

DVR-50(G)



# 5 Channel Digital Video Recorder Installation Manual



ECHOMASTER



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## Introduction

**Thank you for purchasing the EchoMaster DVR-50 Digital Video Recorder (DVR).**

This system is specifically designed for vehicle video surveillance.

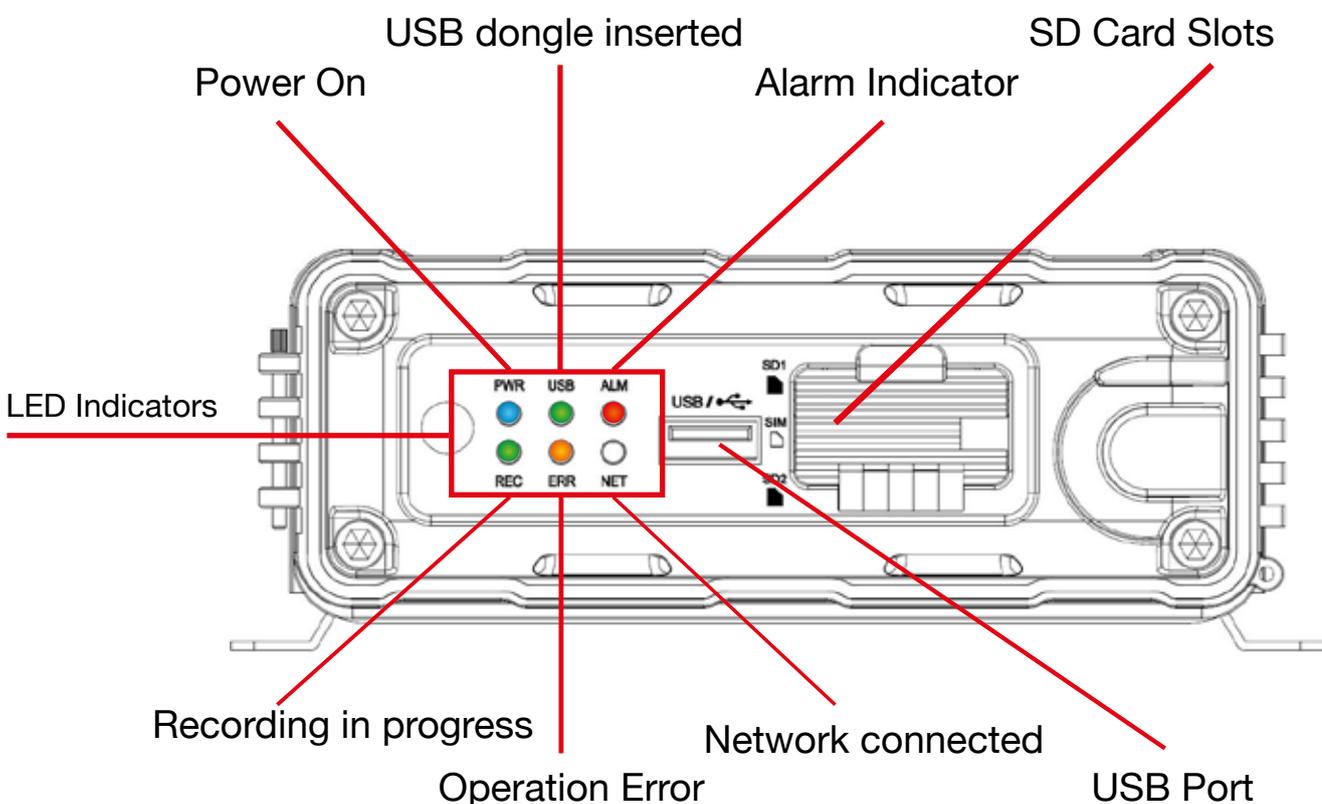
### Key Features

- ▶ Up to 256GB of flash storage
- ▶ Quad analogue inputs
- ▶ HD 5th channel input
- ▶ Optional external trigger module (DVR-50-TH)
- ▶ Optional GPS (DVR-50-G)
- ▶ Lockable cover

### Box Contents

- ▶ DVR module
- ▶ GPS Antenna (DVR-50-G only)
- ▶ Power Cable
- ▶ GX16-RCA adapters x 5
- ▶ User Manual

