just

clicking the PLAY button.



LEVEL 1 : Interval = 1 Hour



LEVEL 2 : Interval = 10 Min.



LEVEL 3 : Interval = 1 Min



LEVEL 4 : Interval = 10 Sec.



LEVEL 5 : Interval = 1 Sec.



Backup Operations

SD Card Backup Operations

The SD card slot of the front unit has four functions as shown below:

Archive Single image Clips into an SD Card

- (1) Press the **SETUP** button to enter the setup mode and select the **DISK**.
- (2) Highlight **DISK** and press the **Enter** button to enter the **DISK SETTING** page.
- (3) Then set **SD FILE** to **JPEG**.
- (4) Insert an SD card into the SD card slot of the front unit.
- (5) Start playing back the recorded video.
- (6) Press the **PAUSE** button to freeze the desired pictures.
- (7) Press the **SETUP** button to save the image in the SD Card.

The quantity of pictures that can be stored depends on the SD card capacity. You can print the saved images from any computer. The image is stored in the JPEG compressed format. If more than one clip is stored in an SD card, the file names will be assigned in sequence as shown below.

SAVE TO F000.JPG
SAVE TO F001.JPG
...
SAVE TO F000N.JPG

- (8) The saved picture is the same as the present picture on the screen; please use the CH1, CH2, CH3, CH4, and the **Enter**

Quad buttons to switch to the channel(s) desired, and then press the **SETUP** button to save.

Archive video of AVI clips into an SD Card

- (1) Press the **SETUP** button to enter the setup mode and select the **DISK**.
- (2) Highlight **DISK** and press the **Enter** button to enter the **DISK SETTING** page.
- (3) Then set **SD FILE** to **AVI**.
- (4) Insert an SD Card into the SD card slot of the front unit.
- (5) Start playing back the recorded video.
- (6) Press the **PAUSE** button to freeze the desired pictures.
- (7) Press the **SETUP** button to save the video in the SD card.

The quantity of video that can be stored depends on the SD card's capacity. The image is stored in the AVI compressed format. If more than one clip is stored in an SD card, the file names will be assigned in sequence as shown below.

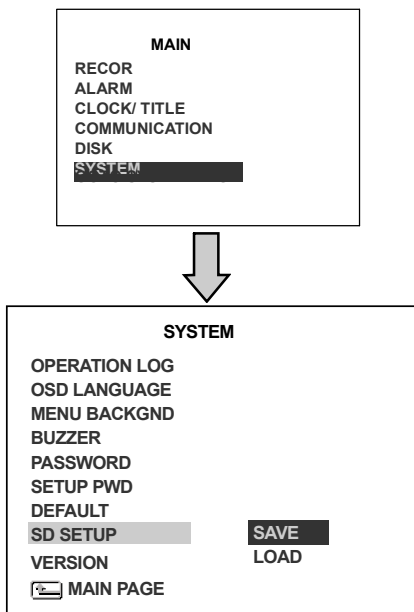
SAVE TO M000.AVI
SAVE TO M001.AVI
...
SAVE TO M000N.AVI

NOTE:

- The **AVI** file format cannot be played and deleted in the **MDR-304A**. It can only be played in a card reader connected to a computer.
- The file format can be selected from the "SD FILE" item on the Setup Menu.

Backup the System setting info into an SD Card.

The MDR-304A offers a quick setup method by using an SD card. If a user wants to set many MDR-304A devices with the same settings, the MDR-304A can save the whole setting in the SD card, and then transfer it to another MDR-304A.



Save the whole setting into the SD card:

- Insert an SD card into the SD card slot.
- Press the **SETUP** button to enter the setup mode.
- Highlight **SYSTEM** and press the **Enter** button to enter the **SYSTEM SETTING** page.
- Set **SD SETUP** to **SAVE**. Then the system setting information will be automatically saved in the SD card.

Transfer the system setting info of the MDR-304A to another MDR-304A:

- Insert the SD card which has stored the system setting information into the MDR-304A.
- Press the **SETUP** button to enter the setup mode and select **SYSTEM**.
- Highlight **SYSTEM** and press the **Enter** button to enter the **SYSTEM SETTING** page.
- Then set **SD SETUP** to **LOAD**.

