The Rockbox Manual
for
Sansa e200

rockbox.org
June 18, 2008

Rockbox

http://www.rockbox.org/
Open Source Jukebox Firmware

Rockbox and this manual is the collaborative effort of the Rockbox team and its contributors. See the appendix for a complete list of contributors.

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Contents

1. Getting started

1.1. Welcome

This is the manual for Rockbox. Rockbox is an open source firmware replacement for a growing number of digital audio players. Rockbox aims to be considerably more functional and efficient than your device's stock firmware while remaining easy to use and customisable. Rockbox is written by users, for users. Not only is it free to use, it is also released under the GNU public license, which means that it will always remain free both to use and to change.

Rockbox has been in development since 2001, and receives new features, tweaks and fixes each day to provide you with the best possible experience on your digital audio player. A major goal of Rockbox is to be simple and easy to use, yet remain very customisable and configurable. We believe that you should never need to go through a series of menus for an action you perform frequently. We also believe that you should be able to configure almost anything about Rockbox you could want, pertaining to functionality. Another top priority of Rockbox is audio playback quality – Rockbox, for most models, includes a wider range of sound settings than that device's original firmware. A lot of work has been put into making Rockbox sound the best it can, and improvements are constantly being made. All models have access to a large number of plugins, including many games, applications, and graphical "demos". You can load different configurations quickly for different purposes (e.g. a large font for in your car, different sound settings for at home). Rockbox features a very wide range of languages, and all supported models also have the ability to talk to you – menus can be voiced and filenames spelled out or spoken.

1.2. Getting more help

This manual is intended to be a comprehensive introduction to the Rockbox firmware. There is, however, more help available. The Rockbox website at http://www.rockbox.org/ contains very extensive documentation and guides written by members of the Rockbox community and this should be your first port of call when looking for further help.

If you cannot find the information you are searching for on the Rockbox website there are a number of support channels you should have a look at. You can try the Rockbox forums located at http://forums.rockbox.org/. Another option are the mailing lists which can be found at http://www.rockbox.org/mail/. From that page you can subscribe to the lists and browse the archives. For searching the list archives simply use the search field that is located on the left side of the website. Also you can ask on IRC. The main channel

for Rockbox is `#rockbox` on irc://irc.freenode.net. A bunch of helpful developers and users are usually around. Just join and ask – if someone knows the answer you'll usually get an answer pretty quickly. More information including IRC logs can be found at http://www.rockbox.org/irc/. We also have a web client for joining the rockbox IRC channel so there is no need for you to install additional software to your computer.

If you think you found a bug please make sure it actually is a bug and is still present in the most recent version of rockbox. You should try to confirm that by using the above mentioned support channels first. After that you can submit that issue to our tracker. Refer to section D (page 143) for details on how to use the tracker.

1.3. Naming conventions and marks

We have some conventions especially on naming that are intended to be consistent throughout this manual.

Manufacturer and product names are formatted in accordance with the standard rules of English grammar, e.g. "Sansa playback is currently unsupported". Manufacturer and model names are proper nouns, and thus are written beginning with a capital letter.

This manual has some parts that are marked with icons on the margin to help you finding important parts or parts you could skip. The following icons are used:

Note: This indicates a note. A note starts always with the text "Note". For easier finding of notes we have put this an icon in the margin like here. Notes are used to mark information that could help you or indicate a possible "weirdness" in rockbox that would be explained.

Warning: This is a warning. In contrast to notes mentioned above, a warning should be taken more seriously. While ignoring notes will not cause any serious damage ignoring warnings *could* cause serious damage. If you are new to rockbox you should really read the warnings before doing anything that is warned about.

This icon marks a section that are intended especially for the blind and visually impaired. As they cannot read the manual in the same way sighted people can do we have added some additional descriptions. If you are not blind or visually impaired you most likely can completely skip these blocks. To make this easier, there is an icon shown in the margin on the right.

Links to the wiki are abbreviated by the name of the wiki page. Those names are still linked so you can simply follow them like any other link in this manual. If you want to access a wiki page manually go to http://www.rockbox.org/wiki/ and type the page name in the "Go" box at the top of the page. Links to wiki pages are also indicated by the symbol ☞in front of the page name.

2. Installation

Note: Rockbox doesn't function on the newer v2 models. They can be identified by checking the Sandisk firmware version number under Settings → Info. The v1 firmware is named 01.xx.xx, while the v2 firmware begins with 03.

2.1. Overview

There are two ways of installing Rockbox: automated and manual. While the manual way is older, more tested and proven to work correctly, the automated installation is based on a nice graphical application that does almost everything that is needed for you. It is still important that you have an overview of the installation process to be able to select the correct installation options.

There are three separate components, two of which need to be installed in order to run Rockbox.

The Sansa bootloader. The Sansa bootloader is the program that tells your player how to boot and load the remaining firmware from disk. It is also responsible for the disk mode on your player.

This bootloader is stored in special flash memory in your Sansa. It is already installed on your player, so it is never necessary to modify this in order to install Rockbox.

The Rockbox bootloader. The Rockbox bootloader is loaded from disk by the Sansa bootloader. It is responsible for loading the Rockbox firmware and for providing the dual boot function. It directly replaces the Sansa firmware on the player's disk.

The Rockbox firmware. Similar to the Sansa firmware, most of the Rockbox code is contained in a "build" that resides on your player's drive. This makes it easy to update Rockbox. The build consists of a directory called `.rockbox` containing all of Rockbox' files, which is located in the root of your player's drive.

Apart from the required parts there are some addons you might be interested in installing too.

Fonts. Rockbox can load custom fonts. The fonts itself are distributed as separate package and thus needs to be installed separately. The fonts are not required to run Rockbox itself but a lot of themes require the fonts package to be installed.

Themes. The view of Rockbox can be customized by themes. Depending on your taste you might want to install additional themes to change the look of Rockbox.

2.2. Prerequisites

Before installing Rockbox you should make sure you meet the prerequisites. Also you may need some tools for installation. In most cases these will be already available on your computer but if not you need to get some additional software.

USB connection. To transfer Rockbox to your player you need to connect it to your computer in MSC mode (rather than MTP mode).

Warning: From within the original firmware, go to SETTINGS → USB MODE and set it to MSC.

Now connect your player to the computer. To proceed you will need to know where to access the player. On Windows this means you need to figure out the drive letter associated with the device. On Linux you need to know the mount point of your player.

For manual installation and customization additional software is required.

ZIP utility. Rockbox is distributed as an archive using the `.zip` format. Thus you need a tool to handle that compressed format. Usually your computer should have a tool installed that can handle the `.zip` file format. Windows XP has built-in support for `.zip` files and presents them to you as directories unless you have installed a third party program that handles compressed files. For other operating systems this may vary. If the `.zip` file format is not recognised on your computer you can find a program to handle them at http://www.info-zip.org/ or http://sevenzip.sf.net/ which can be downloaded and used free of charge.

Text editor. As you will see in the following chapters, Rockbox is highly configurable. In addition to saving configurations within Rockbox, Rockbox also allows you to create customised configuration files. If you would like to edit custom configuration files on your computer, you will need a text editor like Windows' "Wordpad".

2.3. Installing Rockbox

2.3.1. Automated Installation

To automatically install Rockbox download the official installer and housekeeping tool ROCKBOX UTILITY. It allows you to

- Automatically install all needed components for using Rockbox ("Small Installation")
- Automatically install all suggested components ("Full Installation")

- Selectively install any of all available parts of Rockbox
- Install additional themes interactively
- Install voice files and generate talk clips
- Uninstall all components you installed using Rockbox Utility

Prebuilt binaries for Windows, Linux and MacOS X are available from http://download.rockbox.org/rbutil/. As Rockbox Utility is still under development more information including up-to-date download links can be found at ☞RockboxUtility.

Warning: Upon the first start of Rockbox Utility you *need* to set at least the correct player and mountpoint in the configuration dialog. Autodetection can detect most player types. If autodetection failed or was unable to detect the mountpoint make sure to enter the correct values. The mountpoint indicates the location of the player in your filesystem. On Windows, this is the drive letter the player gets assigned, on other systems this is a path in the filesystem.

Note: Rockbox Utility currently lacks some guiding messages. Please have a look at the manual installation instructions if you are stuck during installation.

2.3.2. Manual Installation

Choosing a Rockbox version

There are three different types of firmware binaries from the Rockbox website: Release version, current build and daily build. You need to decide which one you want to install and get the version for your player.

Release. There has not yet been a stable release for the Sansa e200. Until there is a stable release for Sansa e200, use a current build.

Current Build. The current build is built at each source code change to the Rockbox SVN repository, and represent the current state of Rockbox development. This means that the build could contain bugs, but is most of the time safe to use. You can download the current build from http://build.rockbox.org/.

Archived Build. In addition to the release version and the current build, there is also an archive of daily builds available for download. These are built once a day from the latest source code in the SVN repository. You can download archived builds from http://www.rockbox.org/daily.shtml.

Because current builds and daily builds are development versions which change frequently, they may behave differently than described in this manual, or they may introduce new (and maybe annoying) bugs. If you do not want to get undefined behaviour from your player you should really stick to the current stable release, if there is one for your player. If you want to help the project development, you can try development builds and help by reporting bugs. Just be aware that these are development builds that are highly functional, but not perfect!

Installing the firmware

1. Download your chosen version of Rockbox from the links in the previous section.
2. Connect your player to the computer via USB as described in the manual that came with your player.
3. Take the file that you downloaded above, and use the "Extract all" command of your unzip program to extract the files in the `.zip` file onto your player.

   Note that the entire contents of the `.zip` file should be extracted directly to the root of your player's drive. Do not try to create a separate directory on your player for the Rockbox files! The `.zip` file already contains the internal structure that Rockbox needs.

Note: If the contents of the `.zip` file are extracted correctly, you will have a directory called `/.rockbox`, which contains all the files needed by Rockbox, in the main directory of your player's drive. If you receive a "-1" error when you start Rockbox, you have not extracted the contents of the `.zip` file to the proper location.

Installing the fonts package

Rockbox has a fonts package that is available at http://www.rockbox.org/daily.shtml or from the *extras* link in the menu on the Rockbox website. While the current builds and daily builds change frequently, the fonts package rarely changes. Thus, the fonts package is not included in these builds. (The release version, on the other hand, does not change, so fonts are included when you download a release). When installing Rockbox for the first time, you should install the fonts package.

1. Download the fonts package from the link above.
2. Take the file that you downloaded above, and use the "Extract all" command of your unzip program to extract the files in the `.zip` file onto your player. As with the firmware installation, the entire contents of the fonts `.zip` should be extracted directly to the root of your player's drive. Do not try to create a separate directory on your player for the fonts! The `.zip` already contains the correct internal structure.

Installing the bootloader

NOTE: These instructions will not work on the "Rhapsody" version of the E200 series (also known as E200R). Please follow the instructions at http://www.rockbox.org/twiki/bin/view/Main/SansaE200RInstallation.

In order to make your e200 load and execute the Rockbox firmware you have just installed, you will need to install the Rockbox bootloader. Unless bugs are found in the bootloader code, or significant new feature are added, you will only have to perform this step once.

These steps use the sansapatcher tool. Source code is available in the Rockbox SVN repository (http://svn.rockbox.org/viewvc.cgi/trunk/rbutil/sansapatcher/).

Bootloader installation from Windows

1. Make sure you are logged into your computer as Administrator, or a user with Administrator privileges and connect your player.
2. Download sansapatcher.exe from http://download.rockbox.org/bootloader/sandisk-sansa/sansapatcher/win32/sansapatcher.exe and run it.
3. If all has gone well, you should see some information displayed about your e200 and a message asking you if you wish to install the Rockbox bootloader. Press i followed by ENTER, and sansapatcher will now install the bootloader. After a short time you should see the message "[INFO] Bootloader installed successfully." Press ENTER again to exit sansapatcher.
4. Disconnect your player in the usual way. The bootloader is now installed.

Bootloader installation from Mac OS X

1. Attach your player to your Mac and wait for its icon to appear in Finder.
2. Open up Disk Utility (in Applications → Utilities) and click on the name of your player (e.g. Sansa e280) in the list on the left pane. Then click on the "unmount" icon at the top.

   Warning: Do *not* click on the "eject" icon.
3. Download and open sansa.dmg from http://download.rockbox.org/bootloader/sandisk-sansa/sansapatcher/macosx/sansapatcher.dmg and then double-click on the sansapatcher icon inside.
4. If all has gone well, you should see some information displayed about your player and a message asking you if you wish to install the Rockbox bootloader. Press i followed by ENTER, and sansapatcher will now install the bootloader. After a short time you should see the message "[INFO] Bootloader installed successfully." Press ENTER again to exit sansapatcher and then quit the Terminal application.
5. **Warning:** If you received a "Resource busy" error from sansapatcher, then this means you did not complete step 2. Go back to Disk Utility, unmount your player and then run sansapatcher again.
6. Your player will now automatically reconnect itself to your Mac. Wait for it to connect, and then eject and unplug it in the normal way.