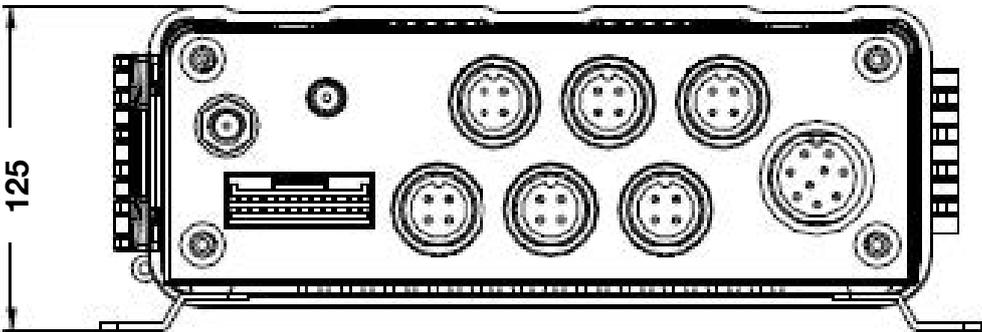
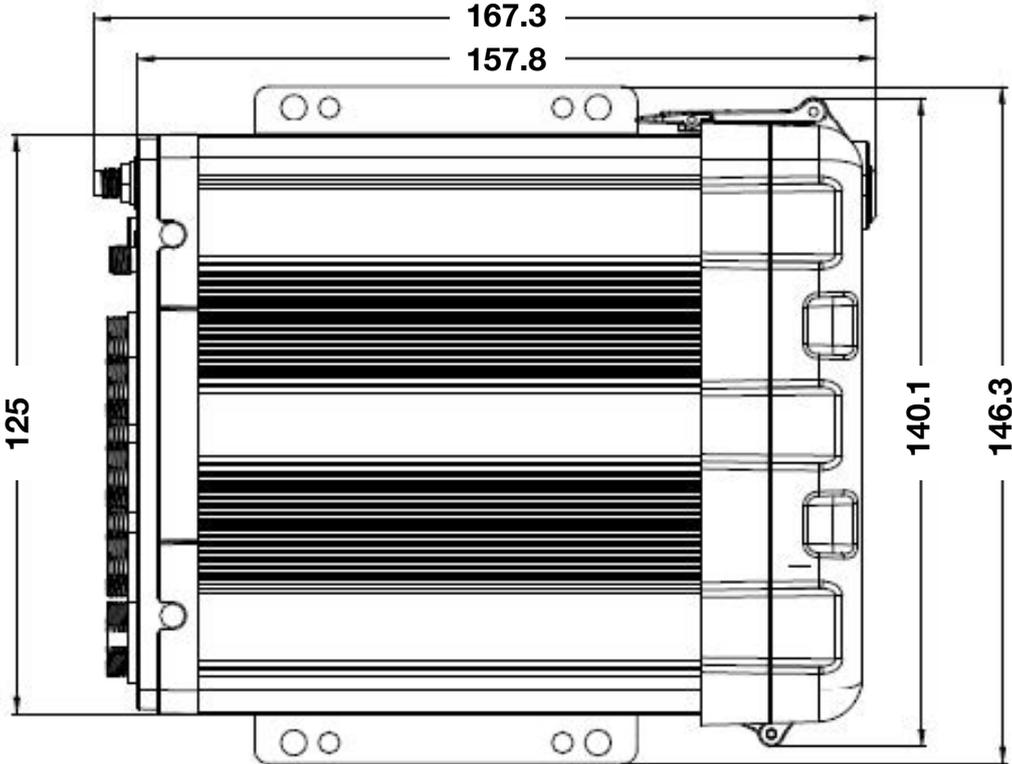
## Front Panel Layout



DVR-50 (G)  
5 Channel DVR Recorder



### Dimensions (mm)



## Installation

When choosing a mounting location, please ensure that there is sufficient access to the front cover of the DVR-50 to allow it to open.