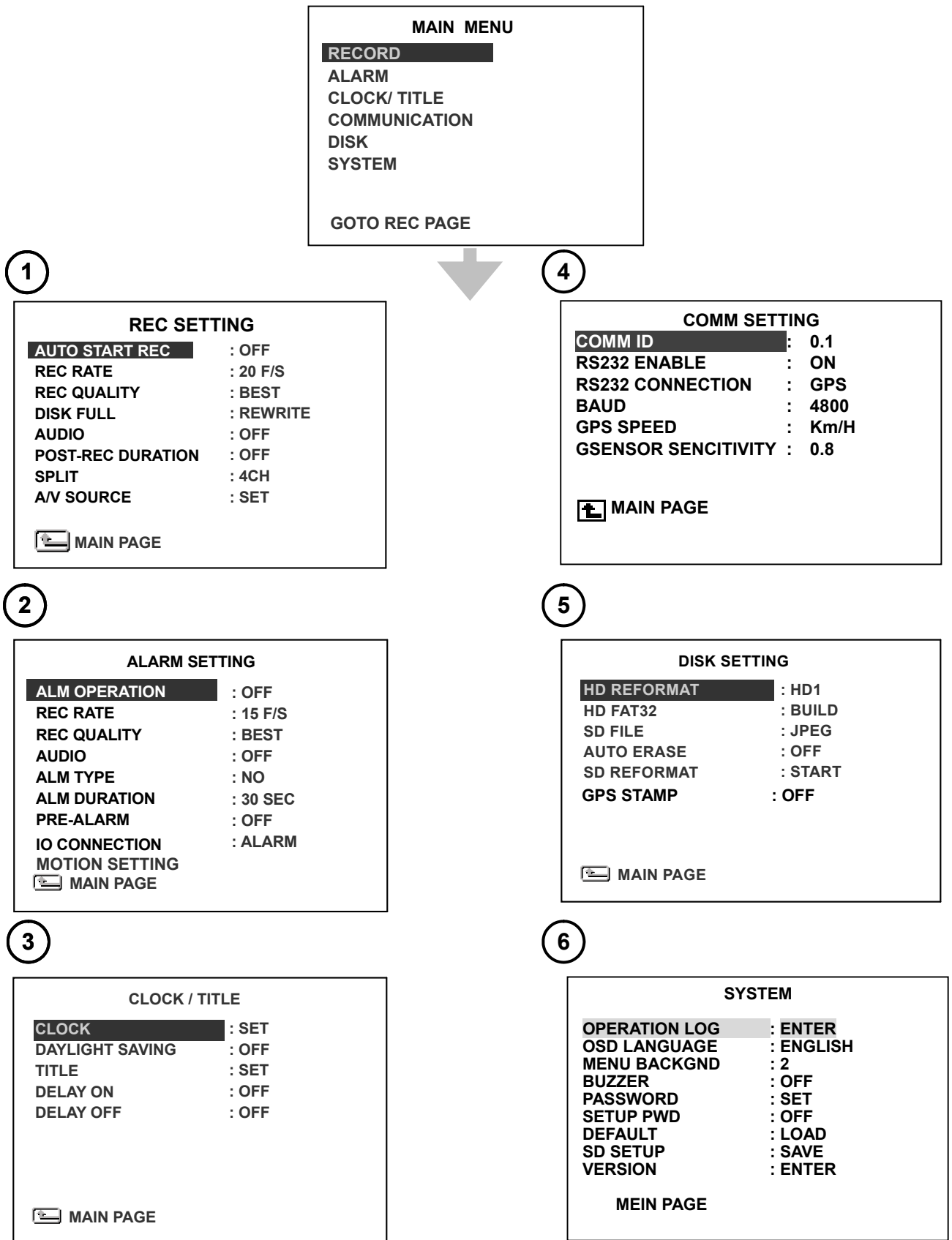
Key Lock Operation

The Key lock operation protects the unit against unauthorized use by disabling the entire front




panel controls. Press the **Enter** button for at least 3 seconds to lock the unit; to release the **Key Lock**, press the button again and enter the pre-set password (or the standard password if this is the initial setting)

5. MISCELLANEOUS

System Default



O.S.D Messages

No.	O.S.D Message	Meanings
1	NO DISK	No hard disk detected after power activated
2	BATTERY LOW	Check vehicle battery
3	BATTERY HIGH	Check vehicle alternator output
4	LOADING	System Boot up
5	VIDEO LOSS	Video loss
6	VIDEO IN	Video input source
7	KEY LOCKED	Key lock function is on
8	KEY UNLOCKED	Key lock function is off
9	n1 OF n2 ITEMS PROGRESS n3 %	BACKUP n1/n2 NOW
10	BACKUP COMPLETE	Backup complete
11	NO ENTRY FOR BACKUP	No backup is possible.
12	BACKUP INCOMPLETE	Backup incomplete, since the user has pressed the STOP button to stop it
13	NOT FOUND	The system cannot find a video in the Search function.
14	END	Playback of recorded video has reached the end point
15	DISK FULL	Hard disks are full; this happens only when the DISK FULL item in the setup menu is set to STOP.
16	EMPTY	The user presses the PLAY button or uses the Search function, but no video can be played.
17	SET TO NTSC, PLS RESTART	System has to be set to NTSC, please reboot (PAL is similar)
18	SOFTWARE UPDATE	Software update
19	PLEASE RESTART	The system should be rebooted after the software has been updated
20	NO DISK	There is no disk.
21	SD CARD ERROR	The user has pressed the Save key without putting in an SD card.
22	FAN STOPPED	The chassis fan has stopped for over 30 seconds.
23	HDn ERROR AT xxxxx	There is a hard-disk error during recording, where n is the hard-disk number and xxxxx is the hexadecimal location.
24	NOT PRESENT	When the user tries to clear a disk that was not attached in the setup menu.
25	SAVE MXXXX.AVI TO SD CARD	Start saving to the AVI file.
26	SAVE TO Fnnnn. JPG	Start saving to the JPEG file. (where nnnn= 0...9999)
27	SAVE OK	Saving to the JPEG or AVI is ok.
28	SD CARD WRITE PROTECT	An SD card is write-protected; or there is an error.
29	ACC OFF	Power off.
30		Received the leftside trigger signals.
31		Received the rightside trigger signals.
32		Received the brake triggering signal.

Specifications

Video	Video system	NTSC / PAL
	Video input	4
	Video output	1
Audio	Audio input	6 CH (Rec 1 Ch)
	Audio output	1 CH
Recording	Compression	MPEG4
	Resolution & Frame rate	120 / 100 IPS @ CIF (NTSC/PAL)
	Recording mode	Auto / Manual / Alarm trigger
	Watermark	Digital signature
	Storage	Removable SATA 2.5" HDD x 1 or SSD x 1
	Pre-alarm	On / Off (5 Seconds, N/A)
Playback	Playback speed	Fast Forward: 1X, 2X, 4X, 8X, 16X, 30X, 100X
		Reverse: 1/2X, 1/4X, 1/8X, 1/16X
	Records search	Record List / Event list / Time & Date / Thumbnail
	Display channel	1 / 2 / 3 / 4
Application	GPS[Optional]	
	Alarm	4 alarm input / 2 alarm output
	Power management	<ul style="list-style-type: none"> ● Stop the unit recording and closes down operation after a user defined period has elapsed from the vehicle ignition being turned off. ● Carry out a controlled and timed power down sequence when the vehicle voltage has fallen below operating voltage. ● Supplies and stabilizes the voltage to peripheral devices on vehicle.
Miscellaneous	Power voltage	DC10~27V
	Software update	SD card
	Backup	SD card
	Operation Temperature	Operation temperature (without heater): 0°C-50°C
	Mechanical construction	Horizontal, Vertical and Bevel angles various installed angles provided
	Vibration resistance	2G
	Mechanical shock	8G
	Dimension	178 x 173 x 50 mm
	Approvals	FCC / CE / e-mark

HDD Viewer

Introduction

HDD Viewer makes it possible to search recorded video for critical moments and export and convert images into standard AVI video file or single image JPEG files.