Bootloader installation from Linux

1. Download sansapatcher from http://download.rockbox.org/bootloader/sandisk-sansa/sansapatcher/linux32x86/sansapatcher (32-bit x86 binary) or http://download.rockbox.org/bootloader/sandisk-sansa/sansapatcher/linux64amd64/sansapatcher (64-bit amd64 binary). You can save this anywhere you wish, but the next steps will assume you have saved it in your home directory.

2. Attach your player to your computer.

3. Open up a terminal window and type the following commands:

   CODE
   ```
   cd $HOME
   chmod +x sansapatcher
   ./sansapatcher
   ```

   Warning: You may need to be the root user in order for sansapatcher to have sufficient permission to perform raw disk access to your player.

4. If all has gone well, you should see some information displayed about your e200 and a message asking you if you wish to install the Rockbox bootloader. Press i followed by ENTER, and sansapatcher will now install the bootloader. After a short time you should see the message "[INFO] Bootloader installed successfully." Press ENTER again to exit sansapatcher.

5. Disconnect your player in the usual way. The bootloader is now installed.

2.3.3. Enabling Speech Support (optional)

If you wish to use speech support you will also need a voice file, english ones are available from http://www.rockbox.org/daily.shtml. Download the "voice" package for your player and unzip it directly to the root of your player. You should now find an `english.voice` in the `/.rockbox/langs` directory on your player. Voice menus are enabled by default and will come into effect after a reboot. See section 7.9 (page 61) for details on voice settings.

2.4. Running Rockbox

Remove your player from the computer's USB port. Your e200 will automatically reboot and Rockbox should load. When you see the Rockbox splash screen, Rockbox is loaded and ready for use.

2.5. Updating Rockbox

Updating Rockbox is easy even if you do not use the Rockbox Utility. Download a Rockbox build. (The latest release of the Rockbox software will always be available from http://www.rockbox.org/download/). Unzip the build to the root directory of your player like you did in the installation step before. If your unzip program asks you whether to overwrite files, choose the "Yes to all" option. The new build will be installed over your current build.

Note: If you use Rockbox Utility be aware that it can not detect manually installed components.

2.6. Uninstalling Rockbox

2.6.1. Automatic Uninstallation

You can uninstall Rockbox automatically by using Rockbox Utility. If you installed Rockbox manually you can still use Rockbox Utility for uninstallation but will not be able to do this selectively.

2.6.2. Manual Uninstallation

Note: The Rockbox bootloader can start the original firmware on your player. (See section 3.1.3 (page 19) for more information.)

If you would like to go back to using the original Sansa software, connect the player to your computer, and follow the instructions to install the bootloader, but when prompted by sansapatcher, enter 'u' for uninstall, instead of 'i' for install. As in the installation, it may be necessary to first put your device into UMS mode.

If you wish to clean up your disk, you may also wish to delete the `.rockbox` directory and its contents. Turn the Sansa off. Turn the player back on and the original Sansa software will load.

3. Quick Start

3.1. Basic overview

3.1.1. The player's controls

Throughout this manual, the buttons on the player are labelled according to the picture above. When a table of button actions says "Long" before the button it means that you should make a long press on that button, in other words, press it for approximately 1 second. In detail the buttons are described in the following paragraph.

Additional information is available for blind users on the Rockbox website at ☞BlindFAQ.

Hold the player with the turning wheel at the front and bottom. On the bottom left of the front of the player is a raised round button, the **Power** button. Above and to the left of this, on the outside of the turning wheel are four buttons. These are the **Play**, **Submenu**, **Left** and **Right** buttons. Inside the wheel is the **Select** button. Turning the wheel to the right activates the **Scroll Forward** function, and to the left, the **Scroll Backward** function.

On the right of the unit is a slot for inserting flash cards. On the bottom is the connector for the USB cable. On the left is the **Rec** button, and on the top, there is the headphone socket to the right, and the **Hold** switch. Moving this switch to the right activates hold mode in which none of the other buttons have any effect. Just to the left of the **Hold** switch is a small hole which contains the internal microphone.

3.1.2. Turning the player on and off

To turn on and off your Rockbox enabled player use the following keys:

Key	Action
Power	Start Rockbox
Long **Power**	Shutdown Rockbox

On shutdown, Rockbox automatically saves its settings.

3.1.3. Starting the original firmware

Rockbox has a dual-boot feature. To boot into the original firmware, press and hold the **Left** button while turning on the player.

3.1.4. Putting music on your player

As the player is connected to the computer as a UMS (USB Drive) device, music files are put on the player via any standard file transfer method that you would use to transfer files between drives e.g., Drag 'n' Drop from your hard drive. The default directory structure that is assumed by some parts of Rockbox (Album Art searching, WPS missing tag fallback) is: /ArtistName/AlbumName/*.mp3

3.1.5. The first contact

After you have first started the player you'll be presented by the MAIN MENU. From this menu you can reach every function of Rockbox, for more information (see section 5.1 (page 37)). To browse the files on you player select FILES (see section 4.1 (page 22)), and to browse in a view that is based on the meta-data[1] of your audio files, select DATABASE (see section 4.2 (page 26)).

3.1.6. Basic controls

When browsing files and moving through menus you usually get a list view presented. The navigation in these lists are usually the same and should be pretty intuitive. In the tree view use **Scroll Forward** and **Scroll Backward** to move around the selection. Use **Select** or **Right** to select an item. When browsing the file system selecting an audio file plays it. The view switches to the "While playing screen", usually abbreviated as "WPS" (see section 4.3 (page 28). The dynamic playlist gets replaced with the contents of the current directory. This way you can easily treat directories as playlists. The created dynamic playlist can be extended or modified while playing. This is also known as

[1] ID3 Tags, Vorbis comments, etc.

"on-the-fly playlist". To go back to the FILE BROWSER stop the playback with the **Power** button or return to the file browser while keeping playback running using **Select**. In list views you can go back one step with **Left**.

3.1.7. Basic concepts

Playlists

Rockbox is playlist oriented. This means that every time you play an audio file, a so-called "dynamic playlist" is generated, unless you play a saved playlist. You can modify the dynamic playlist while playing and also save it to a file. If you do not want to use playlists you can simply play your files directory based. Playlists are covered in detail in section 4.4 (page 32).

Menu

From the menu you can customise Rockbox. Rockbox itself is very customisable. Also there are some special menus for quick access to frequently used functions.

Context Menu

Some views, especially the file browser and the WPS have a context menu. From the file browser this can be accessed with Long **Select**. The contents of the context menu vary, depending on the situation it gets called. The context menu itself presents you with some operations you can perform with the currently highlighted file. In the file browser this is the file (or directory) that is highlighted by the cursor. From the WPS this is the currently playing file. Also there are some actions that do not apply to the current file but refer to the screen from which the context menu gets called. One example is the playback menu, which can be called using the context menu from within the WPS.

3.2. Customising Rockbox

Rockbox' User Interface can be customised using "Themes". Themes usually only affect the visual appearance, but an advanced user can create a theme that also changes various other settings like file view, LCD settings and all other settings that can be modified using `.cfg` files. This topic is discussed in more detail in section 11.3 (page 128). The Rockbox distribution comes with some themes that should look nice on your player.

Note: Some of the themes shipped with Rockbox need additional fonts from the fonts package, so make sure you installed them. Also, if you downloaded additional themes from the Internet make sure you have the needed fonts installed as otherwise the theme may get displayed garbled.

3.3. Menu overview

include an overview of the menu structure here

3.4. Charging

The player can be powered over USB without connecting to your computer by holding **Select** while plugging in. This allows you to continue using the player normally.

4. Browsing and playing

4.1. File Browser

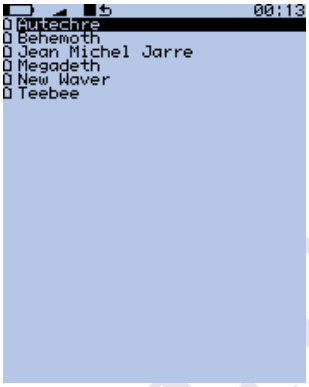

Figure 4.1.: The file browser

Rockbox lets you browse your music in either of two ways. The FILE BROWSER lets you navigate through the files and directories on your player, entering directories and executing the default action on each file. To help differentiate files, each file format is displayed with an icon.

The DATABASE BROWSER, on the other hand, allows you to navigate through the music on your player using categories like album, artist, genre, etc.

You can select whether to browse using the FILE BROWSER or the DATABASE BROWSER by selecting either FILES or DATABASE in the MAIN MENU. If you choose the FILE BROWSER, the SHOW FILES setting lets you select what types of files you wish to view. See section 7.3 (page 55) for more information on the SHOW FILES setting.

Note: The FILE BROWSER allows you to manipulate your files in ways that are not available within the DATABASE BROWSER. Read more about DATABASE in section 4.2 (page 26). The remainder of this section deals with the FILE BROWSER.

4.1.1. File Browser Controls

Key	Action
Scroll Backward/Scroll Forward	Go to previous/next item in list. If you are on the first/last entry, the cursor will wrap to the last/first entry.
Left	Go to the parent directory.
Select or **Right**	Executes the default action on the selected file or enters a directory.
Play	If there is an audio file playing, returns to the WHILE PLAYING SCREEN (WPS) without stopping playback.
Power	Stops audio playback.
Long **Select**	Enter the CONTEXT MENU
Submenu	Enter the MAIN MENU
Long **Rec**	Switches to the Recording screen

4.1.2. Context Menu

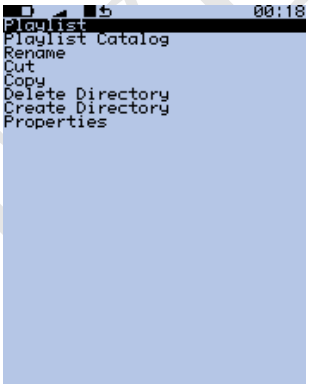

Figure 4.2.: The Context Menu

The CONTEXT MENU allows you to perform certain operations on files or directories. To access the CONTEXT MENU, position the selector over a file or directory and access the context menu with Long **Select**.

Note: The CONTEXT MENU is a context sensitive menu. If the CONTEXT MENU is invoked on a file, it will display options available for files. If the CONTEXT MENU is invoked on a directory, it will display options for directories.

The CONTEXT MENU contains the following options (unless otherwise noted, each option pertains both to files and directories):

Playlist. Enters the PLAYLIST SUBMENU (see section 4.4.3 (page 34)).

Playlist Catalog. Enters the PLAYLIST CATALOG SUBMENU (see section 4.4.2 (page 33)).

Rename. This function lets the user modify the name of a file or directory.

Cut. Copies the name of the currently selected file or directory to the clipboard and marks it to be 'cut'.

Copy. Copies the name of the currently selected file or directory to the clipboard and marks it to be 'copied'.

Paste. Only visible if a file or directory name is on the clipboard. When selected it will move or copy the clipboard to the current directory.

Delete. Deletes the currently selected file. This option applies only to files, and not to directories. Rockbox will ask for confirmation before deleting a file. Press **Select** to confirm deletion or any other key to cancel.

Delete Directory. Deletes the currently selected directory and all of the files and subdirectories it may contain. Deleted directories cannot be recovered. Use this feature with caution!

Open with. Runs a viewer plugin on the file. Normally, when a file is selected in Rockbox, Rockbox automatically detects the file type and runs the appropriate plugin. The OPEN WITH function can be used to override the default action and select a viewer by hand. For example, this function can be used to view a text file even if the file has a non-standard extension (i.e., the file has an extension of something other than `.txt`). See section 10.3 (page 104) for more details on viewers.

Create Directory. Create a new directory in the current directory on the disk.

Properties. Shows properties such as size and the time and date of the last modification for the selected file. If used on a directory, the number of files and subdirectories will be shown, as well as the total size.

Set As Recording Directory. Save recordings in the selected directory.

Add to Shortcuts. Adds a link to the selected item in the `shortcuts.link` file. If the file does not already exist it will be created in the root directory. Note that if you create a shortcut to a file, Rockbox will not open it upon selecting, but simply bring you to it's location in the FILE BROWSER.