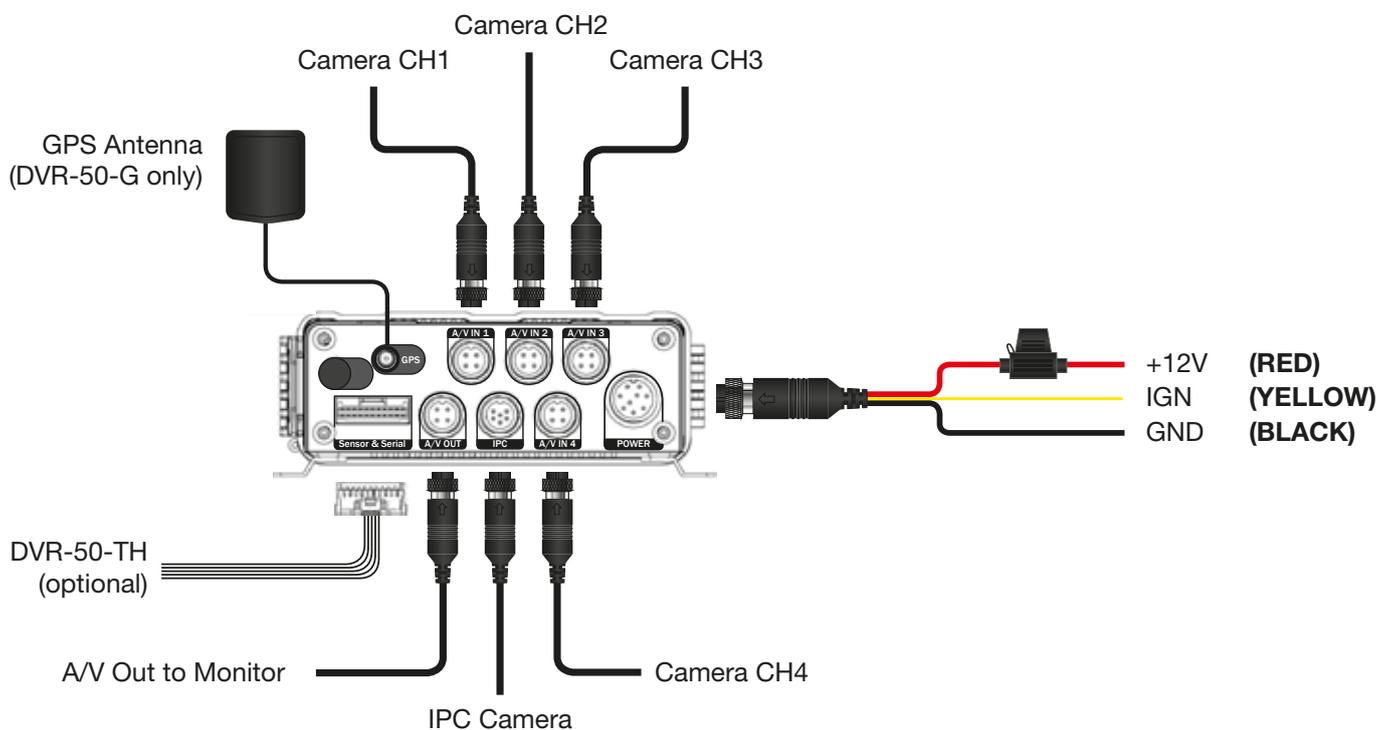
Also ensure that there are no electrical or fluid lines behind any panels that are to be drilled that could become punctured.

Once the mounting location has been decided, secure the unit with 4 screws.

Connect the main power harness to +12V, IGN and Ground.

Make all camera connections before powering up the unit.

Connect and route the GPS antenna (DVR-50-G only) to a position where it has a clear and unobstructed view of the sky. Any metalwork or large wiring looms above the antenna can obstruct its operation.