The Hi-Speed USB 2.0 interface (compatible with USB1.1) allows for fast transfer of raw data onto larger storage devices for long term archiving of files should they be required at a much later date.

The product is available in one package as itemized below. If you discover damaged or missing items, please contact your supplier.

The package includes:

- HDD Viewer CD-ROM
- USB2.0 cable

System Requirements:

The following describes the suggested system requirements for the **HDD Viewer** software.

System requirements:

Minimum:	Pentium III 500 PC or higher 64MB RAM or more
Recommended:	Pentium III 800 PC or higher 128MB RAM or more
Operating system:	Microsoft Windows NT/2000/2003/XP or higher

Installation Instructions - Software

Installing from the CD-ROM

Insert the CD-ROM in your CD Drive and follow the on-screen instructions. If your Auto Play option is disabled in your CD-ROM drive, you will need to navigate to the CD-ROM drive through Windows Explore or My Computer and double click on the **Setup.exe** file.

Installing from the run dialog

Click on the Windows Start button, then select Run. Type in "D:\Setup.exe " where D:\ is the letter of your CD ROM drive. If the CD ROM drive letter is something other than "D:\", you will need to find out what your current CD ROM drive letter designation is and use that instead. For example, if your CD ROM drive is "E:\", then you will have to enter " E:\Setup.exe ". Follow on-screen instructions to install the HDD Viewer.

Software Installation

STEP 1: INSTALLER LANGUAGE

Select a language and click **OK**.



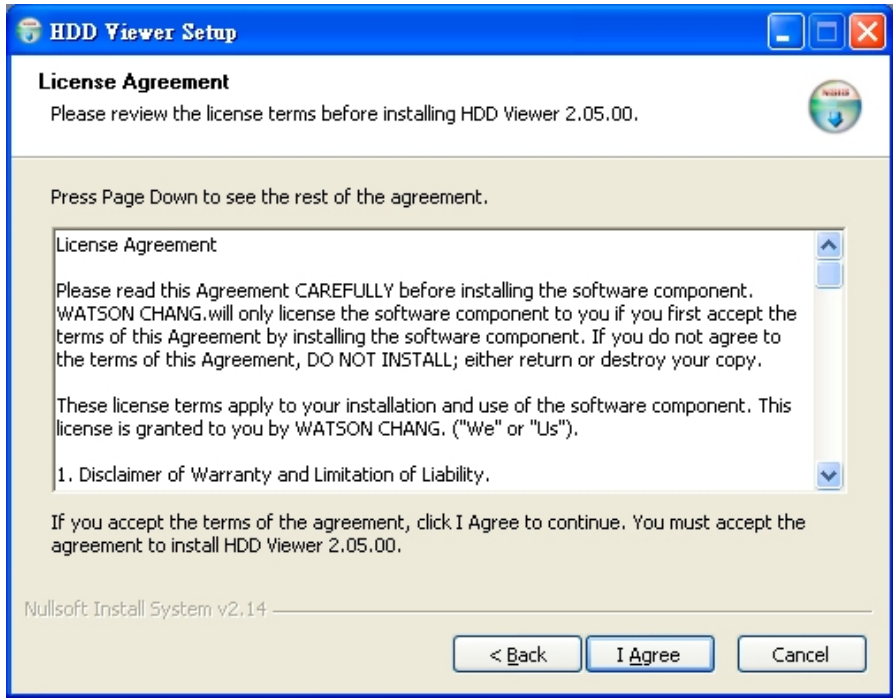
STEP 2: SETUP PROGRAM

Click **Next** and installation will begin right away.



STEP 3: LICENSE AGREEMENT

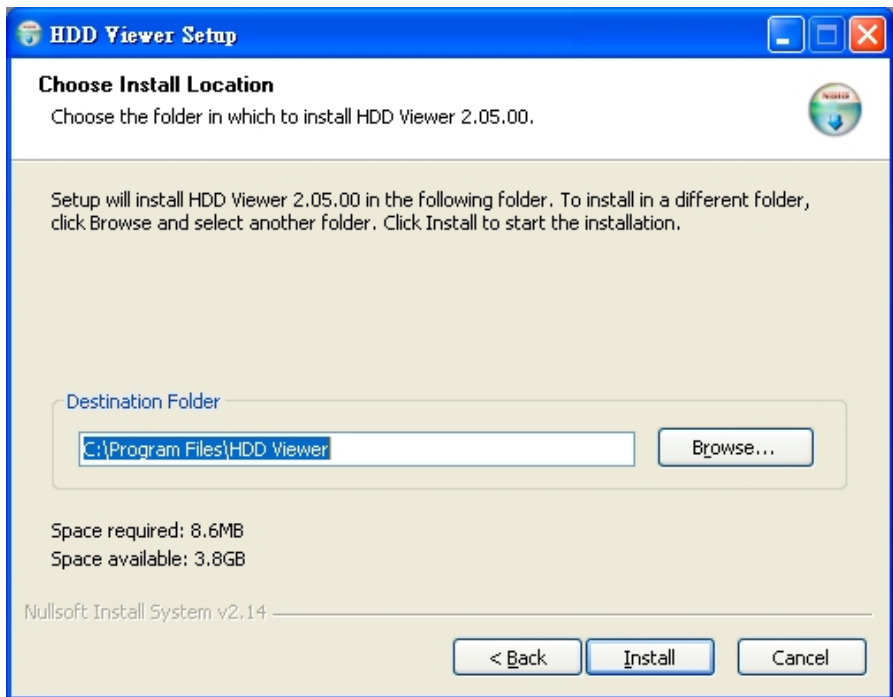
Click **I Agree** to continue after reading the license agreement.