4.1.3. Virtual Keyboard

Figure 4.3.: The virtual keyboard

This is the virtual keyboard that is used when entering text in Rockbox, for example when renaming a file or creating a new directory. The virtual keyboard can be easily changed by making a text file with the required layout. More information on how to achieve this can be found on the Rockbox website at ☞LoadableKeyboardLayouts.

Key	Action
Left / **Right** / **Scroll Backward** / **Scroll Forward**	Move about the virtual keyboard (moves the solid cursor)
Rec + **Left** or **Rec** + **Right**	Move the line cursor within the text line
Select	Inserts the selected keyboard letter at the current cursor position
Power	Exits the virtual keyboard without saving any changes
Play	Exits the virtual keyboard and saves any changes
Submenu	Deletes the character before the line cursor

4.2. Database

4.2.1. Introduction

This chapter describes the Rockbox music database system. Using the information contained in the tags (ID3v1, ID3v2, Vorbis Comments, Apev2, etc.) in your audio files, Rockbox builds and maintains a database of the music files on your player and allows you to browse them by Artist, Album and Genre.

4.2.2. Initializing the database

The first time you use the database, Rockbox will scan your disk for audio files. This can take quite a while depending on the number of files on your player. This scan happens in the background, so you can choose to return to the Main Menu and continue to listen to music. If you shut down your player, the scan will continue next time you turn it on. After the scan is finished you may be prompted to restart your player before you can use the database.

Ignoring directories during database initialization

You may have directories on your player whose contents should not be added to the database. Placing a file named `database.ignore` in a directory will exclude the files in that directory and all its subdirectories from scanning their tags and adding them to the database. This will speed up the database initialization.

If a subdirectory of an 'ignored' directory should still be scanned, place a file named `database.unignore` in it. The files in that directory and its subdirectories will be scanned and added to the database.

4.2.3. The Database Menu

Load To Ram. The database can either be kept on disk (to save memory), or loaded into RAM (for fast browsing). Setting this to YES loads the database to RAM, allowing faster browsing and searching. Setting this option to NO keeps the database on the disk, meaning slower browsing but it does not use extra RAM and saves some battery on boot up.

Note: If you browse your music frequently using the database, you should load to RAM, as this will reduce the overall battery consumption because the disk will not need to spin on each search.

Auto Update. If AUTO UPDATE is set to ON, each time the player boots, the database will automatically be updated.

Note: The AUTO UPDATE will only check for deleted files if the DIRECTORY CACHE (SETTINGS → GENERAL SETTINGS → SYSTEM → DISK → DIRECTORY CACHE) is enabled. UPDATE NOW includes that check whether dircache has been enabled or not.

Initialize Now. You can force Rockbox to rescan your disk for tagged files by using the INITIALIZE NOW function in the DATABASE MENU.

Warning: INITIALIZE NOW removes all database files (removing runtimedb data also) and rebuilds the database from scratch.

Update Now. UPDATE NOW causes the database to detect new and deleted files

Note: Unlike the AUTO UPDATE function, UPDATE NOW will update the database regardless of whether the DIRECTORY CACHE is enabled. Thus, an update using UPDATE NOW may take a long time.

Unlike INITIALIZE NOW, the UPDATE NOW function does not remove runtime database information.

Gather Runtime Data. When enabled, rockbox will record how often and how long a track is being played, when it was last played and its rating. This information can be displayed in the WPS and is used in the database browser to, for example, show the most played, unplayed and most recently played tracks.

Export Modifications. This allows for the runtime data to be exported to the file `/.rockbox/database_changelog.txt`, which backs up the runtime data in ASCII format. This is needed when database structures change, because new code cannot read old database code. But, all modifications exported to ASCII format should be readable by all database versions.

Import Modifications. Allows the `/.rockbox/database_changelog.txt` backup to be conveniently loaded into the database. If AUTO UPDATE is enabled this is performed automatically when the database is initialized.

4.2.4. Using the database

Once the database has been initialized, you can browse your music by Artist, Album, Genre and Song Name. To use the database, go to the MAIN MENU and select DATABASE.

Note: You may need to increase the value of the MAX FILES IN DIR BROWSER setting (SETTINGS → GENERAL SETTINGS → SYSTEM → LIMITS) in order to view long lists of tracks in the ID3 database browser.

There is no option to turn off database completely. If you do not want to use it just do not do the initial build of the database and do not load it to RAM.

4.2.5. Creating your own database navigation criteria

The list of possible navigation criteria can be expanded or even completely replaced by using a custom database navigation file. More information on how to achieve this can be found on the Rockbox website at ☞DataBase

Tag	Type	Origin
filename	string	system
album	string	id tag
albumartist	string	id tag
artist	string	id tag
comment	string	id tag
composer	string	id tag
genre	string	id tag
grouping	string	id tag
title	string	id tag
bitrate	numeric	id tag
discnum	numeric	id tag
year	numeric	id tag
tracknum	numeric	id tag/filename
autoscore	numeric	runtime db
lastplayed	numeric	runtime db
playcount	numeric	runtime db
Pm (play time - min)	numeric	runtime db
Ps (play time - sec)	numeric	runtime db
rating	numeric	runtime db
commitid	numeric	system
entryage	numeric	system
length	numeric	system
Lm (track len - min)	numeric	system
Ls (track len - sec)	numeric	system

4.3. While Playing Screen

The While Playing Screen (WPS) displays various pieces of information about the currently playing audio file. The appearance of the WPS can be configured using WPS configuration files. The items shown depend on your configuration – all item can be turned on or off independently. Refer to section B (page 132) for details on how to change the display of the WPS.

- Status bar: The Status bar shows Battery level, charger status, volume, play mode, repeat mode, shuffle mode and clock. In contrast to all other items, the status bar is always at the top of the screen.
- (Scrolling) path and filename of the current song.
- The ID3 track name.

- The ID3 album name.
- The ID3 artist name.
- Bit rate. VBR files display average bitrate and "(avg)"
- Elapsed and total time.
- A slidebar progress meter representing where in the song you are.
- Peak meter.

See section 11.2 (page 125) for details of customising your WPS (While Playing Screen).

4.3.1. WPS Key Controls

Key	Action
Scroll Backward / **Scroll Forward**	Volume up/down.
Left	Go to beginning of track, or if pressed while in the first seconds of a track, go to previous track.
Long **Left**	Rewind in track.
Right	Go to next track.
Long **Right**	Fast forward in track.
Play	Toggle play/pause.
Power	Stop playback.
Select	Return to the FILE BROWSER.
Long **Select**	Enter WPS CONTEXT MENU.
Submenu	Enter MAIN MENU.
Long **Submenu**	Enter QUICK SCREEN.
Power + **Right**	Skip to the next directory.
Power + **Left**	Skip to the previous directory.
Long **Rec**	Switches to the Recording screen

4.3.2. Peak Meter

The peak meter can be displayed on the While Playing Screen and consists of several indicators. For a picture of the peak meter, please see the While Recording Screen in section 5.8.1 (page 40).

The bar: This is the wide horizontal bar. It represents the current volume value.

The peak indicator: This is a little vertical line at the right end of the bar. It indicates the peak volume value that occurred recently.

The clip indicator: This is a little black block that is displayed at the very right of the scale when an overflow occurs. It usually does not show up during normal playback unless you play an audio file that is distorted heavily. If you encounter clipping while recording, your recording will sound distorted. You should lower the gain.

Note: Note that the clip detection is not very precise. Clipping might occur without being indicated.

The scale: Between the indicators of the right and left channel there are little dots. These dots represent important volume values. In linear mode each dot is a 10% mark. In dbfs mode the dots represent the following values (from right to left): 0db, -3db, -6db, -9db, -12db, -18db, -24db, -30db, -40db, -50db, -60db.

4.3.3. The WPS Context Menu

Like the context menu for the FILE BROWSER, the WPS CONTEXT MENU allows you quick access to some often used functions:

Playlist

The PLAYLIST submenu allows you to view, save, search and reshuffle the current playlist. To change settings for the PLAYLIST VIEWER press **Submenu** while viewing the playlist to bring up the PLAYLIST VIEWER MENU.

Playlist Viewer Menu

Show Icons. This toggles display of the icon for the currently selected playlist entry and the icon for moving a playlist entry

Show Indicies. This toggles display of the line numbering for the playlist

Track Display. This toggles between filename only and full path for playlist entries

Save Current Playlist. Allows the current playlist to be saved as a `.m3u` playlist file

Playlist catalog

View catalog. This lists all playlists that are part of the Playlist catalog. You can load a new playlist directly from this list.

Add to playlist. Adds the currently playing file to a playlist. Select the playlist you want the file to be added to and it will get appended to that playlist.

Add to new playlist. Similar to the previous entry this will add the currently playing track to a playlist. You need to enter a name for the new playlist first.

Sound Settings

This is a shortcut to the SOUND SETTINGS MENU, where you can configure volume, bass, treble, and other settings affecting the sound of your music. See section 6 (page 45) for more information.

Playback Settings

This is a shortcut to the PLAYBACK SETTINGS MENU, where you can configure shuffle, repeat, party mode, study mode and other settings affecting the playback of your music.

Rating

The menu entry is only shown if GATHER RUNTIME INFORMATION is enabled. It allows the asignment of a personal rating value (0 – 10) to a track which can be displayed in the WPS and used in the Database browser. Press **Right** to increment the value. The value wraps at 10.

Bookmarks

This allows you to create a bookmark in the currently-playing track.

Show Track Info

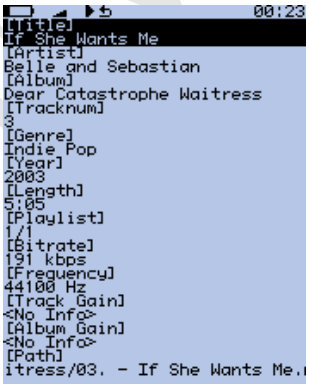

Figure 4.4.: The track info viewer

This screen is accessible from the WPS screen, and provides a detailed view of all the identity information about the current track. This info is known as meta data and is stored in audio file formats to keep information on artist, album etc. To access this screen,

Open With...

This OPEN WITH function is the same as the OPEN WITH function in the file browser's CONTEXT MENU.

Delete

Delete the currently playing file.

Pitch

The PITCH SCREEN allows you to change the pitch and (at the same time) the playback speed of your player. The pitch value can be adjusted between 50% and 200%. 50% means half the normal playback speed and the pitch that is an octave lower than the normal pitch. 200% means double playback speed and the pitch that is an octave higher than the normal pitch. It is not possible to change the pitch without changing the playback speed and vice versa. Changing the pitch can be done in two modes: procentual and semitone. Initially (after the player is switched on), procentual mode is active.

Key	Action
Rec	Toggle pitch changing mode
Scroll Backward / **Scroll Forward**	Increase / Decrease pitch by 0.1% (in procentual mode) or a semitone (in semitone mode)
Long **Scroll Backward** / Long **Scroll Forward**	Increase / Decrease pitch by 1% (in procentual mode) or a semitone (in semitone mode)
Right / **Left**	Temporarily increase / decrease pitch by 2.0%
Select	Reset pitch to 100%
Power or **Play**	Leave the Pitch Screen

4.4. Working with Playlists

This section is currently in a half written state, with possible errors and a lot of stuff missing. Please help us fix this chapter by submitting additions/corrections to the tracker

4.4.1. Playlist terminology

Some common terms that are used in Rockbox when referring to playlists:

Directory. A playlist! One of the keys to getting the most out of Rockbox is understanding that Rockbox *always* considers the song that it is playing to be part of a playlist, and in some situations, Rockbox will create a playlist automatically. For example, if you are playing the contents of a directory, Rockbox will automatically create a playlist containing all songs in it. This means that just about anything that is described in this chapter with respect to playlists also applies to directories.

Dynamic playlist. A dynamic playlist is a playlist that is created "On the fly." Any time you insert or queue tracks using the PLAYLIST SUBMENU (see section 4.4.3 (page 34)), you are creating (or adding to) a dynamic playlist.

Insert. In Rockbox, to INSERT an item into a playlist means putting an item into a playlist and leaving it there, even after it is played. As you will see later in this chapter, Rockbox can INSERT into a playlist in several places.

Queue. In Rockbox, to QUEUE a song means to put the song into a playlist and then to remove the song from the playlist once it has been played. The only difference between INSERT and QUEUE is that the QUEUE option removes the song from the playlist once it has been played, and the INSERT option does not.

4.4.2. Creating playlists

Rockbox can create playlists in four different ways.

By selecting ("playing") a song from the File Browser

Whenever a song is selected from the FILE BROWSER with **Select** or **Right**, Rockbox will automatically create a playlist containing all of the songs in that directory and start playback with the selected song.
Note: If you already have created a dynamic playlist, playing a new song will *erase* the current dynamic playlist and create a new one. If you want to add a song to the current playlist rather than erasing the current playlist, see the section below on how to add music to a playlist.