**DVR-50 (G)**  
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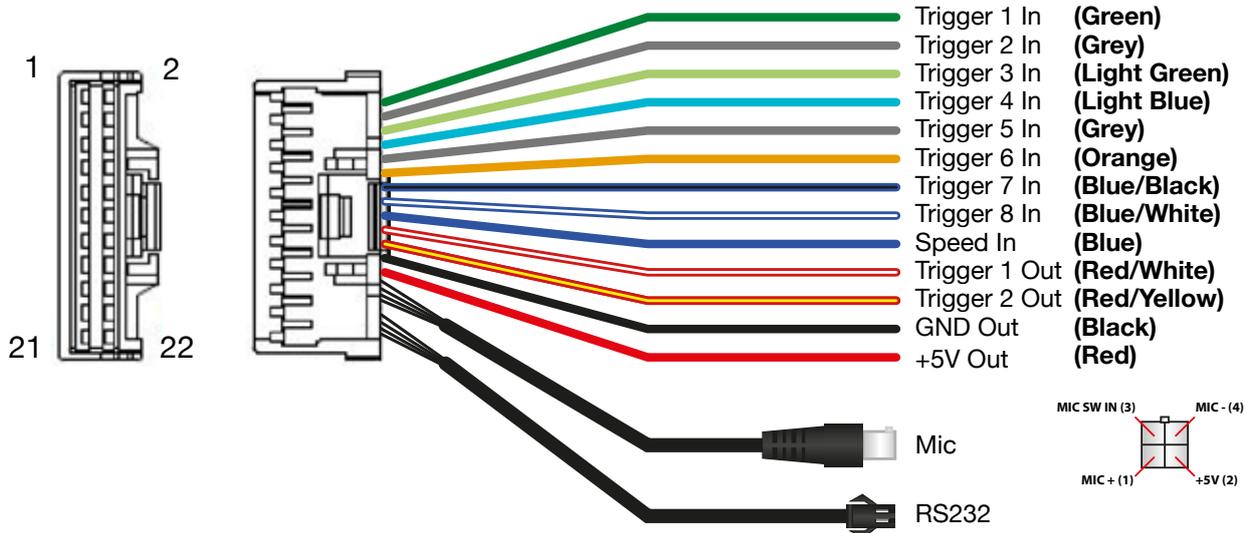
## DVR-50-TH (optional)

If using the DVR-50-TH then this should be connected at this time using the following instructions.

The DVR-50-TH adds the following functions to either the DVR-50 or DVR-50-G: 8 configurable trigger inputs for external inputs, RS232 serial output, speed pulse input and an external mic input.

Follow the wiring diagram below for all connections.

## DVR-50-TH Wiring Diagram



Trigger IN 1- 8 can be a high or low trigger value which is configured in the menu of the DVR-50(G).

Trigger Out 1 and 2 can be used to trigger external devices (such as a telematics device) when any trigger input is activated. This is again configurable in the DVR-50(G) menu.

Speed input can be used to record speed information of the vehicle onto the recording captured on the DVR-50(G). It should be connected to the analog speed output wire on the vehicle (often found behind the radio or instrument cluster).

RS232 output can be used to send and receive data from external devices.

The external mic input can be used to record separate audio to that of the mic normally housed in the cameras.

## Initial Set-up

Power ON the unit with the door closed using the ignition.

Once it is powered up, open the door and plug a mouse into the USB port.

Right click the mouse and then click on the  icon.

Use the password **admin** and click '**LOGIN**'

You will now have access to all the various features and settings of the unit.

Once initial setup is complete: unplug the mouse, insert the SD card(s), close and lock the door and you are ready to start using the product.

### Note:

It is always recommended to carry out a format on all SD cards using the internal format function of the DVR before first use.

## Menu Function

### Main Menu



Using a right mouse click you can bring up the main options. With these initial options you are able to select the individual channel display option or you are also able to choose 2 different split screen display options (4-way and 9-way split).

**Note:** that in the 9-way split screen view only the first 5 channels will be displayed.

Playback of the most recent file is also possible from this screen by selecting the playback option.

The BIZ Menu requires a different version and is not used in this product.

All configurable options are accessed by clicking the  icon to bring up the home menu.

## DVR-50 (G)

5 Channel DVR Recorder



## Home Menu



When browsing the menu system you can return to the previous menu by clicking the back arrow at the top right of the screen.

Selecting the home icon from any menu will return you to this screen.

## REC search



Recordings can be searched for by date by selecting the required date and clicking next.

You will note that the color displayed under the date signifies what type of recordings are present (normal recording, locked recording and alarm recording).

You can also filter recordings by the recording type and also the recording source (Main, sub or mirror).

Once a date has been selected there are options displayed for selecting specific video types (all, normal or alarm). You can also select which channel to view (channels without recorded data are greyed out). Clicking search will provide the option to search by time and also channel (multiple channels can be selected). Clicking the + or - buttons will zoom in on the time bar graph allowing for very accurate time selection while clicking the < or > icons will scroll up or down the graph. You can also select the exact time to start playback by clicking on the time counter and entering the exact time.