STEP 4: SET UP THE INSTALLATION FOLDER

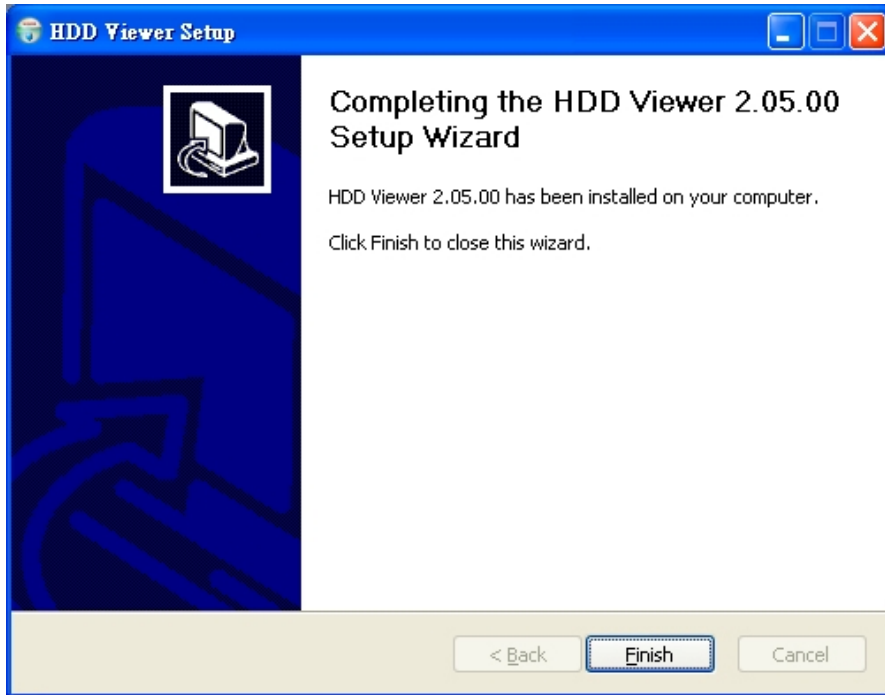
Browse to select the path for the software modules, or just go on to the next step if you select the default path of **C:\Program Files\HDD Viewer**.

Please click **Install** to proceed with the installation. Wait just a few minutes to complete the setup functions.



STEP 5: FINISH THE INSTALLATION

Click **Finish** to complete the installation.



STEP 6: START TO USE THE HDD VIEWER

After completing installation, you can double-click the icon in the desktop, which is shown below. Or click "Start Menu" in the computer and select "Programs" to open the "Program Selection" page. Then click the "HDD Viewer" tag to start the program.



NB:

1. The user must have full 'administrator' rights/permissions for the PC on which HDD Viewer is being run; and
2. The HDD Viewer program must have full 'administrator' rights/permission settings.

Refer to your IT Department/Manager in this respect.

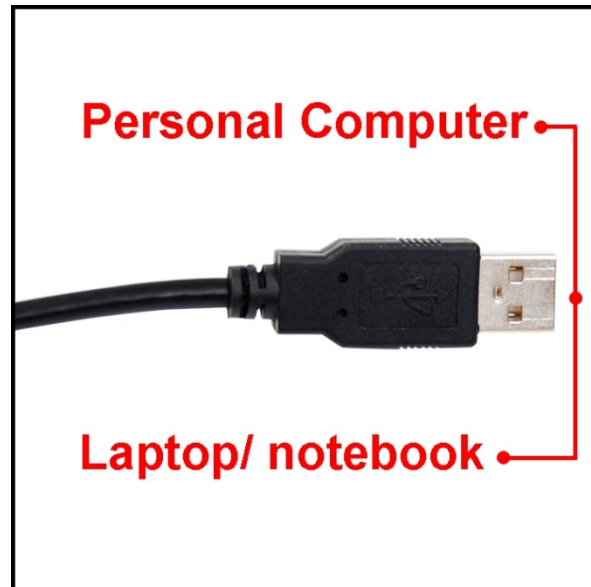
Installation Instructions - Hardware

Please follow the instructions to set up the system.

- Connecting the MDR-304A and PC by the USB2.0 Cable:

Take the USB cable and insert it into the front panel of the MDR-304A, linking the other end to a PC. Then open the HDD Viewer.

Use the USB cable to connect the USB port on your PC or laptop/notebook, and linking the other end into the front panel of the MDR-304A.



Basic Operation






This section shows you how to operate the HDD Viewer.







1. Video display area:

It displays images from the files in the HDD.

2. Single-channel or multi-channel modes & the information status:




Click to select channels 1,2,3...all. The  button and buttons  /  /  /  are used to select the video displaying modes and the video channels.

	Alarm1 Trigger.
	Alarm2 Trigger.
	Alarm3 Trigger.
	Alarm4 Trigger.



3. Scroll bar for video searching.

Drag the square on the bar to search the video.


4. PLAY/ PAUSE/ STOP:


Click  to play and  to make the video pause. Click  to stop the video.

