

USER GUIDE FOR NETmc MARINE 73fifty



Rev 4.3
January 2008

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1. Introduction

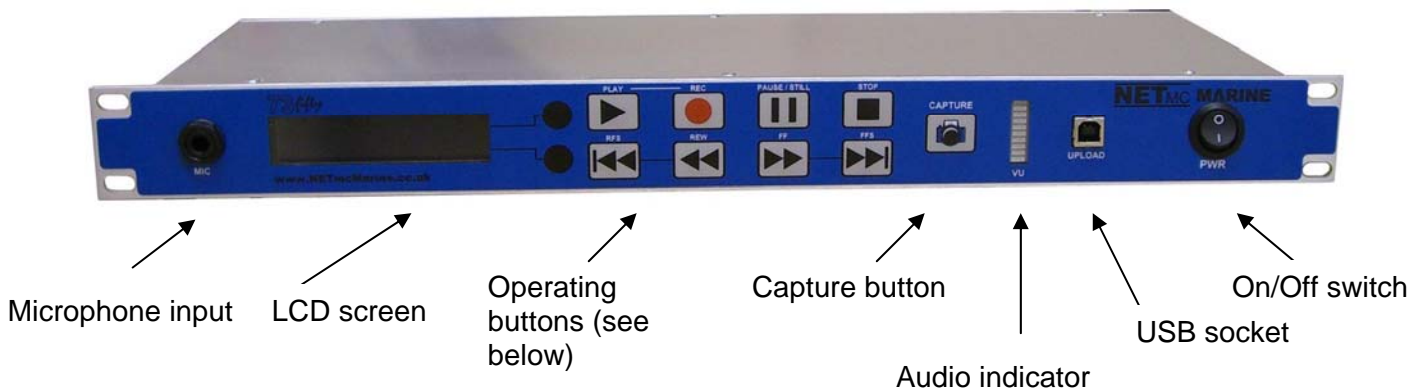
The **73fifty** is a robust digital video recorder which is both simple-to-use and affordable. It is capable of recording from a PAL, NTSC or SECAM video source and will automatically detect which type of signal is present. (No re-configuration is necessary.) It can record for up to 120 hours dependent on the bitrate selected. It is fully compatible with the NETmc Marine *VideoTXT* overlay unit.

The standard (blue) **73fifty** is housed in a 19" 1U rack-mountable case. Also available is a **73fiftyPeli** version, which is supplied in its own robust Peli case for ease of transportation. This can be supplied with or without its own monitor, and with or without internal built-in overlay.

The third option in the range is the **73fifty-Blackbox** – designed for HSE recording requirements.

2. Hardware Description and Connections

Standard (blue) unit



Microphone input

Microphone input is available directly from the front panel.

Audio indicator

A moving bar-graph display indicates that sound is being received and recorded – either through a microphone – or through an external input via the back of the unit.

LCD screen

Text on this screen indicates whether the unit is currently recording, or playing back, or displays the various options available through the menu system. (See Section 3 below).

Operating buttons/On-off switch

For details on how to operate the **73fifty** see Section 4 below.

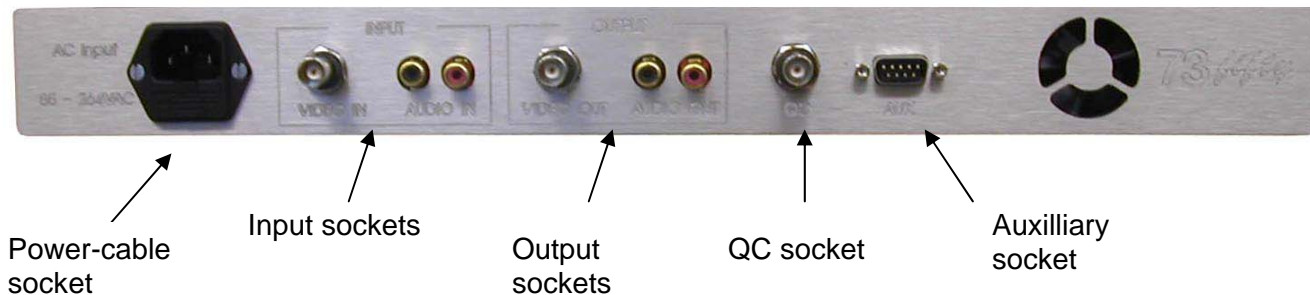
Capture button

This button enables you to capture still pictures during playback, recording or when the machine has stopped.

USB socket

This USB interface, together with the supplied software, enables the transfer of files from the **73fifty** to any PC or laptop.

Back of the unit



Input sockets

Connect the video and audio sources which are to be recorded here.

Output sockets

These sockets enable video and audio connections to a monitor for video playback.

Note: The **73fifty** operates in a similar manner to a domestic video recorder.

During video playback the picture visible on the monitor is that which has been recorded by the **73fifty**.

When the unit is idle or recording, the image shown on your monitor via these sockets is a pass-through signal (i.e. is identical to the input signal.) In order to monitor how the **73fifty** has recorded this signal, please use the QC socket.

QC socket

This socket outputs a "quality control" display which is a decode of the video stream. This is indicative of the mpeg encoding and will lay behind the live video by approximately 2 seconds. Monitoring the QC output will enable the user to check that the **73fifty** is recording successfully, and to monitor the quality of that recording. Note: that the screen will show a "QC" logo in the top corner to indicate that the picture shown is for quality control purposes and NOT the live video.

Example QC screen:

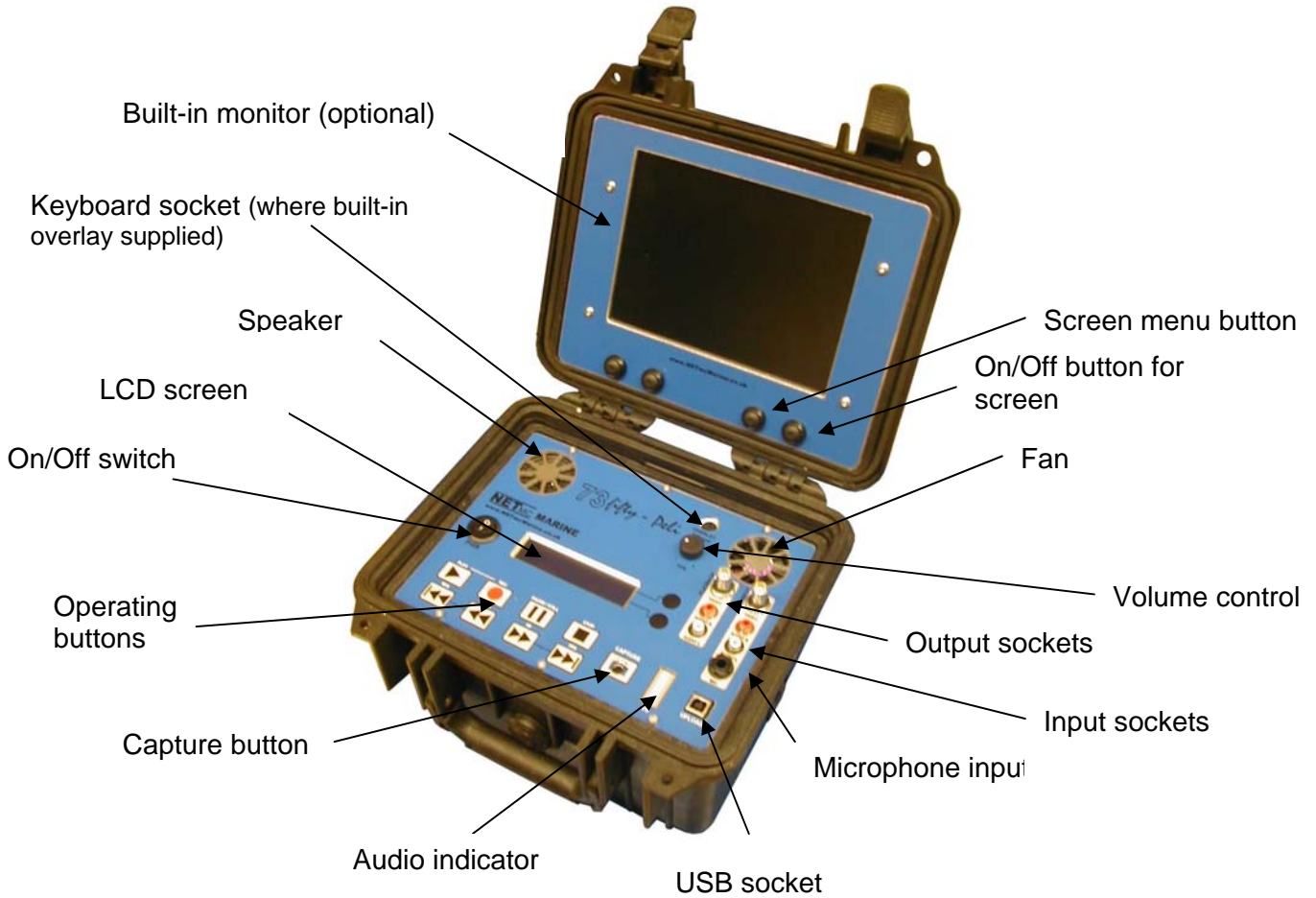


Auxilliary socket

The socket is for NETmc Marine Engineer use only.

It is important to plug in all video and audio input / playback / pass-through connections before switching on the **73fifty.**

Pelicanase unit



Audio indicator

A moving bar-graph display indicates that sound is being received and recorded – either through a microphone – or through an external input via the back of the unit.

LCD screen

Text on this screen advises whether the unit is currently recording, or playing back, or displays the various options available through the menu system. (See Section 3 below).

Operating buttons/On-off switch

For details on how to operate the **73fifty** see Section 5 below. Please note that the screen has a separate on/off button.

Capture button

This button enables the capture of still pictures during playback, recording or when the machine has stopped.

USB socket

This USB interface, together with the supplied software, enables the transfer of files from the **73fifty** to any PC or laptop.

Input sockets

Connect the video and audio sources which are to be recorded here.

Output sockets

These sockets enable video and audio connections to a monitor for video playback.

Note: The **73fifty** operates in a similar manner to a domestic video recorder.

During video playback the picture visible on the monitor is that which has been recorded by the **73fifty**.

When the unit is idle or recording, the image shown on your monitor via these sockets is a pass-through signal (i.e. is identical to the input signal.)

Built-in Monitor

The built-in monitor has a separate on/off button at the bottom right of the screen.

The screen menu allows the user to adjust brightness and contrast. The "Source Input" option allows the user to switch between watching the input (live) video (SVBC1) and the QC screen (SVBC2) which is a decoded version of the mpeg encoded files for quality control purposes.

Built-in Overlay

Overlay can be built in, as an optional extra, in the 73fiftyPeli unit.

See the separate guide for further details on the Overlay function.

It is important to plug in all video and audio input / playback / pass-through connections before switching on the **73fifty.**

73fifty Blackbox

Front of the unit



The **73fiftyBlackbox** is designed for recording for HSE purposes. The unit records to an internal hard disk. Files can be uploaded on to a PC in the same manner as for the standard (blue) **73fifty**. Once the disk is full (after 44 to 83 hours dependent upon the bitrate selected) the unit loops automatically – i.e. the earliest files recorded are deleted to make way for the new ones.

Back of the unit



On **Blackbox** models, there is an external trigger socket on the rear of the unit. This socket is used to link the recorder to an external trigger source, so that it may automatically start and stop. A plug to be used for connecting to the external source is supplied with the unit: 2-way COMBICON terminal block connector (RS part no.: 189-6486)



When 12v is applied across the trigger input (NOT polarity sensitive) the recorder will start recording. When the 12v is removed, the recorder will stop recording.

Once recording is activated by the trigger, it can only be stopped via the external trigger – i.e. the front panel controls are disabled.

Typical remote trigger examples are:

- Record switch on control desk
- Off-deck microswitch for ROV / dive bell
- Feed from main system switchboard (recording starts when vehicle power on.)

For a description of other connections please see the description of the standard (blue) unit above.

3. Set-up

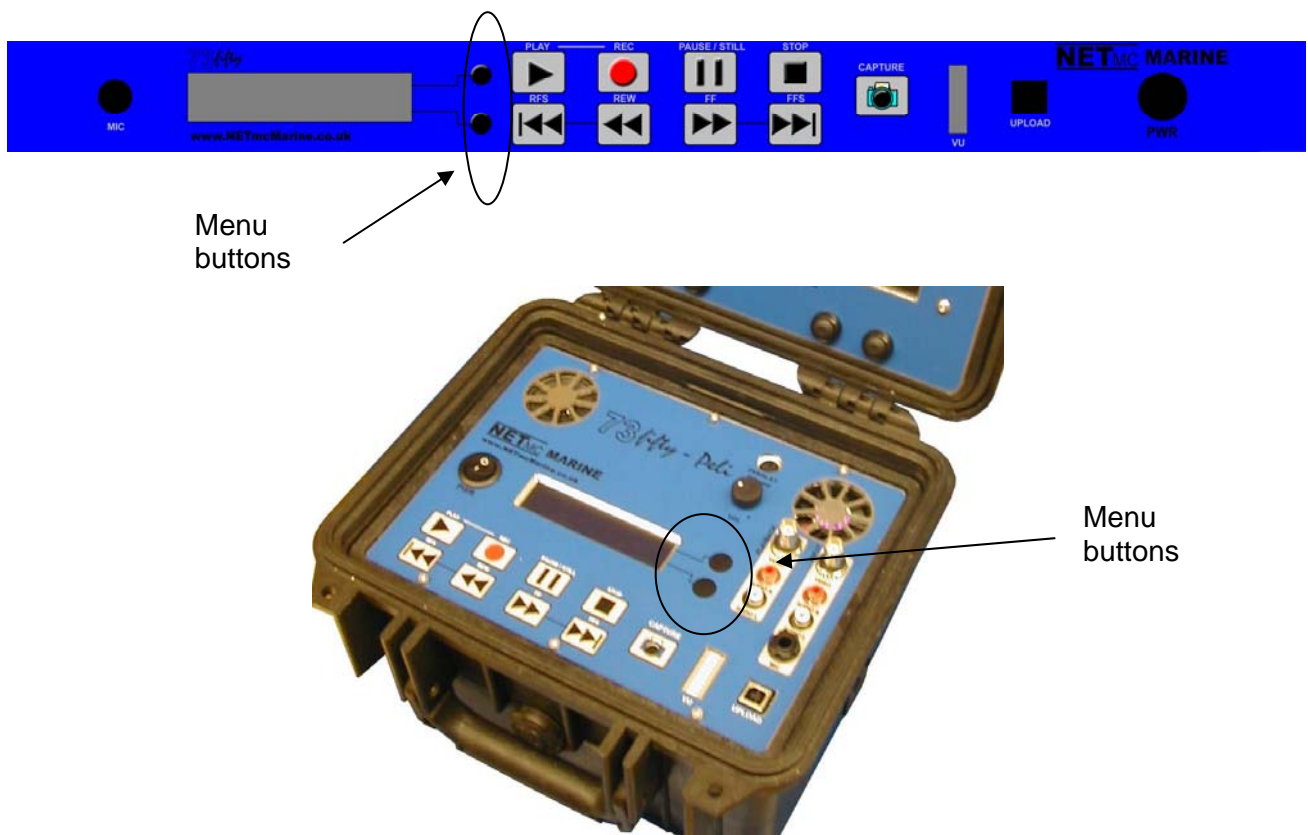
1. Mount the **73fifty** in a suitable rack mount system or position the Peli case as required.
2. Connect the power supply. **Note: this unit should be earthed.** Note (2): we highly recommend connection to a UPS (uninterruptible power supply) to prevent data loss.
3. Connect audio and video input. We recommend that the best quality input is connected – i.e. that the **73fifty** is connected as close to the camera / microphone as possible.
4. Connect audio and video output. Note that the output sockets function as pass-through sockets until “Play” is pressed.
5. Connect a QC monitor via the QC socket. (Not **73fiftyPeli** where the QC screen is available through the screen menu options)