Once you have chosen your start time, click playback to start the playback of the recording.

Files can also be exported to a USB device in either a comprehensive .264 or .avi format which may be more easily read by certain devices.

When selecting to export a file you are given the option to choose the start and end time for export.

## Log Search

This function will allow all operation or alarm logs to be viewed.

These are searched for in the same manner as video files with the user able to choose the date for viewing and then the time. The option to view different log types is also given (alarm logs, operation logs and locked logs).

Clicking search will then display the list of time stamped logs with the log type displayed next to it. These will be shown in chronological order with the most recent displayed at the top of the list.

If the log is an alarm log then the related video file can be played by clicking the video icon to the right of the file.

## System



Clicking this icon will display all the relevant information about the DVR including connected modules, server status, DVR status (environment), and storage information.

## Log Out

Click this to log out the current user.

## Setup

In this menu all configurable options for the DVR can be set.

### Note:

Please ensure that you click save in each screen after making any changes otherwise these changes may not be saved.

## DVR-50 (G)

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## Basic Setup



### Register Info

#### Device Info

You can assign a number to the DVR to distinguish it from others.

#### Vehicle info

**Vehicle plate** – input the registration number of the vehicle to which the device is installed.

**Vehicle number** – Not required

**Line Number** – Not required

#### Driver info

**Driver number** – Assign a unique number to the driver of the vehicle if required

**Driver name** – Input the name of the driver

## Time Setup

### General

This allows the user to set the date format, time format and time zone.

### Time sync

You can set the time and also choose whether the time will remain synced via information received by GPS, server or NTP server.

### DST

It is also possible to configure DST settings. Once enabled, you are able to set the DST.

## Startup

### On/Off

#### **Mode**

Select whether to power cycle the unit according to ignition position, timer or both ignition and timer.

#### **Ignition delay**

Select a delay period that the unit will continue recording after ignition has been turned off (0-86399 seconds). Note that the timer will not begin countdown until 5 minutes have passed from the last power up.

#### **Timer**

Allows a specific power up and power down time to be set.

#### **Light off time**

Requires additional parts.

## Sleep

### ***Sleep Mode***

Currently there is only one option available for no consumption standby.

### ***Low voltage protect***

When enabled, the unit will automatically shut down when the battery voltage drops below the set level.

### ***Battery low voltage protect***

Sets the low voltage threshold for automatic shutdown.

### ***Voltage startup***

Sets the threshold for when the unit will boot up and return to normal operation.

### ***Low volt upload***

When enabled this will report low voltage incidents to the log.

## User Setup

### Idle time

This function allows you to set the delay time that the screen will revert to the camera image screen. If set to “never,” then the screen will always remain on the current screen and never default back to the live view. This will also auto logout the current user. If set to never then you will be required to log out manually by clicking the logout icon in the main menu.

### Users

You can add, remove or edit users in this menu by selecting a current user (to edit) or selecting add to enter a new user. This menu is where passwords can be set for each user. Only Admin user can add new users (up to a maximum of 2 normal users).

**Note:** You cannot delete or rename the Admin user.

Admin user will have full access to all menus and setups whereas a normal user will not be able to change any settings, but they will be able to search video and log files.

## Network, Application & Other setup

These menus are only for use in products supporting network connections and have no function in this product.

## DVR-50 (G)

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## Surveillance



### Live View

#### Preview

#### **Preview Audio**

Selects whether the audio is heard in the live view screen.

#### **Image Setup**

Allows adjustment for brightness, contrast, color and saturation. These are individually configurable for each channel. You can also adjust the mirror image and vertical image flip in this menu (again configurable for each channel separately) by clicking on the 2 rotate icons. Settings can be copied from 1 channel to any other channel to save making the same changes multiple times.

#### **Margins**

Adjust the margins for the left, right, top and bottom of the screen to ensure that it correctly fits your monitor.

#### **Startup screen**

Set the default image display when the unit starts up (single image or split screen). You can also choose which cameras to display in this split screen mode.

#### **Auto loop**

You can configure the unit to automatically loop through any number of video inputs. These can be displayed as a single image (1x1) quad screen (2x2) or 9-way split screen (3x3).

Any combination can be chosen and the time that each image is displayed can be set independently for each camera.

#### **Live OSD**

You are able to configure what information is displayed on the live view by ticking the required box.