5. Previous file (entry)/ Next file (entry):


Click  to skip to the previous video clip (the previous entry in the list). Click  to play the next video clip (the next entry in the list).


6. Backward/ Forward:

Click  to play backward. The HDD Viewer provides fast play backward of recorded video at various speeds: -1x, -2x, -4x, -8x, -16x and -32x.

Click  to play forward. The HDD Viewer provides fast play forward of recorded video at various speeds: 1x, 2x, 4x, 8x, 16x and 32x.

7. Step backward/ Step forward:

Click  to move to the last image.

Click  to move to the next image.

8. Select the mode & select the Rec. Type (Normal/ Manual/ Alarm):

Disk Mode: In this mode, the software will list the files in the MDR-304A hard disk.

File Mode: In this mode, the software will list the files in a specified directory (eg files downloaded from MDR-304A and stored on a PC). Those files could be the backup files from a MDR-304A hard disk, and you can directly play the information on the hard disk or USB device in the File Mode.

Select Rec. Type: Choose the recording type.

Normal: Lists all the recording entries.


Manual: Lists only the manual recording entries.

Alarm: Lists only the alarm recording entries.

9. Export (G-sensor X, Y & Z data in Excel format):

- (1) Select a recorded file from the file list. Then press the **Export** button.
- (2) Specify the file path to be used when exporting the picture and other information in the Information dialog.
- (3) When all is ready, please click the **Data Export** button to start to export.

10. Rescan disk state:

Click  to rescan all the disks. (Refreshes list of recordings).

11. Select a hard disk drive:


Select a storage device from the drop-down list.

12. File (Entry) List:


It provides the information in files.

You can double click the file list or just press the play button to play the files.

13. Google map

A vehicle's location and route are shown on the map. Click the  button (17) first to open the Google map.

14. Time Search:


This allows you to search for a recorded video stored in the HDD of the device. Enter the Year/Month/Day Hour: Minute: Second you wish to search and click the  button to proceed.

15. Save a video clip (AVI):

Click the  button to save a video clip in the AVI, JPG or VOD format.


Please refer to section 6.4.2, "**Save a video (AVI) to a PC**", for more details.

16. Save a single picture:


Click the  button to save a single picture in the JPEG format.

Please refer to section 6.4.1, "**Save a single picture to a PC**", for more details.



17. Map:

Click the  button to open the Google map. Select ON/ OFF to activate/ deactivate the Google map function.

18. G-sensor, Audio Gain and OSD Language Settings:


Click the  button to open the Localization dialog. Check to activate/ deactivate the G-sensor, Audio Gain function and select to change the OSD language.

G-sensor: Select to show the X, Y & Z axes data under the scroll bar.

Audio Gain: Select to activate the audio gain (volume) icon:  /  .


Advanced Operation

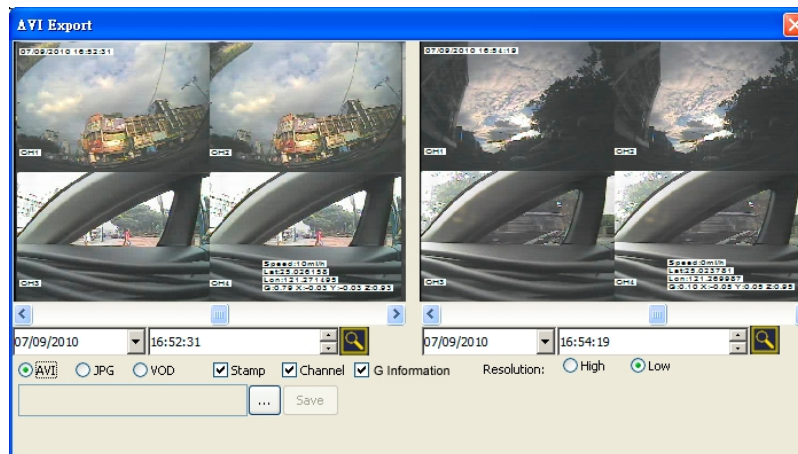
Save a snapshot to a PC

- Step 1.** Click the  button to save a single picture in the JPEG format.
- Step 2.** Please specify the File Name/ File Path to which you want to export the picture.
- Step 3.** After specifying the name and the path, please click the "**Save**" button to start the export.
You can also click "**Cancel**" to cancel all your previous settings.

Save a video file to a PC

To save a video file in AVI / JPG/ VOD format to a PC.

- Step 1.** Click the  button.



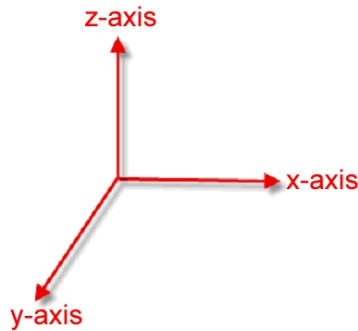
- Step 2.** Drag the squares on the left and right video scroll bars to search for the start and finish points of the video file you wish to save/download.
- Step 3.** Select the backup file format. Check to activate/ deactivate the time stamp or channel display function.
- Step 4.** Select the resolution.
- Step 5.** Specify the file name and the file path in which you want to save the video.
- Step 6.** After specifying the name and the path, click the "**Save**" button to start the transfer.
You can also click "**Stop**" to cancel.
- Step 7.** After finishing the backup process, a dialog box which displays a message: "Data export successfully" opens in the center of the screen.

Read the CSV report

The CSV report helps you to analyze the vehicle status and messages from the G-sensor.

The G-sensor is a 3-axis (X/ Y/ Z) accelerometer which is able to detect the magnitude and direction of acceleration. The G-sensor can be used to sense orientation (because the direction of velocity changes), coordinate acceleration (so long as it produces g-force or a change in g-force) and provides the measurement of low g forces resulting from fall, tilt, motion, positioning, shock or vibration.