6. IMPORTANT: Please plug in and switch on all video and audio input connections before switching on the **73fifty.**

This is because the **73fifty** will automatically detect which type of video signal (PAL, NTSC or SECAM) is present.

7. Switch on the **73fifty**. Note that the unit takes a few seconds to configure the system before becoming fully operational. On **73fiftyPeli** units with a built-in monitor, the monitor needs to be switched on separately.
8. Use the menu buttons to set the recording bitrate, and for standard (blue) and Pelicase units the recording mode (continuous or time-restricted.)
9. Start recording by pressing “Record” (or on **Blackbox** units connect the external trigger). You will see the message “Record” on the LCD screen, and the decoded image will be shown on the QC monitor with a 2-second delay.
10. Once the job has finished, press “Stop”. Please wait for a few seconds while the **73fifty** checks and stores the files (you will see the message “Creating Files” on the LCD screen) before switching off the unit. See below for further operating instructions.

4. Menus



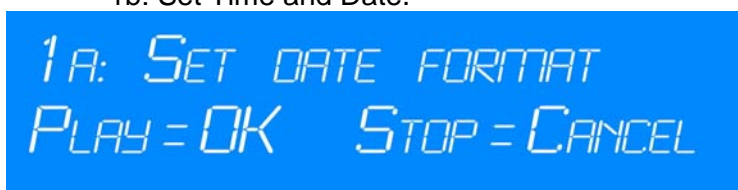
The menus are accessed by pressing the **top** black circle next to the LCD screen. Once you have accessed the menus, pressing the bottom circle allows the user to “scroll-down” through the menus, and pressing the top circle “scrolls-up” through the menus. To select a menu, press the “Play” button. Pressing “Stop” at any time cancels the current operation.

1. To set the time and date

- Press the top black circle to access the menu system. The first option displayed is as follows:



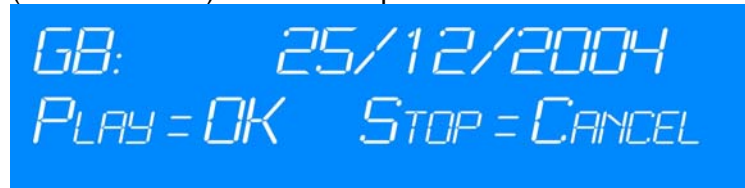
- Press the “Play” button to select Menu 1: Time and Date.
- There are now two submenus:
 - 1a: Set Date Format.
 - 1b: Set Time and Date.





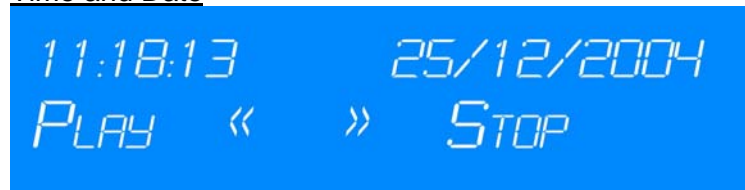
Scroll through these sub-menus by pressing the top and bottom circles. Select one by pressing “Play.”

- Date Format
The default setting is GB format (e.g. DD/MM/YYYY.) The other option is US format (MM/DD/YYYY). For example the GB format is as follows:



Scroll down through these options by pressing the bottom circle. Once you have reached the format you require, press “Play” to store.

- Time and Date



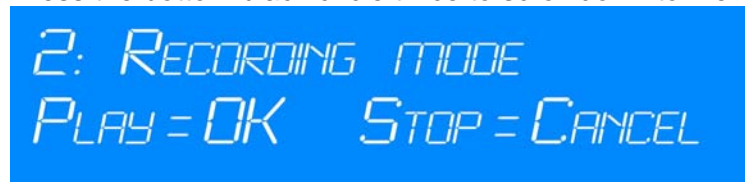
Press the “Fast Forward” or “Rewind” buttons to move to the next section of the time or date (i.e. from hours to minutes to seconds and from day to month to year). Press the black circles to change the digits up or down. Press “Play” to store the date selected.

2. To set the recording mode*

*** Note that the 73iftyblackbox is configured to record in time-restricted mode only.**

Standard (blue) unit and Pelicase unit.

- Press the top black circle to access the menu system.
- Press the bottom black circle twice to scroll down to Menu 2: Recording Mode



- Press the “Play” button to select this menu.
- You now have the following options:
 - 2a: Continuous
 - 2b: Time-restricted
- Continuous recording
This mode enables recording of one continuous file from the moment “Record” is pressed to

the moment “Stop” is pressed. The file name given is the date and time recording was started.

The advantage of this type of recording is its simplicity – only one file is created for each recording session.

The disadvantage is that if the job is a lengthy one, the file will become very large. This may create problems later (for example files will take a long time to upload, they might be too big to save on a CD or forward by email.) It would also mean that the whole file has to be searched to find a particular incident.