**Note:** Not all options are available on all devices and some options require additional add on accessories.

## Record

### General

**System**

Allows the video output to be set as PAL or NTSC format.

**Overwrite**

The user is able to choose the manner in which data is overridden. Capacity will overwrite data when the storage medium is full. Days will start overwriting the storage medium after a set number of days (1-31). The 'Never' setting will not allow any data to be overridden (recording will be suspended when the storage medium is full.)

**Lock duration**

This determines the length of time that locked files are retained before they will be overwritten (1-31 days).

**Pre-recording**

If an alarm is triggered this setting defines the length of pre-recorded time that is locked. Sets the threshold for when the unit will boot up and return to normal operation.

### Main Stream

<b>Channel</b>	Choose which channel to carry out settings on.
<b>Channel Name</b>	Assign a specific name to that channel.
<b>Enable</b>	Turn the channel on or off.
<b>Resolution</b>	Set the recording resolution of the particular channel.
<b>Frame rate</b>	Set the desired frame rate for the chosen channel.
<b>Quality</b>	Choose the recording quality (1 is highest).
<b>Record Mode</b>	This can set the mode in which recording is started on that particular channel. Power up will start recording as soon as the device is turned on. Timer will only start recording on that particular channel at specific times which can be set after this option is highlighted and alarm which will only record that channel when an alarm is triggered.
<b>Audio</b>	Allows audio to be recorded from any channel.
<b>Alarm quality</b>	This can change the recording quality to a different level than that of non-alarm recording. This means that the recording level can be set to a lower quality to conserve storage space but then switch to a higher quality when an alarm is triggered.
<b>Encode mode</b>	Choose whether files are encoded at variable bit rate (VBR) or constant bit rate (CBR). You are able to copy the settings from one channel to all others, or selected channels by using the copy function.

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### Dual Stream

This allows a separate recording stream to be enabled. This can be set to be a mirrored recording, a sub-recording of certain channels or a recording of alarm channels.

This can be saved to only the internal storage medium as the external SD card has no function in this version. In mirror recording, all video parameters are set to be the same as the main recording stream. In sub-recording you can configure separate parameters for each channel which are independent of the main recording stream.

### OSD

You are able to choose what information is shown on the recorded videos by ticking the required parameter.

#### **Position**

The position on screen where the relevant pieces of information can be changed by clicking this button. You will then be shown a single image with all of the information selected shown. Click and drag the information to the desired area and click save.

### IPC Setup

Configure all settings when using the IPC HD cameras. Please ensure that the IPC camera is connected before configuring any of these options.

Channels 1-3 are reserved for analog cameras and cannot be assigned to an IPC camera, but either channel 4 or 5 can be used to display the video from a connected IPC camera. Select the desired channel by ticking the relevant box.

Once ticked, you should click the search icon for the relevant channel. The unit will then perform a search for a connected IPC camera. Once the camera has been found, the results will be displayed. Select the camera by ticking the check box and click OK.

There will now be an IP address and port number displayed on the main IPC setup screen. Click save and the camera image should now be able to be viewed in the live view.

### PTZ

If using a PTZ camera then this menu can configure the various settings and protocols for control. You are also able to test the functionality in this menu.

## Collection



### General

#### Sensor

#### **Sensor Number**

Choose which sensor you wish to edit.

#### **Overwrite**

Assign a specific name to the chosen sensor

#### **OSD name**

Assign a certain name that will be displayed on screen when a sensor is activated.

#### Serial port

This allows you to configure all functions for the RS232 serial port when using external devices, including the type of device connected and also the baud rate.

#### Speed

In this menu, the speed unit and source of the speed information can be configured.

#### Navigation

Currently can only be set to GPS.

#### Mileage

**Source** You are able to select the source of the mileage information.

**Total** Displays the total miles covered since last reset.

**Base Value** This is the initial starting value for the mileage counter when reset. This can be useful if swapping out units as the mileage counter from the old unit can be inserted into this column to retain an accurate record.

**Operation** Clicking correct will adjust the mileage counter to that of the number entered into the base value. Clicking clear will reset the mileage counter to zero.

### Snap Setting

This menu has no function in this product.

## DVR-50 (G)

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## Alarm



### Base

#### Speed Alarm

The speed alarm function can be turned on by ticking the enable box. You can also then configure the type of alarm reported (Alarm/Event).