By using Insert and Queue functions

If playback is stopped, the INSERT and QUEUE functions can be used as described in 4.4.3 to create a new playlist instead of adding to an existing one. This will *erase* any dynamic playlist.

By using the Playlist catalog

The PLAYLIST CATALOG makes it possible to modify and create playlists that are not currently playing. To do this select PLAYLIST CATALOG in the CONTEXT MENU. There you will have two choices, ADD TO PLAYLIST adds the selected track or directory to

an existing playlist and ADD TO A NEW PLAYLIST creates a new playlist containing the selected track or directory.

Note: All playlists in the PLAYLIST CATALOG are stored by default in the `/Playlists` directory in the root of your player's harddisk and playlists stored in other locations are not included in the catalog. It is however possible to move existing playlists there (see section 4.1.2 (page 23)).

By using the Main Menu

To create a playlist containing all music on your player, you can use the CREATE PLAYLIST command in the PLAYLIST OPTIONS menu found in the MAIN MENU. The created playlist will be named `root.m3u` and saved in the root of your player's harddisk.

4.4.3. Adding music to playlists

Adding music to a dynamic playlist

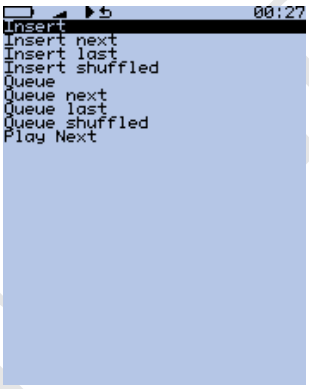

Figure 4.5.: The Playlist Submenu

The PLAYLIST SUBMENU is a submenu in the CONTEXT MENU (see section 4.1.2 (page 23)), it allows you to put tracks into a "dynamic playlist". If there is no music currently playing, Rockbox will create a new dynamic playlist and put the selected track(s) into it. If there is music currently playing, Rockbox will put the selected track(s) into the current playlist. The place in which the newly selected tracks are added to the playlist is determined by the following options:

Insert. Add track(s) immediately after any tracks added via the most recent INSERT operation. If no tracks have yet been added via an INSERT, new tracks will be added immediately after the current playing track. If playback is stopped a new dynamic playlist will get created with the selected tracks.

Insert Next. Add track(s) immediately after current playing track, no matter what else has been inserted.

Insert Last. Add track(s) to end of playlist.

Insert Shuffled. Add track(s) to the playlist in a random order.

Queue. Queue is the same as Insert except queued tracks are deleted immediately from the playlist after they have been played. Also, queued tracks are not saved to the playlist file (see section 5.10 (page 42)).

Queue Next. Queue track(s) immediately after current playing track.

Queue Last. Queue track(s) at end of playlist.

Queue Shuffled. Queue track(s) in a random order.

Play Next. Replaces all but the current playing track with track(s). Current playing track is queued.

The PLAYLIST SUBMENU can be used to add either single tracks or entire directories to a playlist. If the PLAYLIST SUBMENU is invoked on a single track, it will put only that track into the playlist. On the other hand, if the PLAYLIST SUBMENU is invoked on a directory, Rockbox adds all of the tracks in that directory to the playlist.

Note: You can control whether or not Rockbox includes the contents of subdirectories when adding an entire directory to a playlists. Set the SETTINGS → GENERAL SETTINGS → PLAYLIST → RECURSIVELY INSERT DIRECTORIES setting to YES if you would like Rockbox to include tracks in subdirectories as well as tracks in the currently-selected directory.

Dynamic playlists are saved so resume will restore them exactly as they were before shutdown.

Note: To view, save or reshuffle the current dynamic playlist use the PLAYLIST sub menu in the WPS context menu or in the MAIN MENU.

4.4.4. Modifying playlists

Reshuffeling

Reshuffeling the current playlist is easily done from the PLAYLIST sub menu in the WPS, just select RESHUFFLE.

Moving and removing tracks

To move or remove a track from the current playlist enter the PLAYLIST VIEWER by selecting VIEW CURRENT PLAYLIST in the PLAYLIST submenu in the WPS context menu or the MAIN MENU. Once in the PLAYLIST VIEWER open the context menu on the track you want to move or remove. If you want to move the track, select MOVE in the context

menu and then move the blinking cursor to the place where you want the track to be moved and confirm with **Select** or **Right**. To remove a track, simply select REMOVE in the context menu.

4.4.5. Saving playlists

To save the current playlist either enter the PLAYLIST submenu in the WPS CONTEXT MENU (see section 4.3.3 (page 30)) and select SAVE CURRENT PLAYLIST or enter the PLAYLIST OPTIONS menu in the MAIN MENU and select SAVE CURRENT PLAYLIST. Either method will bring you to the VIRTUAL KEYBOARD (see section 4.1.3 (page 25)), enter a filename for your playlist and accept it and you are done.

4.4.6. Loading saved playlists

Through the FILE BROWSER

Playlist files, like regular music tracks, can be selected through the FILE BROWSER. When loading a playlist from disk it will replace the current dynamic playlist.

Through the PLAYLIST CATALOG

The PLAYLIST CATALOG offers a shortcut to all playlists in your player's specified playlist directory. It can be used like the FILE BROWSER.

4.4.7. Helpful Hints

Including subdirectories in playlists

You can control whether or not Rockbox includes the contents of subdirectories when adding an entire directory to a playlists. Set the MAIN MENU → SETTINGS → PLAYLIST → RECURSIVELY INSERT DIRECTORIES setting to YES if you would like to include tracks in subdirectories as well as tracks in the currently selected directory.

5. The Main Menu

5.1. Introducing the Main Menu

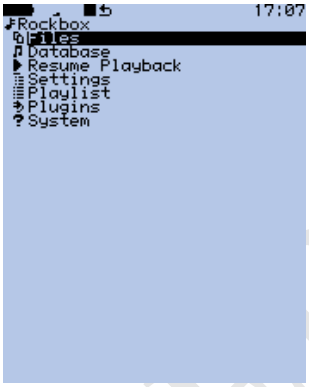

Figure 5.1.: The main menu

The MAIN MENU is the screen from which all of the Rockbox functions can be accessed. To enter the MAIN MENU, press the **Submenu** button.

All settings are stored on the unit. However, Rockbox does not spin up the disk solely for the purpose of saving settings. Instead, Rockbox will save settings when it spins up the disk the next time, for example when refilling the MP3 buffer or navigating through the FILE BROWSER. Changes to settings may therefore not be saved unless the player is shut down safely (see section 3.1.2 (page 19)).

5.2. Navigating the Main Menu

5.3. Recent Bookmarks

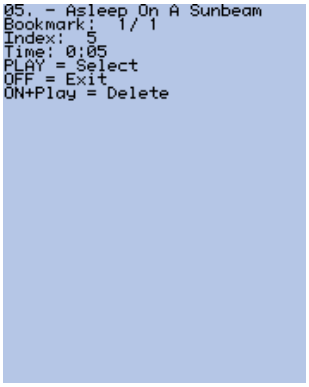

Figure 5.2.: The list bookmarks screen

If the SAVE A LIST OF RECENTLY CREATED BOOKMARKS option is enabled then you can view a list of several recent bookmarks here and select one to jump straight to that track. See section 7.7 (page 60) for more details on configuring bookmarking in Rockbox.
Note: This entry is not shown in the MAIN MENU when the option is off and the option is off by default.

5.4. Files

Browse the files on your player (see section 4.1 (page 22)).

5.5. Database

Browse by the meta-data in your audio files (see section 4.2 (page 26)).

5.6. Now Playing/Resume Playback

Go to the WHILE PLAYING SCREEN and resume if music playback is stopped or paused and there is something to resume (see section 4.3 (page 28)).

5.7. Settings

The SETTINGS menu allows to set or adjust many parameters that affect the way your player works. There are many submenus for different parameter areas. Every time

you are setting a value of a parameter, and that value is selected from a list of some predefined available values, you can press Long **Select**, and the selection cursor will jump to the default value for the parameter. You can then confirm or cancel the value. This is useful if you have changed the value of the parameter from the default to some other value and would like to restore the default value.

5.7.1. Sound Settings

The SOUND SETTINGS menu offers a selection of sound properties you may change to customise your listening experience. The details of this menu are covered in section 6 (page 45).

5.7.2. General Settings

The GENERAL SETTINGS menu allows you to customise the way Rockbox looks and the way it plays music. The details of this menu are covered in section 7 (page 51).

5.7.3. Manage Settings

The MANAGE SETTINGS option allows the saving and re-loading of user configuration settings, browsing the hard drive for alternate firmwares, and finally resetting your player back to initial configuration. The details of this menu are covered in section 11.3 (page 128).

5.7.4. Theme Settings

The THEME SETTINGS menu contains options that control the visual apperance of Rockbox. The details of this menu are covered in section 8 (page 64).

5.7.5. Recording Settings

The RECORDING SETTINGS menu allows you to configure settings related to recording. The details of this menu are covered in detail in section 9 (page 66).

5.8. Recording

5.8.1. While Recording Screen

Figure 5.3.: The while recording screen

Entering the RECORDING option in the MAIN MENU brings up a screen in which you can choose to enter the RECORDING SCREEN or the RECORDING SETTINGS (see section 9 (page 66)). The RECORDING SCREEN shows the time elapsed and the size of the file being recorded. A peak meter is present to allow you set gain correctly. There is also a volume setting, this will only affect the output level of the player and does *not* affect the recorded sound. If enabled in the peak meter settings, a counter in front of the peak meters shows the number of times the clip indicator was activated during recording. The counter is reset to zero when starting a new recording.

Note: When you start a recording, the hard disk will spin up. This will cause the peak meters to freeze in the process. This is expected behaviour, and nothing to worry about. The recording continues during the spin up.

The frequency and channels settings are shown on the last line.

The controls for this screen are:

Key	Action
Scroll Backward / Scroll Forward	Select setting.
Left / Right	Adjust selected setting.
Play	Start recording. While recording: pause recording (press again to continue).
Power	Exit RECORDING SCREEN. While recording: Stop recording.
Rec	Starts recording. While recording: close the current file and open a new one.
Submenu	Open RECORDING SETTINGS (see section 9 (page 66)).

5.9. FM Radio

Note: Not all Sansas have a radio receiver. Generally all american models do, but european models might not. Rockbox will display the radio menu only if it can find a radio receiver in your Sansa.

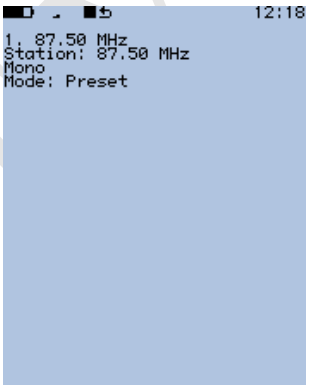

Figure 5.4.: The FM radio screen

This menu option switches to the radio screen. The FM radio has the ability to record and to remember station frequency settings (presets).

Key	Action
Right, **Left**	Change frequency in SCAN mode or jump to next/previous station in PRESET mode
Long **Right**, **Left**	Seek to next station or preset in SCAN mode.
Play, **Submenu**	Change volume.
Submenu	Leave the radio screen with the radio playing.
Power	Stops the radio and returns to MAIN MENU.
Play	Mutes radio playback.
Long **Play**	Switches between SCAN and PRESET mode.
Select	Opens a list of radio presets. You can view all the presets that you have, and switch to the station.
Long **Select**	Displays the FM radio settings menu.

Saving a preset: Up to 64 of your favourite stations can be saved as presets. Long **Select** to go to the menu, then select ADD PRESET. Enter the name (maximum number of characters is 32). Press **Play** to save.

Note: See this page for pre-made FM radio presets from all around the world.

☞FmPresets

Selecting a preset: **Select** to go to the presets list. Use **Play** and **Submenu** to move the cursor and then press **Select** or **Right** to select. Use **Left** to leave the preset without selecting anything.

Removing a preset: **Select** to go to the presets list. Use **Play** and **Submenu** to move the cursor and then press Long **Select** on the preset that you wish to remove, then select REMOVE PRESET.

Note: The radio will turn off when starting playback of an audio file.

5.10. Playlist

This menu allows you to work with playlists. Playlists can be created in three ways. Playing a file in a directory causes all the files in it to be placed in a playlist. Playlists can be created manually by either using the CONTEXT MENU (see section 4.1.2 (page 23)) or using the PLAYLIST menu. Both automatically and manually created playlists can be edited using this menu.