- Time-restricted recording

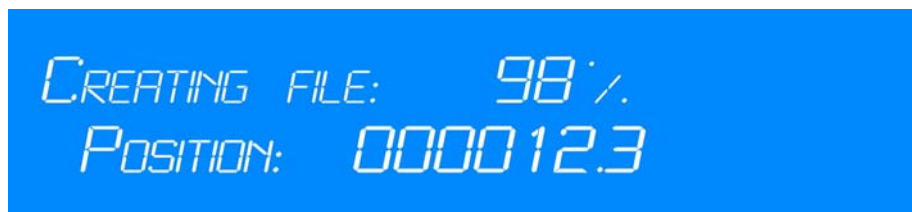
This mode means that for each recording session (starting when “Record” is pressed and ending when “Stop” is pressed) several individual files of 5 minutes long each are created. Each 5-minute segment is named according to the date/time at the start of this segment. This is intended to make searching for a particular incident easier, and makes storage and transfer of files more simple.

These files can later be stored or transferred separately – or if required, can be joined together as the customer requires.

Feature to prevent gaps in recording between the 5 minute segments

Note that unlike many other video recorders which have a time-restricted mode, the **73fifty** does not stop and restart recording at the end of each 5-minutes. Instead it records continuously over a longer time period, then cuts the file into 5-minute segments. The aim of this is to prevent any gap in recording, and to reduce any “jump” during playback, or if the files are later joined together.

- During recording in time-restricted mode, you may notice a message on the LCD screen saying “creating file” at the end of each 5-minute segment, telling you that this process is happening. The “Record” button will flash at the same time. Please be reassured that there will be no break in recording while this is happening.



Similarly when “Stop” is pressed when recording in time-restricted mode, there will be a few seconds while all the data is collected and stored correctly before any other operation is allowed. The message “creating file” will be displayed on the screen.

3. To set the recording bitrate

- Press the top black circle to access the menu system.
- Press the bottom black circle to scroll down to Menu 3: Recording bitrate



Press the “Play” button to select this menu.

- By scrolling up and down (through pressing the black circles) you can now select:
 - 3a: Low bitrate
 - 3b: Medium bitrate
 - 3c: High bitrate

Note: The chosen bitrate impacts directly upon the ability of the MPEG encoder to produce a detailed image when part or all of the scene as viewed by the camera is in motion. It has very little effect upon the quality of the image when the camera is directed at a stationary scene.

Therefore, the low bitrate setting can produce good results when the aim is to inspect/record a series of static scenes.

If the scene to be recorded contains some moving elements such as sediment, an outflow, etc. the medium setting would in this case give better results.

The high bitrate setting will give the optimum results when television-style high quality recording of continuously moving scenes is required.

4. Software Versions

When this option is selected, technical information relating to the software is displayed.

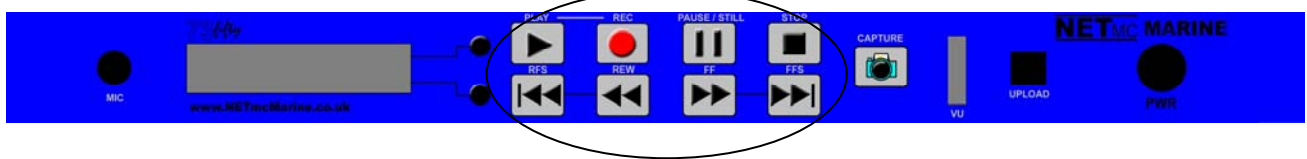
This information may be useful for our technical support for troubleshooting purposes.

Two types of information are shown:

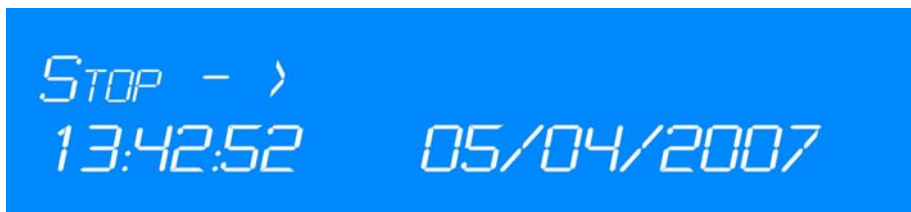
- 4a: Firmware revs.
- 4b: PVR OS & API rv.

5. Operating Instructions

The buttons on the front panel are designed to be simple “one-touch” buttons.



In idle mode, the following message is displayed on the screen:



The second line displays the current time and date.

Recording

To start recording press:



The small screen now displays “Record” and two small letters in superscript.




The first letter indicates whether you are recording in continuous (c) or time-restricted (t) mode. The second letter indicates whether you are recording at high (h), medium (m) or low (l) bitrate. In the above example the **73fifty** is recording in time-restricted mode, at high bitrate.

The digits to the right of these symbols show the file name. This name is **made up of the date and time when recording was started** (in time-restricted mode the name will be the time at the start of each 5-minute block.) In the above example, the current date is the 16th April 2007 and this current block of recording was started at 11:55 and 28 seconds.

The second line of the display shows the time in seconds since recording was started (or in time-restricted mode the time since the start of the latest 5 minute segment.) In the above example 12.5 seconds have lapsed since the start of the latest recording segment.

Recording can be paused by pressing: 

and resumed by pressing  ensuring that the same file name is kept.

To stop recording press: 

After stop has been pressed, the file name of the most recently recorded file (or segment) is displayed for a few seconds.

To monitor the quality of the recording:

Standard (blue)" unit and 73fifty Blackbox

When the unit is recording, the image shown on the monitor connected to the input sockets is a pass-through signal (i.e. is identical to the input signal.)

Quality control is enabled through the use of a monitor connected to the QC socket at the back of the **73fifty**. This shows a decoded view of the encoded mpeg file and will lay behind the live video by approximately 2 seconds. A "QC" logo is displayed in the top corner of the QC screen.

An example is shown here:



73fiftyPeli with built-in monitor

The QC screen is available through the Screen Menu system. The screen menu is selected by pressing the button next to the screen on/off button. Scroll through the menu options and select "Source Input" to choose between two input channels. SVBC 1 is the live video signal, SVBC 2 shows a QC view of the encoded files.

Notes on recording:

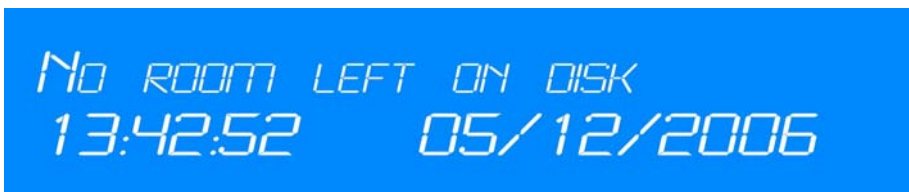
Disk full: Note that the disk can hold 40 – 110 hours of recording in continuous mode, up to 83 hours in time-restricted mode, depending on the recording bitrate you have selected. It is possible to record up to 999 files.

When the amount of free disk space starts to get low, the unit will start beeping at regular intervals. The top line of the display screen will alternate between the record display and a bar chart which gives an indication of how much space is left.



The more boxes that are chequered, the less space there is. Note that the unit is still recording at this stage. However, you should upload some files to a PC as soon as possible.

If this is not done, the disk space will eventually become full, at which point further recording will not be possible, and an alternating message will appear on your screen. “Recorder was stopped” and “No Room left on disk”



It will then be necessary to upload and delete some files from the **73fifty** before you can record more files.

The date and time shown are those when recording was stopped.