Once enabled you can configure the speed setting, speed difference and alarm duration by clicking the trigger setup.

Using the linkage setup, it is also possible to link this alarm to one of the 2 available trigger outputs and additionally configure post-recording times in addition to linking the alarm to a particular camera. The alarm snap feature is not functional on this product.

Post recording will continue to record locked video for the set time after the alarm has been cancelled.

#### Panel Alarm

Requires additional devices.

#### IO Alarm

The speed alarm function can be turned on by ticking the enable box.

You can also then configure the type of alarm reported (Alarm or Event).

Once enabled, you can configure the trigger setup to high or low voltage by clicking the trigger setup. Selecting high will mean that the trigger input on the chosen channel will need to go high (+12V) to trigger the alarm; Setting this to low will mean that the trigger needs to be taken to ground to trigger the alarm.

Using the linkage setup, it is also possible to link this alarm to one of the 2 available trigger outputs and additionally configure post-recording times in addition to linking the alarm to a particular camera. The alarm snap feature is not functional on this product.

Post recording will continue to record locked video for the set time after the alarm has been cancelled. It is possible to copy the settings from 1 alarm to any or all of the others using the copy feature.

## Video

### Video loss

This enables a video loss on a particular channel or multiple channels to trigger an alarm and also to switch display or file lock to a different channel.

Using the linkage setup, it is also possible to link this alarm to one of the 2 available trigger outputs and additionally configure post-recording times in addition to linking the alarm to a particular camera. The alarm snap feature is not functional on this product.

Post recording will continue to record locked video for the set time after the alarm has been cancelled.

### Motion

This enables motion to be detected by the camera and trigger an alarm and switch to a chosen channel display and lock file.

To set the motion detect area, enable the function and then click on trigger setup. Green highlighted areas are detection areas whereas grey highlighted areas are not detected.

You are able to select the sensitivity and the detection area individually for each camera. Use the left mouse button to drag the desired detection area on screen. If you make an error, you can clear all or part of the detection area by click and dragging the mouse across any of the grey highlighted grid.

To back out of this menu, use the right mouse click.

Once happy with all the detection areas, click OK and Save on the main screen.

Using the linkage setup, it is also possible to link this alarm to one of the 2 available trigger outputs and additionally configure post-recording times in addition to linking the alarm to a particular camera. The alarm snap feature is not functional on this product.

Post recording will continue to record locked video for the set time after the alarm has been cancelled.

### Cover

This enables the DVR to detect if a camera has been covered and switch the display to a chosen channel and also to trigger an alarm and lock a recording.

Check the box to enable this feature and choose whether it reports as an event or an alarm. By clicking the trigger setup, you can select which channels to enable this feature on and also set the sensitivity, alarm duration and delay time before the alarm is triggered.

Using the linkage setup, it is also possible to link this alarm to one of the 2 available trigger outputs and additionally configure post-recording times in addition to linking the alarm to a particular camera. The alarm snap feature is not functional on this product.

Post recording will continue to record locked video for the set time after the alarm has been cancelled.

## DVR-50 (G)

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## Advanced

### Acc Alarm

Requires additional devices.

### Electrifence

Requires additional devices.

## Maintenance



### Config

You are able to import and export configuration files which is useful if you are fitting multiple products to different vehicles and wish to use the same configuration for all. This will save having to configure each unit separately.

A USB hub can be used to simultaneously connect a USB drive and a mouse so that this operation can be carried out.

### File Data

You can export any type of file data to an external USB device using this menu. Data can be exported in bulk (all data) or only between a certain period of time.

A USB hub can be used to simultaneously connect a USB drive and a mouse so that this operation can be carried out.

### Upgrade

The unit can be upgraded from this menu option when upgrades are released. The upgrade file should be placed on the root folder of a USB device.

A USB hub can be used to simultaneously connect a USB drive and a mouse so that this operation can be carried out.