Create Playlist: Rockbox will create a playlist with all tracks in the current directory and all sub-directories. The playlist will be created one directory level "up" from where you currently are.

View Current Playlist: Displays the contents of the playlist currently stored in memory.

Save Current Playlist: Saves the current dynamic playlist, excluding queued tracks, to the specified file. If no path is provided then playlist is saved to current directory (see section **??** (page **??**)).

Playlist Catalog: The PLAYLIST CATALOG provides a simple interface to maintain several playlist (see section **??** (page **??**)).

5.11. Plugins

With this option you can load and run various plugins that have been written for Rockbox. There are a wide variety of these supplied with Rockbox, including several games, some impressive demos and a number of utilities. A detailed description of the different plugins is to be found in section 10 (page 69).

5.12. System

This option shows RAM buffer size, battery voltage level and estimated time remaining, disk total space and disk free space.

Rockbox Info: Displays some basic system information. This is, from top to bottom, the amount of memory Rockbox has available for storing music (the buffer). The battery status. Memory size and amount of free space on the two data volumes, this info is given seperately for internal memory (*Int*) and for a plugged in memory card (*MSD*).

Version: Software version and credits display.

Sleep Timer: The SLEEP TIMER powers off your player after playing for a given time. It can be set from OFF to 5 hours in 5 minute steps. The SLEEP TIMER is reset on boot.

Debug (Keep Out!): This sub menu is intended to be used *only* by Rockbox developers. It shows hardware, disk, battery status and other technical information.

Warning: It is not recommended that users access this menu unless instructed to do so in the course of fixing a problem with Rockbox. If you think you have messed up your settings by use of this menu please try to reset *all* settings before asking for help.

5.13. Quick Screen

Whilst not strictly part of the MAIN MENU, it is worth noting that a few of the more commonly used settings are available from the QUICK SCREEN. The QUICK SCREEN screen is accessed with Long **Submenu** and exited with the same button. It allows rapid access to the SHUFFLE and REPEAT modes (section 7.1 (page 51)) and the SHOW FILES option (section 7.3 (page 55)).

6. Sound Settings

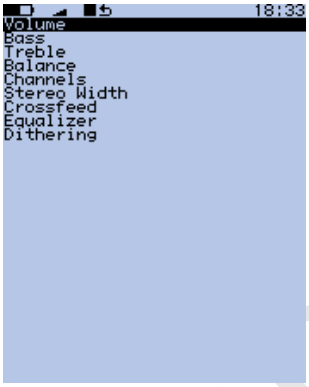

Figure 6.1.: The sound settings screen

The Sound Settings menu offers a selection of sound properties you may change to customise your listening experience.

6.1. Volume

This setting adjusts the volume of your music. Like most professional audio gear and many consumer audio products, Rockbox uses a decibel scale where 0 dB is a reference that indicates the maximum volume that the player can produce without possible distortion (clipping). All values lower than this reference will be negative and yield a progressively softer volume. The volume can be adjusted from a minimum of -74 dB to a maximum of +6 db.

6.2. Bass

This emphasises or suppresses the lower frequency (bass) sounds in the track. 0dB means that bass in unaltered (flat response). The minimum setting is -24dB and the maximum is 24dB.

6.3. Treble

This setting emphasises or suppresses the higher frequency (treble) sounds in the track. 0dB means that treble is unaltered (flat response). The minimum setting -24dB and the maximum is 24dB.

6.4. Balance

This setting controls the balance between the left and right channels. The default, 0, means that the left and right outputs are equal in volume. Negative numbers increase the volume of the left channel relative to the right, positive numbers increase the volume of the right channel relative to the left.

6.5. Channels

A stereo audio signal consists of two channels, left and right. The CHANNELS setting controls if these channels are to be combined in any way, and if so, in what manner they will be combined. Available options are:

Setting	Description
Stereo	Leave the audio signal unmodified.
Mono	Combine both channels and send the resulting signal to both stereo channels, resulting in a monophonic output.
Custom	Allows you to manually specify a stereo width with the STEREO WIDTH setting described later in this chapter.
Mono Left	Plays the left channel in both stereo channels.
Mono Right	Plays the right channel in both stereo channels.
Karaoke	Removes all sound that is common to both channels. Since most music is recorded with vocals being equally present in both channels to make the singer sound centrally placed, this often (but not always) has the effect of removing the voice track from a song. This setting also very often has other undesirable effects on the sound.

6.6. Stereo Width

Stereo width allows you to manually specify the effect that is applied when the CHANNELS setting is set to "custom". All values below 100% will progressively mix the contents of one channel into the other. This has the effect of gradually centering the stereo image, until you have monophonic sound at 0%. Values above 100% will progressively remove components in one channel that is also present in the other. This has the effect of widening the stereo field. A value of 100% will leave the stereo field unaltered.

6.7. Crossfeed

Crossfeed attempts to make the experience of listening to music on headphones more similar to listening to music with stereo speakers. When you listen to music through speakers, each ear will hear sound originating from both speakers. However, the sound from the left speaker reaches your right ear slightly later than it does your left ear, and vice versa.

The human ear and brain together are very good at interpreting the time differences between direct sounds and reflected sounds and using that information to identify the direction that the sound is coming from. On the other hand, when listening to headphones, each ear hears only the stereo channel corresponding to it. The left ear hears only the left channel and the right ear hears only the right channel. The result is that sound from headphones does not provide the same spatial cues to your ear and brain as speakers, and might for that reason sound unnatural to some listeners.

The crossfeed function uses an algorithm to feed a delayed and filtered portion of the signal from the right channel into the left channel and vice versa in order to simulate the spatial cues that the ear and brain receive when listening to a set of loudspeakers placed in front of the listener. The result is a more natural stereo image that can be especially appreciated in older rock and jazz records, where one instrument is often hard-panned to just one of the speakers. Many people will find such records tiring to listen to using earphones and no crossfeed effect.

Crossfeed has the following settings:

Crossfeed: Selects whether the crossfeed effect is to be enabled or not.

Direct Gain: How much the level of the audio that travels the direct path from a speaker to the corresponding ear is supposed to be decreased.

Cross Gain: How much the level of the audio that travels the cross path from a speaker to the opposite ear is to be decreased.

High-Frequency Attenuation: How much the upper frequencies of the cross path audio will be dampened. Note that the total level of the higher frequencies will be a combination of both this setting and the CROSS GAIN setting.

High-Frequency Cutoff Decides at which frequency the cross path audio will start to be cut by the amount described by the HIGH-FREQUENCY ATTENUATION setting.

Most users will find the default settings to yield satisfactory results, but for the more adventurous user the settings can be fine-tuned to provide a virtual speaker placement suited to ones preference.

Beware that the crossfeed function is capable of making the audio distort if you choose settings which result in a too high output level.

6.8. Equalizer

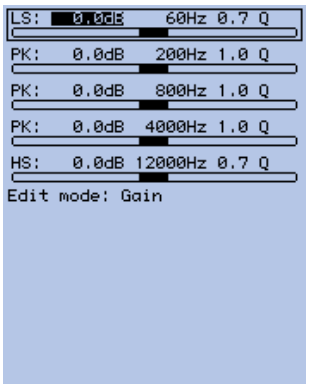

Figure 6.2.: The graphical equalizer

Rockbox features a parametric equalizer (EQ). As the name suggests, a parametric EQ lets you control several different parameters for each band of the EQ. In some ways the EQ is similar to the BASS and TREBLE settings described earlier, but the EQ allows you to control the sound much more carefully.

Rockbox's parametric EQ is composed of five different bands:

Band 0: Low shelf filter The low shelf filter boosts or lowers all frequencies below a certain frequency limit, much like what a "bass" control found on ordinary stereo systems does. Adjust the "cutoff" frequency parameter to decide where the shelving starts to take effect. For example, a cutoff frequency of 50 Hz will adjust only very low frequencies. A cutoff frequency of 200 Hz, on the other hand, will adjust a much wider range of bass frequencies. The "gain" parameter controls how much the loudness of the band is adjusted. Positive numbers make the EQ band louder, while negative numbers make that EQ band quieter. The "Q" parameter should always be set to 0.7 for the shelving filters. Higher values will add a small boost around the cutoff frequency that is almost always undesirable.

Bands 1-3: Peaking filters Peaking EQ filters boost or lower a frequency range centered at the center frequency chosen. Graphic equalizers in home stereos are usually peaking filters. The peaking filters in Rockbox's EQ lets you adjust three different parameters for EQ bands 1 through 3. The "center" parameter controls the center frequency of the frequency range that is affected as described above. The "gain" parameter controls how much each band is adjusted, and works as for the low shelf filter. Finally, the "Q" parameter controls how wide or narrow the affected frequency range is. Higher Q values will affect a narrower band of frequencies, while lower Q values will affect a wider band of frequencies.

Band 4: High shelf filter A high shelf filter boosts or lowers all frequencies above a

certain frequency limit, much like what a "treble" control found on ordinary stereo systems does. The high shelf filter is adjusted the same way as the low shelf filter, except that it works on the high end of the frequency spectrum rather than the low end.

As a general guide, EQ band 0 should be used for lows, EQ bands 1 through 3 should be used for mids, and EQ band 4 should be used for highs.

Enable EQ: This option controls whether the EQ is on or off.

Graphical EQ: This option brings up a graphic EQ screen, which allows adjustment of each of the three parameters described above (gain, center frequency, and Q) for each of the five EQ bands.

Key	Action
Scroll Backward	Raises the highlighted parameter.
Scroll Forward	Lowers the highlighted parameter.
Play	Moves to the previous EQ band.
Submenu	Moves to the next EQ band.
Select	Toggles the cursor among the three parameters (gain, center frequency, Q) for the selected EQ band.
Power/Right	Exits the graphic EQ screen.

Pre-cut: If too much gain is added through the graphical EQ, your music may distort. The PRECUT setting allows you to adjust the overall gain of the EQ.

If your music distorts when using the EQ, trying changing this setting to a negative value.

Simple EQ: This option provides an easier alternative for those who are daunted by all of the parameters that can be adjusted using the graphical EQ. With the SIMPLE EQ, the only parameter that can be adjusted is the gain.

Advanced EQ: This sub menu provides options for adjusting the same parameters as the GRAPHICAL EQ. The only difference is that the parameters are adjusted through textual menus rather than through a graphic interface.

Save EQ Preset: This option saves the current EQ configuration in a `.cfg` file.

Browse EQ Presets: This menu displays a list of EQ presets, as well as any EQ configurations saved using the SAVE EQ PRESET option. Users unfamiliar with the operation of a parametric EQ may wish to use the presets instead of trying to configure the EQ, or use the presets for designing their own custom EQ settings.

6.9. Dithering

This setting controls the dithering and noise shaping functionality of Rockbox.

Most of Rockbox' audio file decoders work at a higher bit depth than the 16 bits used for output on the player's audio connectors. The simplest way to convert from one bit depth to another is simply discarding all the surplus bits. This is the default behaviour, and adds distortion to the signal that will vary in character along with the desired sound.

Dithering adds low-level noise to the signal prior to throwing away the surplus bits, which gives the resulting signal a uniform noise floor which is independent of the signal. Most people find this noise preferable to the time-varying noise heard when not performing dithering.

After dithering, noise shaping is performed. This basically just pushes the dithering noise to the parts of the frequency spectrum humans cannot hear so easily. In Rockbox' case, some of the noise is pushed up to above 10 kHz.

This setting will be put to its best use when listening to dynamic music with frequently occuring quiet parts, classical music being a typical example. It is worth noting that the effects of dithering and noise shaping are very subtle, and not easily noticable.

Rockbox uses highpass triangular distribution noise as the dithering noise source, and a third order noise shaper.

7. General Settings

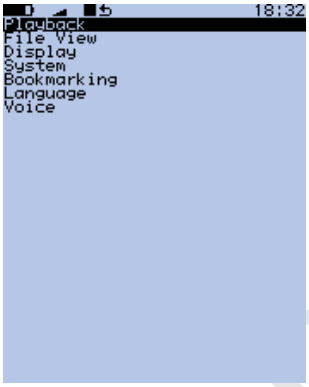

Figure 7.1.: The general settings screen

7.1. Playback

The PLAYBACK sub menu allows you to configure settings related to audio playback.

Shuffle. Turning shuffle on will cause Rockbox to randomly re-order the playlist. Thus, to shuffle all of the audio files on the player, you first need to create a playlist containing all of them. For more information on creating playlists refer to section 4.4 (page 32).
Options: YES/NO.