The X/ Y/ Z axes:



1													2				3	4	5			
A	B	C	D	E	F	G	H	I	J	K	L	M	R	S	T	U	V	W	X	Y	Z	
Date	Time	X[0]	Y[0]	Z[0]	X[1]	Y[1]	Z[1]	X[2]	Y[2]	Z[2]	X[3]	Y[3]	Z[3]	X[4]	Y[4]	Z[4]	Lat	Lon	GPS Speed	Alarm		
2011/3/16	11:06:14	0.99	0.64	0.27	0.68	0.57	0.21	0.73	0.52	0.18	0.61	0.51	0.17	0.728	0.0728	0.0728	0.1109	0.1109	-37.910984	145.165161	49.541	Left
2011/3/16	11:06:15	0.72	0.59	0.28	0.66	0	0	0.84	0	0	0.28	0.79	0.1109	0.1109	0.1109	1.4243	-37.910992	145.165054	49.3002	Left		
2011/3/16	11:06:15	1.11	1.35	0.5	0.41	0.52	0.77	0.37	0.55	0.7	0.37	0.1131	0.1131	0.1131	0.1131	-37.910793	145.164948	49.9484	Left			
2011/3/16	11:06:16	0.52	0.28	0.48	0.18	0	0	0.11	0	0	0.48	0	0	0.6246	0.6246	0.6246	0.6246	-37.910698	145.164841	50.0966	Left&Right	
2011/3/16	11:06:17	0.5	1.06	0.48	0.48	0.5	0.37	0.73	0.23	0.5	0.5	0.1	0	0.6248	0.6248	0.6248	0.892	-37.910599	145.164734	49.8118	Left&Stop	
2011/3/16	11:06:19	0.09	0.25	0.61	0.43	0	0	1.2	0	0	1.06	0	0	1.0905	1.0905	1.0905	0.892	-37.9105	145.164642	49.7818	Left&Stop&Right	
2011/3/16	11:06:20	0.57	0.43	0.1	0.72	1.2	0.03	0.16	1.06	0.32	0.34	0.1	0	1.0905	0.3511	0.3511	0.3511	-37.910397	145.164551	49.5595	Left&Stop&Right	
2011/3/16	11:06:21	0.5	0.19	0.16	0.63	0	0	0.52	0	0	0.61	0.1	0	0.9891	0.3511	0.9448	0.9448	-37.910301	145.164474	49.3002	Left&Stop&Right	
2011/3/16	11:06:22	0.5	0.27	0.48	0.61	1	0.25	0.09	1.13	0.21	0.1	0.1658	0.1658	0.1658	0.1658	0.1658	-37.910198	145.164383	49.2076	Left&Right		
2011/3/16	11:06:23	0.25	1.18	0.09	0.95	0	0	0.45	0	0	0	0.1658	0.5163	0.5163	0.5163	0.5163	-37.910099	145.164307	48.9298	Left&Stop&Right		
2011/3/16	11:06:24	0.5	0.19	0.09	0.25	0.55	0.12	0.3	0.88	0.95	0.5	0.2377	0.2377	0.2377	1.174	1.174	-37.91	145.16423	48.2076	Left&Stop&Right		
2011/3/16	11:06:25	0.54	0.25	0.39	0.05	0	0	0.07	0	0	0.28	0.3165	0.3165	0.3165	0.3165	0.3165	-37.909901	145.164154	45.9481	Left&Stop&Right		
2011/3/16	11:06:26	0.73	0.09	0.68	0.7	0.18	1.02	0.88	0.68	0.45	0.46	0.8421	0.8421	0.6453	0.6453	0.6453	-37.909801	145.164097	43.3035	Left&Stop&Right		
2011/3/16	11:06:27	0.48	0.48	0.77	0.68	0	0	1.02	0	0	0.86	0.3113	0.3113	0.3113	0.7132	0.7132	-37.909698	145.164032	41.7811	Left&Stop&Right		
2011/3/16	11:06:28	0.55	0.3	0.75	0.55	0.34	0.73	0.52	0.28	0.93	0.52	0.7132	0.7132	0.7132	0.7132	0.0616	-37.909603	145.163986	42.7071	Left&Stop&Right		
2011/3/16	11:06:29	1.13	0.32	0.07	0.21	0	0	0.57	0	0	0.3	0.1562	1.0678	0.0616	0.0616	0.0616	-37.909504	145.163925	43.6702	Left&Stop&Right		
2011/3/16	11:06:30	1.02	0.21	0.32	1	0.16	0.23	0.97	0.09	0.19	0.1	1.0678	1.0678	0.5689	0.5689	0.5689	-37.909405	145.163864	44.7072	Left&Stop&Right		
2011/3/16	11:06:31	0.01	0.86	0.66	0.99	0	0	0.27	0	0	0.5689	0.5689	0.5689	0.5689	0.2205	0.2205	-37.909298	145.163818	46.4482	Left&Stop&Right		
2011/3/16	11:06:32	0.39	0.54	0.88	0.77	0.16	0.39	0.79	0.37	0.54	0.39	0.3997	0.3997	0.3997	0.3997	0.5228	-37.909184	145.163773	48.1335	Left&Stop&Right		
2011/3/16	11:06:33	0.19	0.7	0.95	0.5	0	0	1.09	0	0	0.5	0.29	0.29	0.29	0.29	0.29	-37.909081	145.163712	49.578	Left&Stop&Right		
2011/3/16	11:06:34	0.7	0.19	0.66	0.68	0.3	0.57	0.48	0.5	0.54	0.36	0.086	0.9981	0.9981	0.9981	-37.908943	145.163666	50.4855	Left&Stop&Right			
2011/3/16	11:06:35	0.68	0.28	0.64	0.21	0	0	0.21	0	0	0.25	0.0539	0.0539	0.0539	0.0539	-37.908825	145.163605	50.4485	Left&Stop&Right			
2011/3/16	11:06:36	0.63	0.41	0.97	0.07	0.45	0.54	1.04	0.28	0.46	1.13	0.1446	0.1446	0.1446	0.1446	-37.908707	145.163559	48.9669	Left&Stop&Right			
2011/3/16	11:06:37	0.57	0.79	0.07	0.18	0	0	0.36	0	0	0.77	0	0	0.9884	0.9884	0.816	0.2555	-37.909504	145.163925	43.6702	Left&Right	
2011/3/16	11:06:38	0.37	0.86	0.75	0.73	0.14	0.37	0.54	0.34	0.18	0.14	0.816	0.816	0.816	1.2057	-37.909405	145.163864	44.7072	Left&Stop&Right			
2011/3/16	11:06:39	0.39	0.43	0.5	1.13	0	0	0.43	0	0	0.96	1.2035	1.2035	1.2037	1.2037	-37.909298	145.163818	46.4482	Left&Stop&Right			
2011/3/16	11:06:40	0.09	1.13	0.37	0.05	0.93	0.41	0.39	0.03	0.14	0.2035	1.2035	1.5532	1.5532	1.5532	-37.909184	145.163773	48.1335	Left&Stop&Right			
2011/3/16	11:06:41	0.97	0.66	0.09	0.12	0	0	0.63	0	0	1.5532	1.5532	1.5532	0.1513	0.1513	-37.909081	145.163712	49.578	Left&Stop&Right			
2011/3/16	11:06:42	0.05	0.75	0.39	0.1	0.72	0.46	0.05	0.9	0.34	1.07	0.3362	0.3362	0.3362	0.3362	1.3035	-37.908249	145.163345	48.3002	Left&Stop&Right		
2011/3/16	11:06:43	0.18	0.84	0.52	0.88	0	0	0.88	0	0	0.9	0.3362	0.1517	0.1517	0.1517	0.1517	-37.908134	145.1633	48.3742	Left&Stop&Right		