Accidental switch-off: Note that as a safety measure to prevent accidental loss of data, if the power switch of the **73fifty** is pressed **during recording**, recording will not actually stop. The unit will not switch off until “Stop” is pressed and the unit has ensured that the file has been saved correctly.

Recording to the 73fiftyBlackbox

Recording to the **73fiftyBlackbox** is typically triggered by an external connection – for example to a record switch on the control desk, an off-deck microswitch for the ROV / dive bell, or a trigger from the main system switchboard. When 12v is applied across the trigger input (NOT polarity sensitive) the recorder will start recording. When the 12v is removed, the recorder will stop recording.

Once recording is activated by the trigger, it can only be stopped via the external trigger – i.e. the front panel controls are disabled.

Recording to the **73fiftyBlackbox** is automatically set to be in time-restricted mode (see the Menu section on recording mode for more information.)

An example of the display screen during recording to the **Blackbox** is as follows:



RECORD > BL 160407115528
POSITION: 000012.5

The first line of display indicates that the unit is currently recording. The BL indicates that it is a **Blackbox** and is recording at low bitrate. The line of digits shows the current file name (the date and time the current recording segment began.)

The second line of display shows that 12.5 seconds have lapsed since recording to this file name began.

Once the disk space has been filled, the unit begins loop-recording. Every 300 seconds the oldest file(s) is removed to make space for the newly-recorded file. The messages “creating file” will appear on the screen and the record button will flash rapidly.



CREATING FILE: 98%
POSITION: 000012.3

Once the percentage has reached 100%, the message “releasing space” is displayed on the screen. The record button flashes slowly.



RELEASING SPACE . . .

Please note that recording continues whilst these messages are displayed.

It will not be possible to stop the **73iftyBlackbox** while the message “Releasing Space” is displayed. If you wish to stop recording at this time, please wait until this message has cleared before pressing Stop.

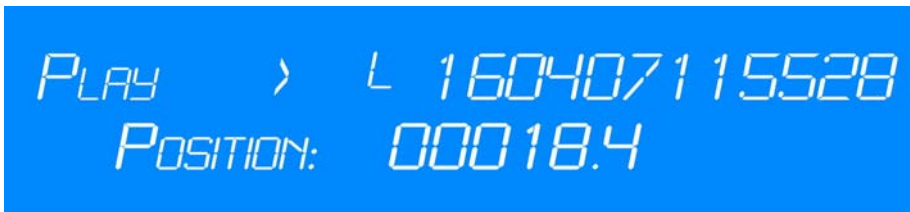
Playback

To start playback of the video press:



If a recording has just been made, pressing the play button will automatically play the file that has just been recorded.


The file-name of the file currently being played back will be shown on the LCD screen.



The small letter indicates whether the recording was made at high (h), medium (m) or low (l) bitrate. In the above example recording was made at low bitrate.

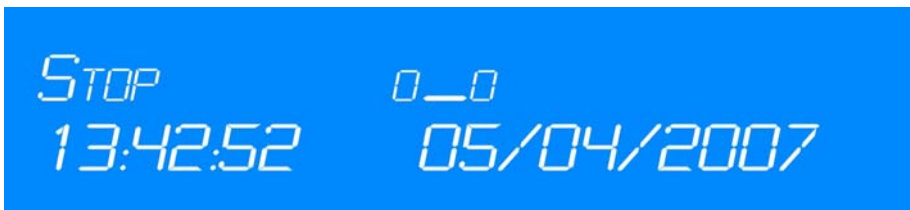
The file name of the file currently being played back is shown next to this symbol. The file name in the above example shows that file currently being played, was recorded on the 16th April 2007, starting at 11:55:28.

The second line displays how many seconds of the current file have been played.


To pause playback, with the picture still on the screen, press: 

Press “Play” again to start from where the file was paused.

The following screen shows that play has stopped because there are no more files on the disk:



Fast-forward and Rewind

The fast-forward and rewind buttons are illustrated here: 

Note: These buttons work during video playback only.

2x normal speed

Press and hold the fast-forward or rewind button to advance or go back through the video at double speed.

8x normal speed

After holding the button down for several seconds, the function “locks” (you will hear a beep) and you can let go of the key. You will now advance / rewind through the video at 8x normal speed until either “Stop” or “Play” is pressed.

Please note that the picture will appear slightly jumpy when rewinding at 8x speed. Unfortunately this is due to the nature of mpeg files and cannot be avoided.

Skip function

Pressing the following buttons allows you to “skip”



to the start of the next file



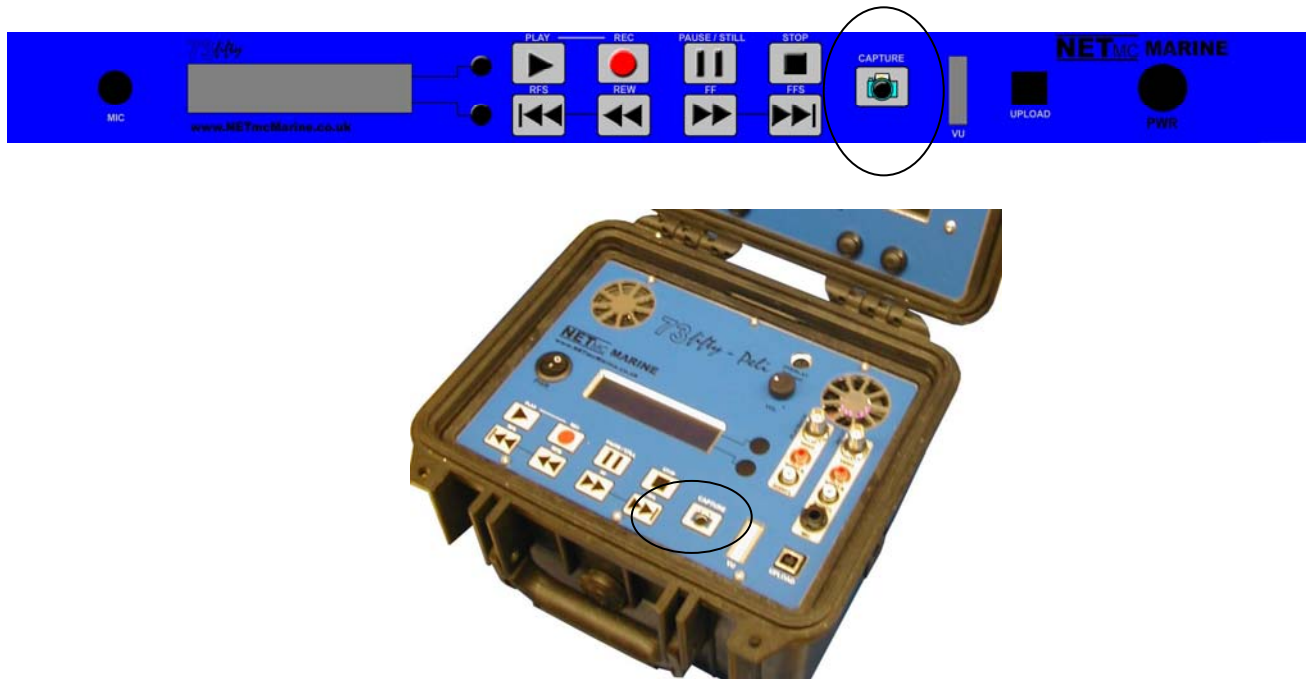
or back to the start of the previous file.