Repeat. Configures settings related to repeating of directories or playlists.
Options: OFF / ALL / ONE / SHUFFLE / A-B:

- **Off.** The current playlist will not repeat when it is finished.
  Note: If you have the AUTO CHANGE DIRECTORY option set to YES, Rockbox will move on to the next directory on your hard drive. If the AUTO CHANGE DIRECTORY option is set to NO, playback will stop when the current directory or playlist is finished.
- **All.** The current playlist will repeat when it is finished.
- **One.** Repeat one track over and over.
- **Shuffle.** When the current playlist has finished playing, it will be shuffled and then repeated.

A-B. Repeats between two user defined points within a track, typically used by musicians when attempting to learn a piece of music. This option is more complicated to use than the others as the player must first be placed into A-B repeat mode and then the start and end points defined.
To set the Start Point (A) hold **Power** and press **Left**. Setting the End Point (B) is done accordingly using **Power** and **Right**. To reset the markers hold **Power** and press **Play**.

Play Selected First. This setting controls what happens when you select a file for playback while shuffle mode is on. If the PLAY SELECTED FIRST setting is YES, the file you selected will be played first. If this setting is NO, a random file in the directory will be played first.

Fast-Forward/Rewind. How fast you want search (fast forward or rewind) to accelerate when you hold down the button. OFF means no acceleration. 2X/1S means double the search speed once every second the button is held. 2X/5S means double the search speed once every 5 seconds the button is held.

Anti-Skip Buffer. This setting allows you to control how much music is stored in the player's memory whilst playing a song, acting as a buffer against shock or playback problems. The player transfers the selected amount of the forthcoming song into its memory at high speed whilst you are playing the song. It keeps a "rolling" buffer, which keeps feeding more of the forthcoming song into memory as it goes along. If the player is knocked, shaken or jogged heavily while Rockbox is trying to read the hard drive, Rockbox might not be able to read the drive. Rockbox will retry over and over again until it succeeds, but may eventually reach the end of the memory buffer. When that happens, Rockbox must stop playing and wait for more data from the disk, which causes your music to skip. The anti-skip setting tells Rockbox how much extra buffer memory to spare to handle this situation. This setting therefore allows you to reduce the chances of there being a gap or pause during playback of songs.

The anti-skip buffer can be set to various values between 5 seconds and 10 minutes.

Note: Having a large anti-skip buffer tends to use more power, and may reduce your battery life. It is recommended to always use the lowest possible setting that allows correct and continuous playback.

Fade on Stop/Pause. Enables and disables a fade effect when you pause or stop playing a song. If the Fade on Stop/Pause option is set to YES, your music will fade out when you stop or pause playback, and fade in when you resume playback.

Party Mode. Enables unstoppable music playback. When new songs are selected, they are queued at the end of the current dynamic playlist instead of being played immediately. Pausing and stopping playback is disabled as well as skipping songs and launching plugins.

Crossfade. This setting enables a cross-fader. At the end of a song, the song will fade out as the next song fades in, creating a smooth transition between songs.
Options:

Enable Crossfade. If set to OFF, crossfade is disabled. If set to ALWAYS, songs will always crossfade into one another. If set to SHUFFLE, crossfade is enabled when the shuffle feature is set to YES, but disabled otherwise. If set to track skip only, tracks will only crossfade when you manually change tracks.

Fade In Delay. The "fade in delay" is the length of time between when the crossfade process begins and when the new track begins to fade in.

Fade In Duration. The length of time, in seconds, that it takes your music to fade in.

Fade Out Delay. The "fade out delay" is the length of time between when the crossfade process begins and when the old track begins to fade out.

Fade Out Duration. The length of time, in seconds, that it takes your music to fade out.

Fade Out Mode. If set to CROSSFADE, one song will fade out and the next song will simultaneously fade in. If set to MIX, the ending song will continue to play as normal until its end, while the starting song will fade in from under it. MIX mode is not used for manual track skips, even if it is selected here.

Note: The crossfade setting is particularly effective when the player is set on shuffle.

Replaygain. This allows you to control the replaygain function. The purpose of replaygain is to adjust the volume of the music played so that all songs (or albums, depending on your settings) have the same apparent volume. This prevents sudden changes in volume when changing between songs recorded at different volume levels. For replaygain to work, the songs must have been processed by a program that adds replaygain information to the ID3 tags (or Vorbis tags).

Note: APEv2 tags are not currently supported.

Options for replaygain are:

Enable Replaygain. This turns on/off the replaygain function.

Prevent Clipping. Avoid clipping of a song's waveform. If a song would clip during playback, the volume is lowered for that song. Replaygain information is needed for this to work.

Replaygain type. Choose the type of replaygain to apply:

Album Gain. Maintain a constant volume level between albums, but keep any intentional volume variations between songs in an album. (If album gain value is not available, uses track gain information).

Track Gain. Maintain a constant volume level between tracks. If track gain value is not available, no replaygain is applied.

Track Gain if Shuffling. Maintains a constant volume between tracks if SHUFFLE is set to YES. Reverts to album mode if SHUFFLE is set to NO.

Pre-amp. This allows you to adjust the volume when replaygain is applied. Replaygain often lowers the volume, sometimes quite much, so here you can compensate for that. Please note that a (large) positive pre-amp setting can cause clipping, unless prevent clipping is enabled. The pre-amp can be set to any decibel (dB) value between -12dB and +12dB, in increments of 0.1dB.

Beep Volume. Controls the volume of the beep that is heard when skipping forward or backward between tracks. The beep is disabled when set to OFF.

Auto-Change Directory. Control what Rockbox does when it reaches the end of a directory. If AUTO-CHANGE DIRECTORY is set to YES, Rockbox will continue to the next directory. If AUTO-CHANGE DIRECTORY is set to NO, playback will stop at the end of the current playlist.

Note: You must have the REPEAT option set to NO for AUTO-CHANGE DIRECTORY to function properly.

Last.fm Log. Enables logging of your played tracks for submittal to http://www.last.fm. This service was formely known as *Audioscrobbler*. When you enable this option, you'll have to reboot to start the logging. The log-file is called `.scrobbler.log`,and is to be found in the root directory of your player.

Note: See ☞LastFMLog for a further description, and for tools you can use to submit your Last.fm log.

Cuesheet Support. Enables reading of cuesheet files for played tracks. If a cuesheet is found for a track, track markers are displayed on the progressbar and it is possible to skip between the tracks within the cuesheet. Also the information found in the cuesheet file will replace the information from the ID3 tags. When you enable this option, you'll have to reboot for it to come into effect.

7.2. Playlist

The PLAYLIST sub menu allows you to configure settings related to playlists.

Recursively Insert Directories. If set to ON, then when a directory is inserted or queued into a dynamic playlist, all subdirectories will also be inserted. If set to ASK, Rockbox will prompt the user about whether to include sub-directories.

Warn When Erasing Dynamic Playlist. If set to YES, Rockbox will provide a warning if the user attempts to take an action that will cause Rockbox to erase the current dynamic playlist.

7.3. File View

The File View menu deals with options relating to how the File Browser displays files.

Sort Case Sensitive: If this option is set to YES, all files that start with upper case letters will be listed first, followed by all files that begin with lower case letters. If this option is set to NO, then case will be ignored when sorting files.

Sort Directories: This option controls how Rockbox sorts directories. The default is to sort them alphabetically. BY DATE sorts them with the oldest directory first. BY NEWEST DATE sorts them with the newest directory first.

Sort Files: This option controls how Rockbox sorts files. All of the options for SORT DIRECTORIES are available in this option. In addition, there is a BY TYPE option which sorts files alphabetically by their type (such as `.mp3`) then alphabetically within each type.

Show Files: This option controls which files are displayed in the File Browser.

- **All:** The FILE BROWSER displays all files and directories. Extensions are shown. No files or directories are hidden.
- **Supported:** The FILE BROWSER displays all directories and files supported by Rockbox (see section A.1 (page 131)). Files and directories starting with `.` (*dot*) or with the *hidden* flag set are hidden.
- **Music:** The FILE BROWSER displays only directories, playlists and the supported *audio* file formats. Extensions are stripped. Files and directories starting with `.` or with the "hidden" flag set are hidden.
- **Playlists:** The FILE BROWSER displays only directories and playlists, for simplified navigation.

Show Filename Extensions: This option controls how file extensions are shown in the File Browser.

- **Off:** The file extensions are never shown.
- **On:** The file extensions are always shown.
- **Only unknown types:** Only the extensions of unknown filetypes are shown.
- **Only when viewing all types:** Only show file extensions when SHOW FILES is set to ALL.

Follow Playlist: This option determines what directory the FILE BROWSER displays first. If FOLLOW PLAYLIST is set to YES, when you enter the FILE BROWSER from the WPS, you will find yourself in the same directory as the currently playing file. If FOLLOW PLAYLIST is set to NO, when you enter the FILE BROWSER from the WPS, you will find yourself in the directory you were in when you last left the FILE BROWSER.

Show Path: If this setting is set to FULL PATH the full path to the current directory will be displayed on the first line in the FILE BROWSER. If set to CURRENT DIRECTORY ONLY only the name of the current directory will be displayed.

This has a similar effect on the Database browser. If set to CURRENT DIRECTORY ONLY or FULL PATH, then the title of each menu will be displayed on the first line in the DATABASE BROWSER.

7.4. Database

This sub menu allows you to configure the database. See section 4.2 (page 26) for more information about using the database.

7.5. Display

LCD Settings: This sub menu contains settings that relate to the display of the player.

Backlight: The amount of time the backlight shines after a key press. If set to OFF, the backlight will not light when a button is pressed. If set to ON, the backlight will never shut off. If set to a time (1 to 90 seconds), the backlight will stay lit for that amount of time after a button press.

Backlight (While Plugged In): This setting is equivalent to the BACKLIGHT setting except it applies when the player is plugged into the charger.

Backlight on Hold: This setting controls the behavior of the backlight when the Hold switch is toggled. If set to NORMAL the backlight will behave as usual. If set to OFF the backlight will be turned off immediately when the Hold switch is engaged and if set to ON the backlight will be turned on and stay on while the Hold switch is engaged.

Caption Backlight: This option turns on the backlight a number of seconds before the start of a new track, and keeps it on for the same number of seconds after the beginning so that the display can be read to see song information. The amount of time is determined by the value of the backlight timeout setting, but is no less than 5 seconds.

First Keypress Enables Backlight Only: With this option enabled the first keypress while the backlight is turned off will only turn the backlight on without having any other effect. When disabled the first keypress will *also* perform its appropriate action.

Sleep (After Backlight Off): This setting controls how long rockbox will wait before turning off the display after the backlight is turned off. Turning off the display saves a little bit of battery power but turning on the display takes noticeably longer than just turning on the backlight.

Brightness: Changes the brightness of your LCD display.

LCD Mode: This setting lets you invert the colours of the display.

Upside Down: Displays the screen so that the top of the display is nearest the buttons. This is sometimes useful when carrying the player in a pocket for easy access to the headphone socket.

Scrolling This feature controls how text will scroll in Rockbox. You can configure the following parameters:

Scroll Speed: Controls how many times per second the scrolling text moves a step.

Scroll Start Delay: Controls how many milliseconds Rockbox should wait before a new text begins scrolling.

Scroll Step Size: Controls how many pixels the text scroll should move for each step.

Bidirectional Scroll Limit: Rockbox has two different scroll methods: always scrolling the text to the left and when the line has ended beginning again at the start, or moving to the left until you can read the end of the line and scroll right until you see the beginning again. Rockbox chooses which method it should use depending of how much it has to scroll left. This setting lets you tell Rockbox where that limit is, expressed in percentage of line length.

Screen Scrolls Out of View: On lists with long entries that do not fit on the screen using the complete content will be scrolled right/left. With this option set to YES the lines can scroll out of view. Otherwise the entries will only scroll as far as they align to the margins.

Screen Scroll Step Size: Determines how many pixels the text should advance in every click when scrolling the screen.

Paged Scrolling: When enabled scrolling will page up/down instead of changing lines. This can be useful on slow displays.

Status/Scrollbar: Settings related to on screen status display and the scrollbar.

Scroll Bar: Enables or disables the scroll bar at the left.

Status Bar: Enables or disables the status bar at the upper side.

Volume Display: Controls whether the volume is displayed as a graphic or a numeric value on the Status Bar. If you select a numeric display, volume is displayed in decibels. **cross-reference to volume setting.**

Battery Display: Controls whether the battery charge status is displayed as a graphic or numerical percentage value on the Status Bar.

Peak Meter: The peak meter can be configured with a number of parameters.

Peak Release: This determines how fast the bar shrinks when the music becomes softer. Lower values make the peak meter look smoother. Expressed in scale units per 10ms.