### Storage

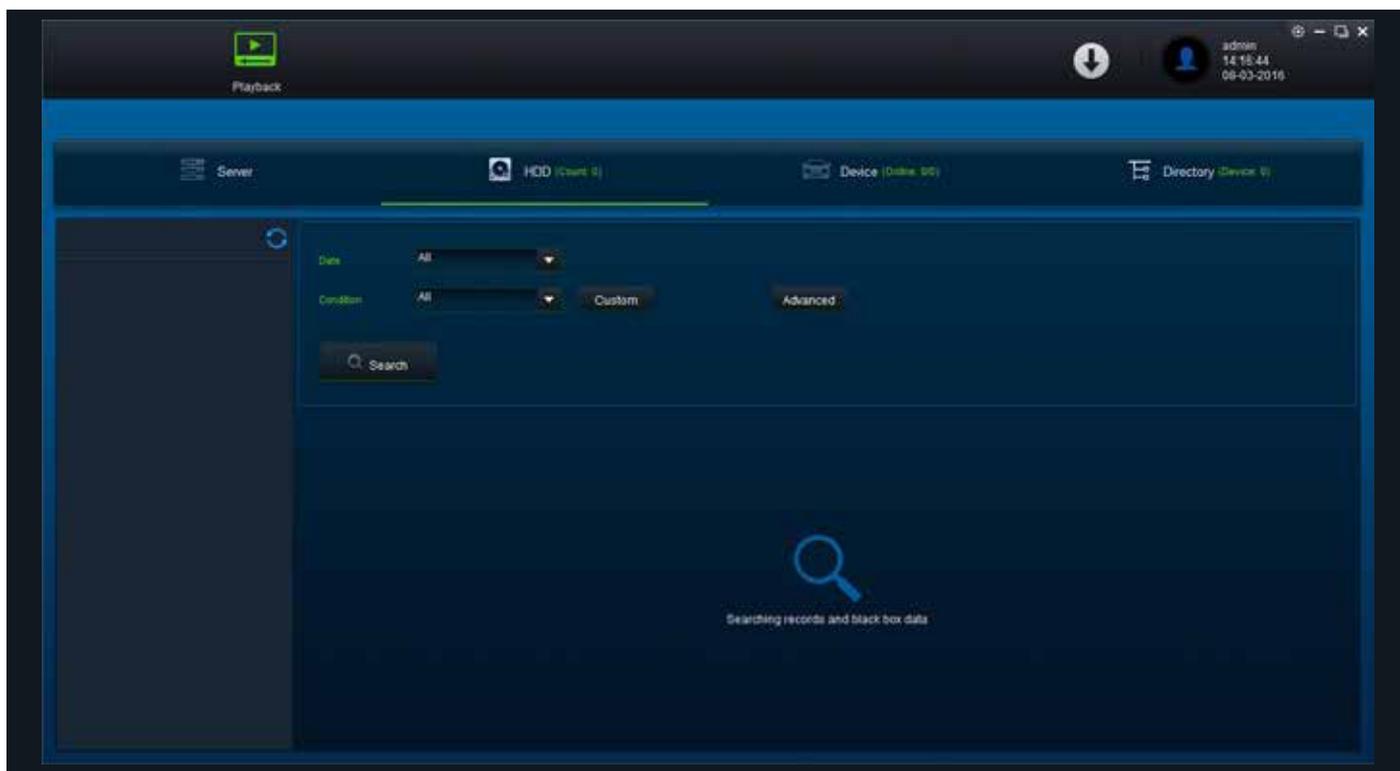
This option will display all connected storage mediums and also gives you the option to format each device individually.

### Reset

You are able to reset all parameters to default factory settings using the reset feature in this menu. You can also reboot the system from this location.

## Video Playback

To playback stored video files you will need to download the Ceiba 2 software and user guide.



These can be downloaded from the following location.

[http://echomaster.com/index.php?controller=attachment&id\\_attachment=660](http://echomaster.com/index.php?controller=attachment&id_attachment=660)

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# References

## Storage Capacity

### Recording File Size Calculation

The file size for each channel can be determined using the table above and the following calculation.

**Recording Time (seconds) x Stream (Kbps) / 8 / 1024 = File size (Mb)**

*For example;* 1 channel using D1 resolution at quality 2, recording for 1 hour.  
 $3600 \times 1536 / 8 / 1024 = 675\text{Mb}$

		Quality							
Resolution		1	2	3	4	5	6	7	8
Stream (KBPS)	D1	2048	1536	1230	1024	900	800	720	640
	HD1	1280	960	768	640	560	500	450	400
	CIF	800	600	480	400	350	312	280	250



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