It is possible to keep track of which file is currently being shown, by watching the file-name shown on the small screen.

Note: these buttons work during playback, or during fast-forwarding / rewinding, or when “stop” has been pressed – to enable you to search for a particular date/time of a recording before playing back any file.

Stills grabs*

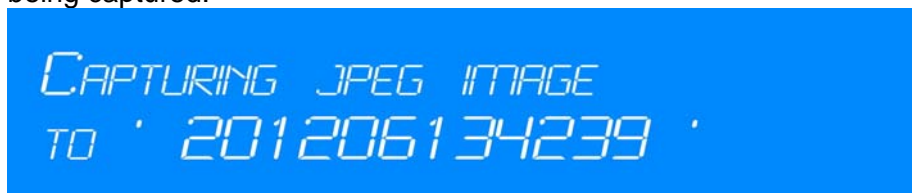
* Standard (blue) unit and *73fiftyPeli*.



Pressing the following button  during playback or recording enables you to grab a still image from the video. The still picture will be saved as a jpeg file, separately from the video recording.

A stills grab can also be taken when the machine has stopped recording.

The following message will be briefly displayed on the LCD screen indicating that a still image is being captured:



The second line of the display indicates the filename being given to the stills grab. Please note that the **filename** of the stills grab will be the date and time **when the grab was taken** (not when the file was originally recorded).

This file can later be uploaded via the USB socket and transferred to another PC.

6. Uploading Files to a PC

To upload files to a PC you will need a USB cable and the free **73fifty**upload software. This software is normally supplied on a CD with the **73fifty**. Alternatively it can be downloaded from our website www.netmcmarine.co.uk.

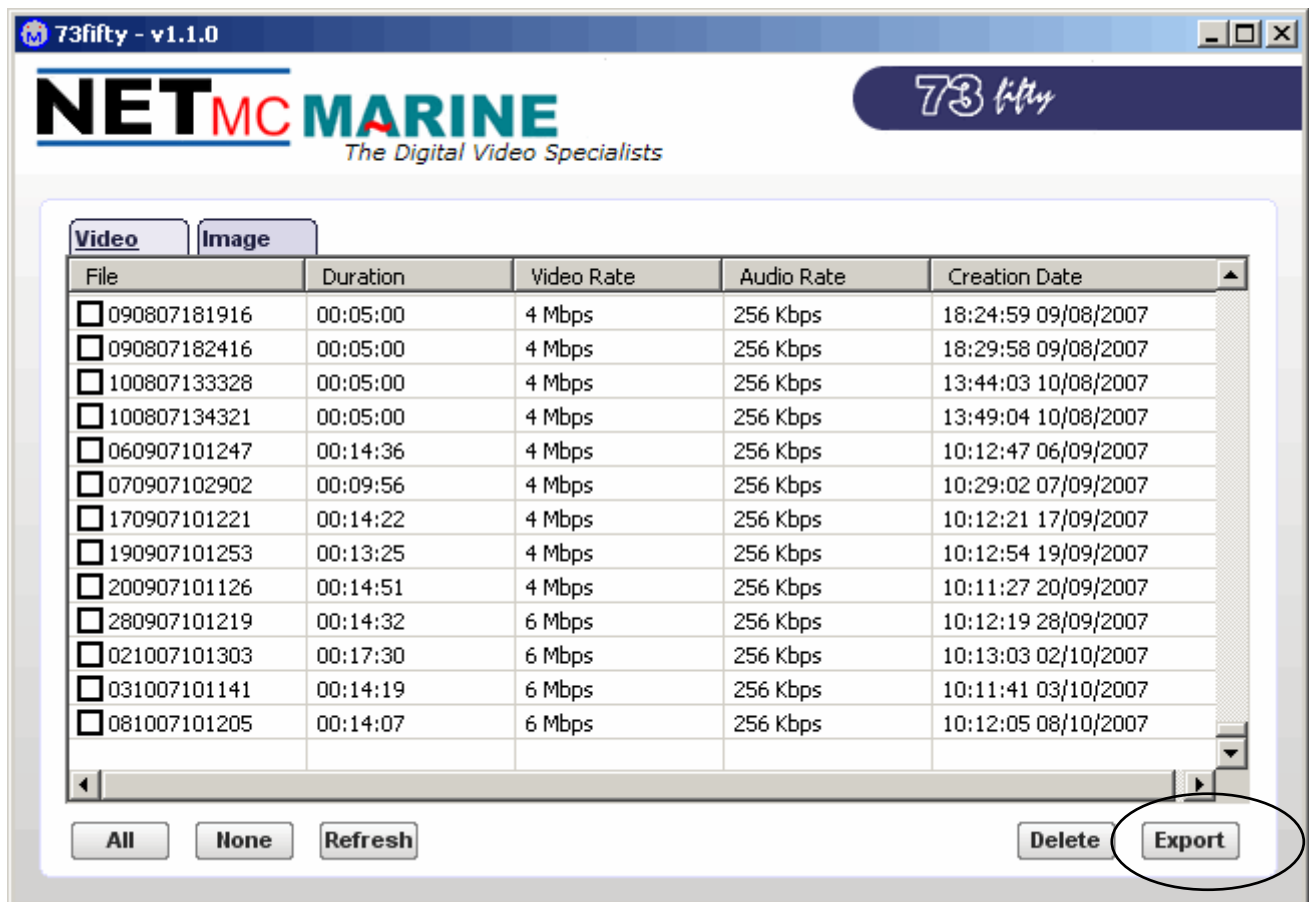
To install the software on your PC, simply insert the CD and follow the instructions on screen. Note: Recording can still continue when the upload software is in use.

Connect the USB cable between the socket on the front of the **73fifty** and your PC.



73
fifty
73fifty
v1.1.0.3.exe

Start the software on your PC by double-clicking on the **73fifty v1.1.0.3.exe** icon on your desktop, or selecting it under "Start, Programs". You will now see a screen like this:



Note:

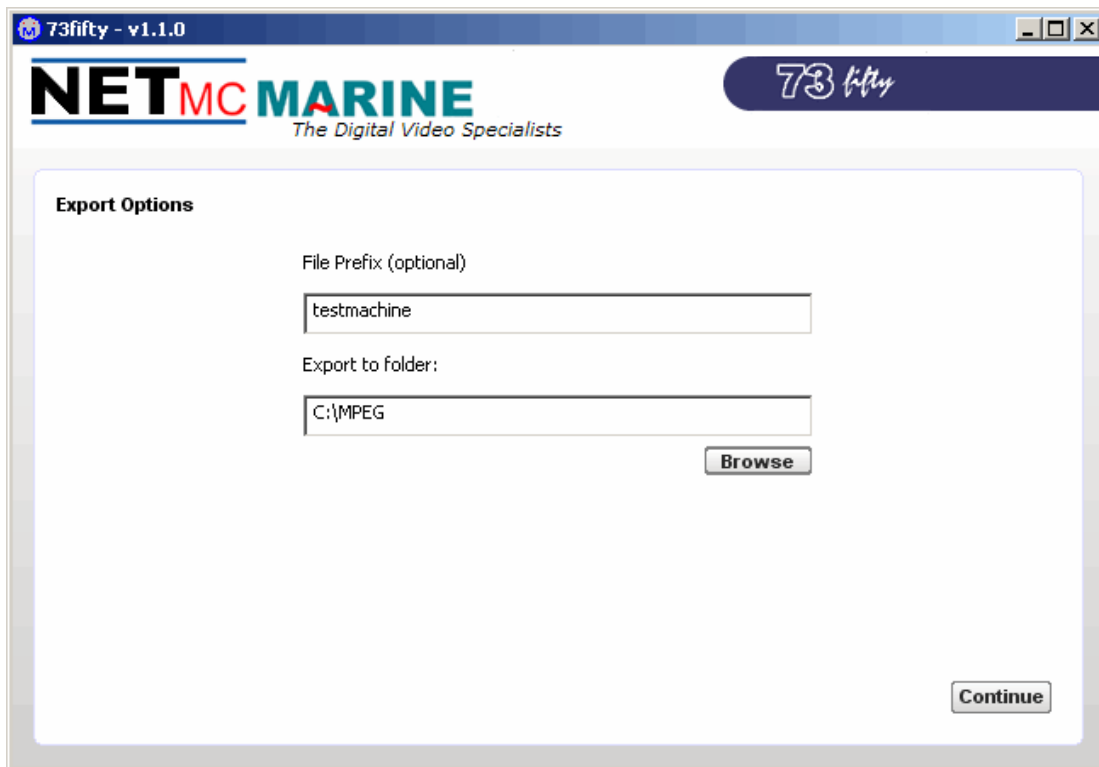
When the USB connection is made, the upload software only shows those files which had been created up to the point of plugging in the USB. To see files which have been recorded subsequently, you must refresh the software. This feature avoids confusion which may occur if the list were continually growing while uploading / deleting were taking place.

To do this either disconnect and then reconnect the USB cable, or press the **bottom** of the menu access circles once to refresh the software. The machine will emit a beeping sound 2 seconds later to indicate that this has happened. Depending on the speed of your computer it may take a moment or two for the refresh to take effect. Please therefore wait for 10 to 20 seconds before taking any further actions.

Follow these steps to upload your files:

1. Select "Video" or "Image" according to the type of file you wish to upload.
2. Select the files that you wish to upload, by ticking the relevant box(es). Several files can be uploaded at once, and there is also an option to select "All" files. Clicking "None" de-selects any files that had previously been selected.
3. Click on "Export" to start the process.

The following screen will then appear:



File Prefix

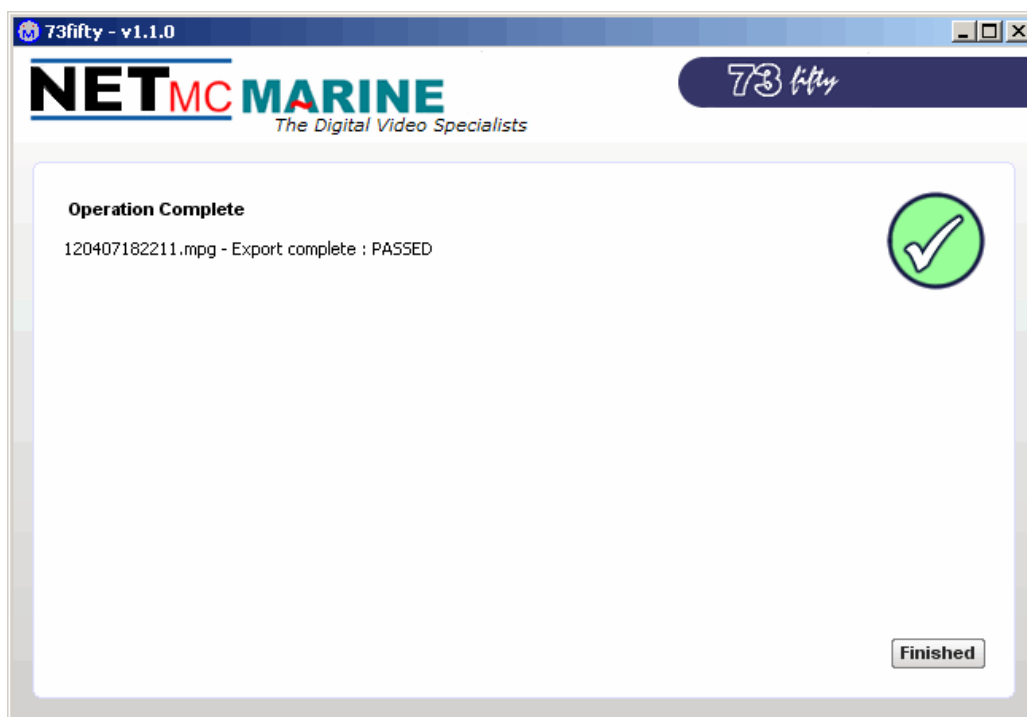
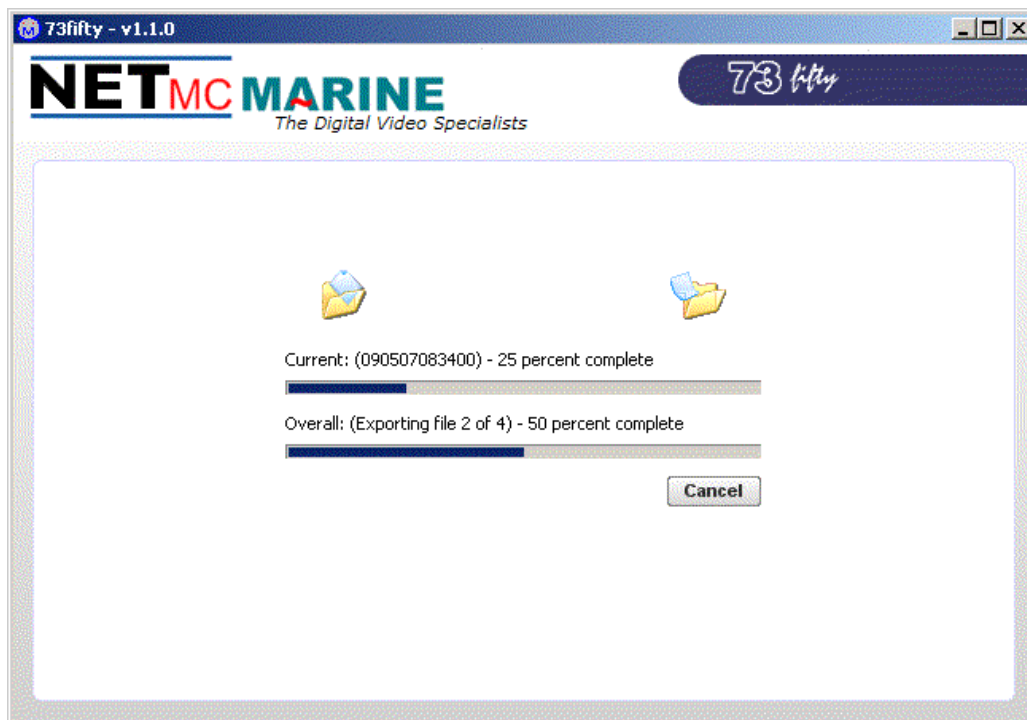
In order to make it easier to find files later, you can choose to prefix all the files to be uploaded with text of your choice. In this example the filenames will be prefixed by the text "testmachine" so the first file will be named "testmachine090807181916.mpg" etc.