- X [0-4]/ Y [0-4]/ Z [0-4]:** The vector data consists of three acceleration values, the X, Y, and Z parts of the acceleration. The G Sensor will detect the values of X, Y, and Z five times per second.

X/ Y/ Z [0]: The sampling value of X/ Y/ Z in the first detection in a second.

X/ Y/ Z [1]: The sampling value of X/ Y/ Z in the second detection in a second.

X/ Y/ Z [2]: The sampling value of X/ Y/ Z in the third detection in a second.

X/ Y/ Z [3]: The sampling value of X/ Y/ Z in the fourth detection in a second.

X/ Y/ Z [4]: The sampling value of X/ Y/ Z in the fifth detection in a second.
- G [0-4]:** The average values of X, Y, and Z will be calculated five times per second as well.

3. **Lat/ Lon:** This stands for the latitude and longitude that the GPS receives.
4. **GPS speed:** The velocity which is measured by the GPS receiver.
5. **Alarm:**
 - Stop:** The car stops at a signal light.
 - Left/ Right:** The left-side car signal light/ the right-side car signal light.

APPENDIX 1. –Table of LOG Message

MENU SETUP LOG

-- REC SETTING PAGE --

1>.AUTO START REC	OFF	-->	M-R ASR OFF
AUTO START REC	0 SEC	-->	M-R ASR 0 SEC
AUTO START REC	1 MIN	-->	M-R ASR 1 MIN
2>.DISK FULL	REWRITE	-->	M-R DFULL REW
DISK FULL	STOP	-->	M-R DFULL STOP
3>.POST-REC DURATION	OFF	-->	M-R POST OFF
POST-REC DURATION	1 MIN	-->	M-R POST 1 MIN
POST-REC DURATION	5 MIN	-->	M-R POST 5 MIN
POST-REC DURATION	10 MIN	-->	M-R POST 10 MIN
POST-REC DURATION	30 MIN	-->	M-R POST 30 MIN
POST-REC DURATION	60 MIN	-->	M-R POST 60 MIN
POST-REC DURATION	90 MIN	-->	M-R POST 90 MIN
POST-REC DURATION	120 MIN	-->	M-R POST 120 MIN
POST-REC DURATION	NON STOP	-->	M-R POST NON

STOP

4>.SPLIT	4CH	-->	M-R SPLIT 4CH
SPLIT	3CH	-->	M-R SPLIT 3CH
SPLIT	2CH	-->	M-R SPLIT 2CH
5>.A / V SOURCE		-->	M-R AV

SET

-- ALARM SETTING PAGE --

1>.ALM OPERATION	OFF	-->	M-A OPERATION OFF
ALM OPERATION	ON	-->	M-A OPERATION ON
2>.REC RATE	25 F/S	-->	M-A RATE 25
REC RATE	12.5F/S	-->	M-A RATE 12.5
REC RATE	8.3 F/S	-->	M-A RATE 8.3
REC RATE	5 F/S	-->	M-A RATE 5
REC RATE	REMAIN	-->	M-A RATE REMAIN
3>.ALM DURATION	0 SEC	-->	M-A DUR 0 SEC
ALM DURATION	30 SEC	-->	M-A DUR 30 SEC
ALM DURATION	1 MIN	-->	M-A DUR 1 MIN
ALM DURATION	5 MIN	-->	M-A DUR 5 MIN
ALM DURATION	10 MIN	-->	M-A DUR 10 MIN
ALM DURATION	NON STOP	-->	M-A DUR NON STOP
4>.IO CONNECTION	ALARM	-->	M-A IO ALARM
IO CONNECTION	VEHICLE SIGNAL	-->	M-A IO VS
IO CONNECTION	VEHICLE SIGNAL	-->	M-A IO VST