Peak Hold Time: Specifies the time after which the peak indicator will reset. For example, if you set this value to 5s, the peak indicator displays the loudest volume value that occurred within the last 5 seconds. Larger values are useful if you want to find the peak level of a song, which might be of interest when copying music from the player via the analogue output to some other recording device.

Clip Hold Time: The number of seconds that the clipping indicator will be visible after clipping is detected.

Clip Counter: Show the number of times the clip indicator went active during recording in front of the peakmeters.

Scale: Select whether the peak meter displays linear or logarithmic values. The human ear perceives loudness on a logarithmic scale. If the Scale setting is set to LOGARITHMIC (dB) scale, the volume values are scaled logarithmically. The volume meters of digital audio devices usually are scaled this way. On the other hand, if you are interested in the power level that is applied to your headphones you should choose LINEAR display. This setting cannot be displayed in units like volts or watts because such units depend on your headphones.

Minimum and maximum range: These two options define the full value range that the peak meter displays. Recommended values for the LOGARITHMIC (dB) setting are -40 dB for minimum and 0 dB for maximum. Recommended values for LINEAR display are 0 and 100%. Note that -40 dB is approximately 1% in linear value, but if you change the minimum setting in linear mode slightly and then change to the dB scale, there will be a large change. You can use these values for 'zooming' into the peak meter.

Default Codepage: A codepage describes the way extended characters that are not available within the ASCII character set are encoded. ID3v1 tags do not have a codepage encoding contained so Rockbox needs to know what encoding has been used when generating these tags. This should be "ISO-8859-1" but to support languages outside Western Europe most applications use the setting of your operating system instead. If your operating system uses a different codepage and you are getting garbled extended characters you should adjust this settings. In most cases sticking to "ISO-8859-1" would be sufficient.

7.6. System

7.6.1. Start Screen

Set the screen that Rockbox will start in. Selecting RESUME PLAYBACK will resume playback where it was when the player was shut off if there is a playlist to resume and will then end up in the WPS. Selecting PREVIOUS SCREEN will make Rockbox start in the screen it was when the player was shut off.

7.6.2. Disk

Options relating to the hard disk.

Directory Cache: Rockbox has the ability to cache the contents of your drive in RAM. The DIRECTORY CACHE takes a small amount of memory away from Rockbox that would otherwise be used to buffer music, but it speeds up navigation in the file browser by eliminating the slight pause between the time a navigation button is pressed and the time Rockbox responds. Turning this setting on activates the directory cache, and turning it off deactivates the directory cache.

Note: The first time you enable the directory cache, Rockbox will request a reboot of the player and upon restarting take a few minutes to scan the drive. After this, the directory cache will work in the background.

7.6.3. Time and Date

Time related menu options.

Set Time/Date: Set current time and date.

Time Format: Choose 12 or 24 hour clock.

7.6.4. Idle Poweroff

Rockbox can be configured to turn off power after the unit has been idle for a defined number of minutes. The player is idle when playback is stopped or paused. It is not idle while the USB or charger is connected , or while recording. Settings are either OFF or 1 to 10 minutes in 1 minute steps. Then 15,30,45 and 60 minutes are available.

7.6.5. Limits

This sub menu relates to limits in the Rockbox operating system.

Max Entries in File Browser: This setting controls the limit on the number of files that you can put in any particular directory in the file browser. You can configure the size to be between 50 and 10,000 files in steps of 50. The default is 400. Higher values will shorten the music buffer, so you should increase this setting *only* if you have directories with a large number of files.

Max Playlist Size: This setting controls the maximum size of a playlist. The playlist size can be between 1,000 and 32,000 files, in steps of 1,000 (default is 10,000). Higher values will shorten the music buffer, so you should increase this setting *only* if you have very large playlists.

7.6.6. Car Adapter Mode

This option turns ON and OFF the car ignition auto stop function.

Car Adapter Mode: When using the player in a car, CAR ADAPTER MODE automatically stops playback on the player when power (i.e. from cigarette lighter power adapter) to the external DC in jack is turned off. If the CAR ADAPTER MODE is set to ON, Rockbox will pause playback when the external power off condition is detected. Rockbox will then shutdown the player after the length of time set in the IDLE POWEROFF setting (see above). If power to the DC in jack is turned back on before the *Idle Poweroff* function has shut the player off, playback will be resumed 5 seconds after the power is applied. This delay is to allow for the time while the car engine is being started.

Once the player is shut off either manually, or automatically with the IDLE POWEROFF function, it must be powered up manually to resume playback.

7.6.7. Wheel Light Timeout

This setting controls the amount of time the wheel lights shine after a button press or wheel turn. If set to OFF, the LEDs will not light when a button is pressed. If set to ON, the lights will never shut off. If set to a time (1 to 120 seconds), the wheel will stay lit for that amount of time after a button press or wheel turn.

7.7. Bookmarking

Bookmarks allow you to save your current position within a track so that you can return to it at a later time. Bookmarks are saved on a per directory basis (for dynamic playlists) or for individual (saved) playlists. They are stored next to the directory/playlist they reference. You can store multiple bookmarks for the same track.

Bookmark on Stop. This option controls whether Rockbox writes a bookmark to the disk when playback is stopped. Setting this to NO turns automatic bookmarking completely off. In contrast YES turns automatic bookmarking on while ASK asks on stopping the track if a bookmark should be created. With the above options YES and ASK if there is an existing `.bmark` file the current position information will be added to the front of the existing list, up to the maximum number of allowed bookmarks per file (currently 10). If no `.bmark` file exists, one will be created with the new bookmark information. Finally, if the MAINTAIN A LIST OF RECENTLY USED BOOKMARKS option is enabled, the bookmarking information will be added to recent bookmarks list.

Yes – Recent Only. Turns on automatic bookmarking – One bookmark only

Ask – Recent Only. Asks if a bookmark should be created when stopping track – One bookmark only

With the two RECENT ONLY options, nothing is written to the `.bmark` file. If the MAINTAIN A LIST OF RECENTLY USED BOOKMARKS option is enabled, the bookmarking information will however be added to recent bookmarks list.

Note: The RESUME function remembers your position in the most recently accessed track regardless of how the BOOKMARK ON STOP option is set.

Load Last Bookmark. When the LOAD LAST BOOKMARK option is set to YES, Rockbox automatically returns to the position of the last bookmark within a file when that file is played.

When the LOAD LAST BOOKMARK option is set to ASK, Rockbox will give the user the option of starting from the beginning of the track of or from the bookmark.

When the LOAD LAST BOOKMARK option is set to NO, playback always starts from the beginning of the track, and the user must play the bookmark or use the LOAD BOOKMARK function in the Main Menu, while the file is playing, to resume at the bookmarked location.

Maintain a list of Recently Used Bookmarks. This list of Most Recent Bookmarks (MRB's) may be accessed through the RECENT BOOKMARKS option of the BOOKMARKS sub menu of the Main Menu. When set to YES each new bookmark will be added to the MRB list. Setting this to NO disables the addition of bookmarks to the MRB list. UNIQUE ONLY behaves like the YES setting but in addition all older entries for the current (dynamic) playlist will be removed from the MRB whenever a new entry is added.

Bookmark Actions context menu. When viewing any bookmark list, pressing the standard context menu key (Long **Select**) will bring up the Bookmark Actions context menu.

RESUME will commence playback of the currently-selected bookmark entry.

DELETE will remove just the currently-selected bookmark entry from the list.

7.8. Language

This setting controls the language of the Rockbox user interface. Selecting a language will activate it. The language files must be in the `/.rockbox/langs/` directory. See section 11.1.3 (page 124) for further details about languages.

7.9. Voice

Voice Menus. This option controls the voicing of menus/settings as they are selected by the cursor. In order for this to work, a voice file must be present in the `/.rockbox/langs/` directory on the player. Voice files are large and are not shipped with Rockbox by default. The voice file is the name of the language for which it is made, followed

by the extension `.voice`. So for English, the file name would be `english.voice`. This option is on by default, but will do nothing unless the appropriate voice file is installed in the correct place on the player. The Voice Menus have several limitations:

- Setting the Sound Option CHANNELS to KARAOKE may disable voice menus.
- Plugins and the wake up alarm do not support voice features.

Voice Directories. This option controls voicing of directory names. A voice file must be present for this to work. Several options are available.

Spell. Speak the directory name by spelling it out letter by letter. Support is provided only for the most common letters, numbers and punctuation.

Numbers. Each directory is assigned a number based upon its position in the file list. They are then announced as "Directory 1", "Directory 2" etc.

Off. No attempt will be made to speak directory names.

You can use pre-generated .talk clips to have directory names spoken properly, but you must enable this explicitly (see below).

Use Directory .talk Clips. This option turns on the use of .talk clips for directories.

On. Use special pre-recorded MP3 files (`_dirname.talk`) in each directory. These must be generated in advance, and are typically produced synthetically using a text-to-speech engine on a PC.

Off. No checking is made for directory .talk clips; they are not used even if present. This can reduce disk activity.

Use of a .talk clip takes precedence over other directory name voicing. Otherwise (e.g. if a .talk clip is not available), voicing uses the method set under VOICE DIRECTORIES above.

Voice Filenames. This option controls voicing of filenames. Again, a voice file must be present for this to work. The options provided are SPELL, NUMBERS, and OFF which function the same as for VOICE DIRECTORIES. You can use pre-generated .talk clips to have filenames spoken properly, but you must enable this explicitly (see below).

Use File .talk Clips. This option turns on the use of .talk clips for files.

On. Use special pre-recorded MP3 files for each file. This functions the same as for directories except that the .talk clip file must have the same name as the described file with an extra .talk extension (e.g. `Punkadiddle.mp3` would require a file called `Punkadiddle.mp3.talk`).

Off. No checking is made for file .talk clips; they are not used even if present. This can reduce disk activity.

Use of a .talk clip takes precedence over other filename voicing. Otherwise (e.g. if a .talk clip is not available), voicing uses the method set under VOICE FILENAMES above.

Say File Type. This option turns on voicing of file types when VOICE FILENAMES is set to SPELL or NUMBERS. When VOICE DIRECTORIES is set to SPELL, "Directory" will be voiced after each spelled out directory.

Announce Battery Level. When this option is enabled the battery level is announced when it falls under 50%, 30% and 15%.

See ☞VoiceHowto for more details on configuring speech support in Rockbox.

8. Theme Settings

The THEME SETTINGS menu offers options that you can change to customize the visual apperance of Rockbox.

Browse Themes. This option will display all the currently installed themes on the player, press **Select** or **Right** to load the chosen theme and apply it.

A theme is a configuration file, stored in a specific directory, that typically changes the WPS , font used and on some platforms additional information such as background image and text colours.

There are a number of themes that ship with Rockbox. If none of these suit your needs, many more can be downloaded from . Some of the downloads from this website will actually be standalone WPS files, others will be full-blown themes.

Note: Themes do not have to be purely visual. It is quite possible to create a theme that switches between audio configurations for use in the car, with headphones and when connected to an external amplifier. See section 11.2.2 (page 125) for more details.

Browse fonts. Browse the installed fonts on your player. Selecting one will activate it. See section 11.1.2 (page 124) for further details about fonts.

Browse WPS files. Opens the FILE BROWSER in the `/.rockbox/wps` directory and displays all `.wps` files. Selecting one will activate it, stop will exit back to the menu. For further information about the WPS see section 4.3 (page 28). For information about editing a .wps file see section 11.2 (page 125).

Show Icons. Rockbox has the ability to display an icon to the left of the file in the FILE BROWSER. For details of these icons, see section A.1 (page 131).

Clear Backdrop: Rockbox allows you to select bitmap pictures to use as backdrops, see section 11.1.5 (page 125) for further information. This option allows you to clear the backdrops that you set.

Line Selector Type. This option allows you to select which type of line selector to use.

Pointer: A small arrow to the left of the menu text.

Bar (inverse): A bar with inverted foreground and background colour.

Bar (Solid Colour): A bar with a solid colour, the colour is set in the COLOURS submenu.

Bar (Gradient Colour): A bar with a colour gradient, the colours are set in the COLOURS submenu.

Colours. The options in this menu sets the colours for visual elements in Rockbox.

Line Selector Colours. These options sets the colours for the line selector bars.

Primary Colour: Set the primary colour used for the gradient line selector bar and the colour used for the solid color line selector bar.

Secondary Colour: Set the secondary colour used for the gradient line selector bar.

Text Colour: Set the colour of the selected text when using the solid colour or the gradient colour line selection bars.

Background Colour: Sets the background colour for the display.

Foreground Colour: Sets the colour used for text and icons.

Reset Colours: Resets the LCD display to Rockbox's default colours.