Export to folder

Enter the folder in which the files should be saved or use the "Browse" button to search for the right place.

Click on "Continue"

The following screens indicate that the files have successfully been uploaded.



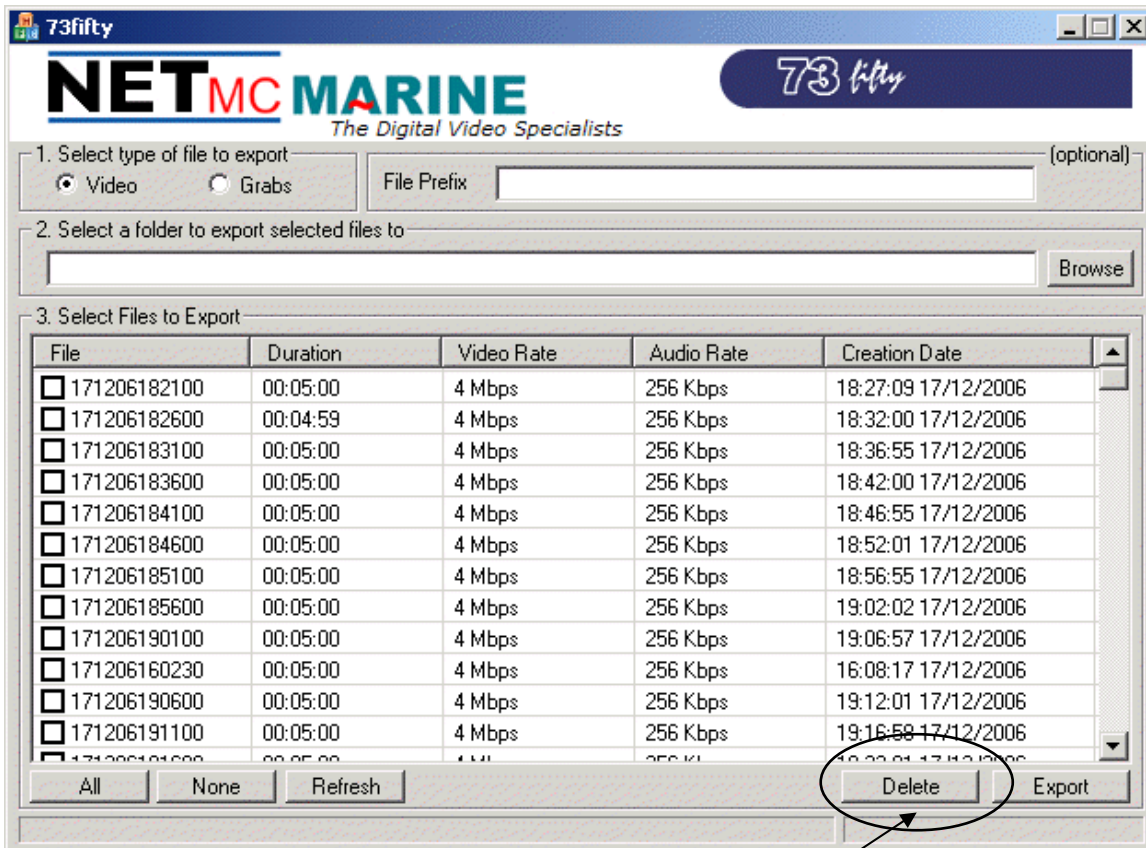
Refreshing the unit

If further recording has taken place after the USB cable is connected, press the **bottom** of the menu access circles once to refresh the software. The machine will emit a beeping sound 2 seconds later to indicate that this has happened. Again depending on the speed of your computer it may take a moment or two for the refresh to take effect. Please therefore wait for 10 to 20 seconds before taking any further actions.

Click on the "Refresh" button on the 73fiftyupload programme to refresh the display on the screen.

7. Deleting files from the 73fifty

To delete files from the **73fifty**, use the same **73fifty**upload software.



Select the files to be deleted and click on the “Delete” button.

The 73fifty must then be switched off and back on again in order to complete the delete process and free-up disk space.

It is good practice to upload files regularly and to delete all files, once they have transferred to your PC. This will ensure that your **73fifty** is always ready for recording.

8. Playback of files on your PC

All the files should be easy to play back on your PC. Simply double-click to start playback.

Video files are .mpg format and so will play using Windows Media Player.

Still Grabs are .jpg files and will be shown using, for example, Microsoft Office Picture Manager. These grabs can be easily pasted into a word document. (In Word, click on “Insert” “Picture” “From file”).

9. Troubleshooting

Q: *No data is being recorded*

A: Please make sure that the camera/audio input is running BEFORE the **73ifty** is switched on.

Q: *No sound is being recorded*

A: Please ensure that there is a moving display on the audio indicator. If not, there may be a problem with the microphone or the connection to the **73ifty**.

Q: *I have pressed the off-switch but the **73ifty** appears to be still recording*

A: This is a safety feature to prevent accidental loss of data. Please press "Stop" before switching off the unit. If you are using a **73iftyBlackbox** then note that the front panel keys are disabled when recording is triggered externally. Recording will only stop when the trigger is removed.

Q: *During recording, the record button suddenly flashes and the message "creating file" is displayed on the small LCD screen*



A: This is a feature of recording in time-restricted mode. The message means that more than 5 minutes of data has been recorded and a 5-minute segment is being created. Please be reassured that recording is still in progress. After a few seconds this message will disappear and the screen will say "Record" again.

Q: *The LCD screen shows the message "Releasing space"*



A: This is a feature of the loop-recording of the **73iftyBlackbox**. Once the disk space has been used up, the unit will start progressively removing the oldest files to make room for the new one. You will see this message every 300 seconds. Recording is not interrupted whilst this message is displayed, and it is not possible to stop recording until this task has been completed.

Q: *The LCD screen shows a series of blocks, some of which are filled, some chequered*



A: This message is a warning that disk space is becoming full. The more chequered boxes that are displayed, the less space there is less on the disk. When you see this message it will be necessary to upload some files (for example to a PC). If this is not done, eventually the disk will become full and recording will no longer be possible until some files are uploaded.

Q: The LCD screen shows the message “No room left on disk”



A: Press “Stop” to clear this message. It will be necessary to upload and delete some files from your 73fifty before further recording is possible. Note that the deletion process is not complete until the 73fifty has been power-cycled.

Q: The LCD screen shows the message “Can’t start recorder”



A: This message is displayed when “Record” is pressed but the disk space is already full. The “Can’t start recorder” message alternates with “No room left on disk”. Pressing “Stop” clears the message. It will be necessary to upload and delete some files from your **73fifty** before further recording is possible. Note that the deletion process is not complete until the 73fifty has been switched off and back on again.

Note: Whilst every effort has been made to ensure that the information contained in this manual is accurate, no liability can be accepted for errors and omissions.

Note:

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.