-- CLOCK/TITLE SETTING PAGE --

1>.CLOCK	SET	-->	M-T CLOCK SET
2>.DAYLIGHT SAVING	OFF	-->	M-T DST OFF
DAYLIGHT SAVING	US	-->	M-T DST US
DAYLIGHT SAVING	EUROPE	-->	M-T DST EU
DAYLIGHT SAVING	UK	-->	M-T DST UK
DAYLIGHT SAVING	SET	-->	M-T DST SET

-- DISK SETTING PAGE --

1>.HD REFORMAT	HD1	-->	M-D HD REFORMAT
2>.AUTO ERASE	OFF	-->	M-D A-ERASE OFF
AUTO ERASE	SET	-->	M-D A-ERASE SET
3>.SD REFORMAT	START	-->	M-D SD REFORMAT
4>.GPS STAMP	OFF	-->	M-D G-STAMP ON
GPS STAMP	ON	-->	M-D G-STAMP OFF

-- SYSTEM SETTING PAGE --

1>.BUZZER	OFF	-->	M-S BUZZER OFF
BUZZER	ON	-->	M-S BUZZER ON
2>.PASSWORD	SET	-->	M-S PASSWORD
3>.SETUP PWD	OFF	-->	M-S SETUP_PWD OFF
SETUP PWD	ON	-->	M-S SETUP_PWD ON
4>.DEFAULT	LOAD	-->	M-S DEFAULT
5>.SD SETUP	SAVE	-->	M-S SD SAVE
SD SETUP	LOAD	-->	M-S SD LOAD
6>.VERSION	ENTER	-->	M-S VERSION

-- OTHER LOG -----

1>.POST REC DURATION			
MENU / REC / POST-REC DURATION	-->		POST 1 MIN
MENU / REC / POST-REC DURATION	-->		POST 30 MIN
MENU / REC / POST-REC DURATION	-->		POST xxxxxx
2>.AUTO START REC			
MENU / REC / AUTO START REC = 0 SEC	-->		AUTO REC
3>.I/O WDT RESET			
I/O / WDT Reset	-->		WDT RST
4>.NTSC PAL			
PAUSE + LEFT	-->		NTSC PAL SET
5>.NO DISK			
NO DISK	-->		NO DISK
6>.SYSTEM			
Main board system on	-->		SYSTEM ON
Main board system off	-->		SYSTEM OFF
Starts recording	-->		REC:
Ceases recording	-->		STOP:
Ceases playback	-->		STOP-P:
Shows recorded video	-->		PLAY:
Video input is connected	-->		V-IN:
Video loss occurs	-->		V-LOSS:
Power interruption occurs	-->		P-LOSS:
Detects an alarm input	-->		A-IN:
Disables the entire front panel controls	-->		LOCK:
Releases the key lock	-->		UNLOCK:
Updates system software	-->		UPDATE:
Vehicle Ignition ON	-->		ACC ON:
Vehicle Ignition OFF	-->		ACC Off:
Power off because of the low voltage of battery	-->		OFF-BL:
Power off because of the high voltage of battery	-->		OFF-BH:

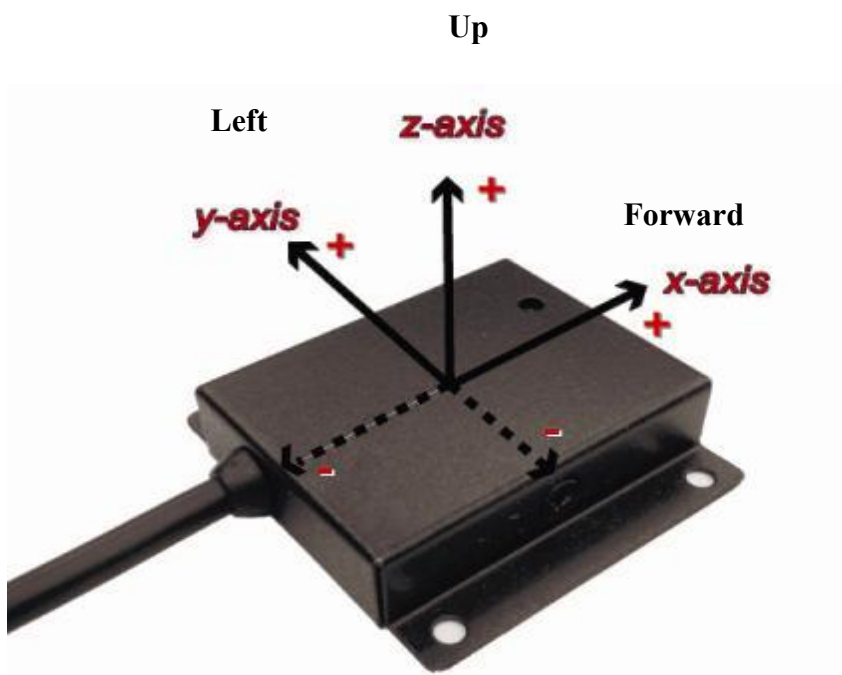
The G-sensor

The value “G” is only used when the MVR connects with a G sensor, which can detect the vehicle acceleration force or G force. The G value is equal to the square root of the $x^2+y^2+z^2$.

The user can set the G-sensor sensitivity which is a limited value for corresponding with the value “G” of the G-sensor. When the currently value is over the limited sensitivity, and the alarm operation is already set to on, the MVR will trigger alarm signal.

The Range of the G-sensor sensitivity: 0.2, 0.4, 0.6, 0.8, 1.0, 1.2, 1.4.

The X/ Y/ Z axes:





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