9. Recording Settings

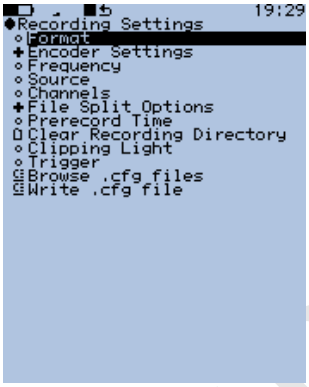

Figure 9.1.: The recording settings screen

Note: To change the location where recordings are stored open the CONTEXT MENU (see section 4.1.2 (page 23)) on the directory where you want to store them in the FILE BROWSER and select SET AS RECORDING DIRECTORY.

9.1. Format

Choose which format to save your recording in. The available choices are the two uncompressed formats PCM WAVE and AIFF, the losslessly compressed WAVPACK and the lossy MPEG LAYER 3.

9.2. Encoder Settings

This sets the bitrate when using the MPEG LAYER 3 format. And has no settings for the other formats.

9.3. Frequency

Recordings can only be made at a 22.05kHz frequency (sample rate) on this player.

9.4. Source

Choose the source of the recording. This can be MIC or LINE IN. For recording from the radio see section 5.9 (page 41).

9.5. Channels

This allows you to select mono or stereo recording. Please note that for mono recording, only the left channel is recorded. Mono recordings are usually somewhat smaller than stereo.

9.6. File Split Options

This sub menu contains options for file splitting, which can be used to split up long recordings into manageable pieces. The splits are seamless (frame accurate), no audio is lost at the split point. The break between recordings is only the time required to stop and restart the recording, on the order of 2 – 4 seconds.

Split Measure: This option controls wether to split the recording when the SPLIT FILESIZE is reached or when the SPLIT TIME has elapsed.

What to do when Splitting: This controls what will happend when the splitting condition is fullfilled the two available options here are START A NEW FILE or STOP RECORDING.

Split Time: Set the time to record between each split, if time is used as SPLIT MEASURE. Options (hours:minutes between splits): Off, 00:05, 00:10, 00:15, 00:30, 1:00, 1:14 (74 minute CD), 1:20 (80 minute CD), 2:00, 4:00, 8:00, 10:00, 12:00, 18:00, 24:00.

Split Filesize: Set the filesize to record between each split, if filesize is used as SPLIT MEASURE.

9.7. Prerecord Time

This setting buffers a small amount of audio so that when the record button is pressed, the recording will begin from that number of seconds earlier. This is useful for ensuring that a recording begins before a cue that is being waited for.

9.8. Clear Recording Directory

Resets the location where the recorded files are saved to the root of your player's drive.

9.9. Clipping Light

Causes the backlight to flash on when clipping has been detected.
Options: OFF, MAIN UNIT ONLY, MAIN AND REMOTE UNIT, REMOTE UNIT ONLY.

9.10. Trigger

Add description of triggered recording.

10. Plugins

Plugins are little programs that Rockbox can load and run. Only one plugin can be loaded at a time. Plugins have exclusive control over the user interface. This means you cannot switch back and forth between a plugin and Rockbox, a plugin is loaded, run and then exited, which returns control to Rockbox. Most plugins will not interfere with music playback but some of them will stop playback while running. Plugins have the file extension `.rock`. Most of them can be started from BROWSE PLUGINS in the MAIN MENU.

Viewer plugins get started automatically by opening an associated file (i.e. text files, chip8 games), or from the OPEN WITH option on the CONTEXT MENU.

10.1. Games

See also the Chip-8 emulator in section 10.3.2 (page 105) and Rockboy in section 10.3.6 (page 109).

10.1.1. Blackjack

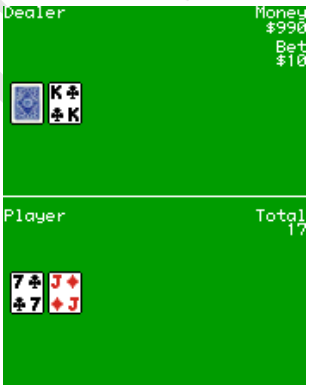

Figure 10.1.: Blackjack

Blackjack, a game played in casinos around the world, is now available in the palm of your hand! The rules are simple: try to get as close to 21 without going over or simply beat out the dealer for the best hand. Although this may not seem difficult, blackjack

is a game renowned for the strategy involved. This version includes the ability to split, buy insurance, and double down.

For the full set of rules to the game, and other facinating information visit http://www.blackjackinfo.com/blackjack-rules.php

Key	Action
	In menu
Select	Start new game
Rec	Resume saved game
Play	Show high scores
Power	Quit
	In game
Left/Right/ Scroll	Enter betting amount
Forward/Scroll Backward	
Select	Hit (Draw new card)
Right	Stay (End hand)
Left	Double down
Rec	Save game
Power	Return to menu or cancel

10.1.2. BrickMania

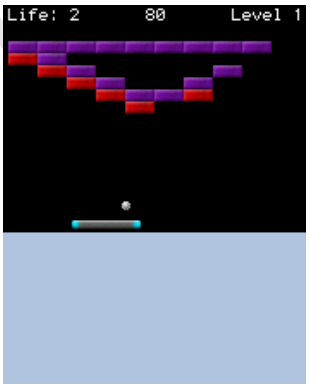

Figure 10.2.: BrickMania

BrickMania is a clone of the classic game Breakout. The aim of the game is to destroy all the bricks by hitting them with the ball once or more. Sometimes a special falls down when you destroy a brick. For a special to take effect, you must catch it with the paddle.

Look out for the bad ones.

Specials

Displayed	Name	Description
N	Normal	Returns paddle to normal.
D	Die	Ball dies; lose a life.
L	Life	Gain a life.
F	Fire	Allows you to shoot bricks with paddle.
G	Glue	Ball sticks to paddle each time it hits.
B	Ball	Immediately fires another ball.
FL	Flip	Flip left / right movement.

Key	Action
Left / Right Scroll Backward / Scroll Forward	Moves the paddle
Select	Release the ball / Fire
Power	Open menu / Quit

10.1.3. Bubbles

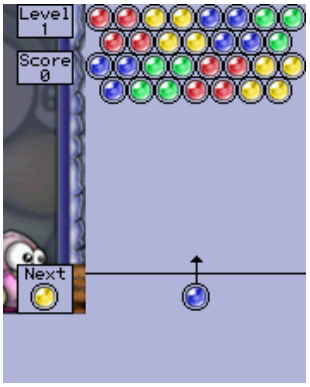

Figure 10.3.: Bubbles

The goal of the game is to beat each level as quickly as possible by clearing the board of all bubbles. Bubbles are removed from the board when a cluster of three of more of the same type is formed. The game is over when any bubbles on the board extend below the bottom line. To make things more difficult, the entire board is shifted down every time a certain number of shots have been fired. Points are awarded depending on how quickly the level was completed.

Key	Action
	In menu
Play	Start new game
Submenu	Resume saved game
Select	Show high scores
Scroll	Select starting level
Forward/Scroll	
Backward	
Power	Quit
	In game
Play	Pause game
Left/Right	Aim the bubble
Select	Fire bubble
Submenu	Save game
Power	Exit to menu

10.1.4. Chessbox

Figure 10.4.: Chessbox

Chessbox is a chess game with computer AI. The chess engine is a port of GNU Chess 2 by John Stanback.

It also works as a PGN file viewer. Instead of executing the game from the plugin menu, look for any file with `.pgn` extension in the file browser and execute it. Chessbox will show the list of matches included in the file and allow you to select the one you want to watch. After that, you can scroll back and forth through the moves of the game. If the menu is invoked while in the viewer, the user is allowed to select a new match from the same file or quit the game.

When you quit the game the current state will be saved and restored when you resume the game. The menu also allows the user to reload the last game saved, save the current position and start a new game without having to quit the game.

Keys

Key	Action
Direction keys	Move the cursor
Select	Select / Move piece
Rec	Change level
Select+Right	Force play
Power	Show the menu

10.1.5. Doom

Figure 10.5.: Doom

This is the famous Doom game.

Getting started

For the game to run you need `.wad` game files located in `/.rockbox/doom/` on your player. Create the directory and save the following files there:

rockdoom.wad. The Rockbox `.wad`, based on `prboom.wad` from prboom-2.2.6

Your wad files. Copy all Doom wads you wish to play into that directory.

The needed files can be found at ☞PluginDoom

To play addon wads create the `addons` directory within the doom directory. Place `wad` files in this directory. Currently doom only supports a maximum number of 10 addons.

A free alternative for Doom 2 is FreeDoom (http://freedoom.sourceforge.net). This can be used in place of `doom2.wad`, or it may be used as an addon in Doom, by placing it in the `addons` directory.

Menus

Rockdoom Menu. The Rockdoom menu is shown when Doom is first launched. This is the only time it can be accessed (before starting the game). To re-adjust Rockdoom options, you will need to quit your current game and restart the plugin.

Main Menu. The Doom plugin has a main menu, which is brought up before a game is started. It has the following entries:

Game. Select which (official) wad to launch
Addon. Select which unofficial addon wad to launch (From `/.rockbox/doom/addons` directory)
Demos. Select which demo file to play on game start
Options. Configure low-level Doom options
Play Game. Launch the wad/addon/Demo chosen

Options Menu. This menu has the following options:

Sound. Enable or Disable sound in Doom
Set Keys. Change the game key configuration
Time Demo. Run a timed demo, to test game speed on a player (Only runs on Doom Shareware)
Player Bobbing. Enable or Disable player up/Down movement
Translucency. Enable or Disable sprite translucency (Fireballs, Plasma...)
Fake Contrast. Enable or Disable modified game lighting
Always Run. Make the player always run
Headsup Display. Show the player status when in fullscreen
Statusbar Always Red. Disable color response statusbar

InGame Main Menu. This menu can only be accessed from within a running game, and is displayed by pressing **Power**

New Game. Start a new game
Options. In game options
Load Game. Load a saved game

Save Game. Save the current game
Quit. Quit the game

InGame Options Menu. This menu has the folloing options:

End Game. Ends the current game
Messages. Enable or Disable in game messages
Screen Size. Shrink or Enlarge the displayed portion of the game
Gamma. Change the brightness (Gamma) of the game
Sound Volume. Change the sound, music and system volume

Note: In game music is not currently supported

Keys

Key	Action
Play	Move Forward
Submenu	Down
Left	Turn Left
Right	Turn Right
Select	Shoot
Rec	Open
Power	Escape
Scroll Backward	Enter
Scroll Forward	Change Weapon

Playing the game

After installation of the `wad` files is complete you can start the game. **more description is needed**

10.1.6. Flipit

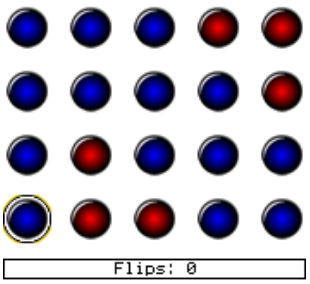

Figure 10.6.: Flipit

Flipping the colour of the token under the cursor also flips the tokens above, below, left and right of the cursor. The aim is to end up with a screen containing tokens of only one colour.

Key	Action
Play/Submenu/Left/Right	Move the cursor
Select	Flip
Rec+Left	Shuffle
Rec+Right	Solve
Rec+Select	Solve step by step
Power	Quit the game

10.1.7. Jewels

Figure 10.7.: Jewels

Jewels is a simple yet addicting game which involves swapping pairs of jewels in order to form connected segments of three or more of the same type.

The goal of the game is to score as many points as possible before running out of available moves. Higher points are awarded to larger combos. The game advances to the next level after every one hundred points and randomly clears several jewels.

Key	Action
Left/Right/ Play/Submenu	Move the cursor around the jewels
Select	Select a jewel
Long **Select**	Show the in-game menu
Power	Exit

10.1.8. MazezaM

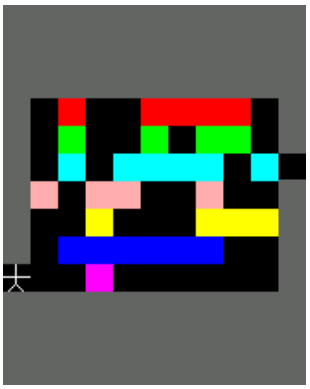

Figure 10.8.: MazezaM

The goal of this puzzle game is to escape a dungeon consisting of ten "mazezams". These are rooms containing rows of blocks which can be shifted left or right. You can move the rows only by pushing them and if you move the rows carelessly, you will get stuck. You can have another go by selecting "retry level" from the menu, but this will cost you a life. You start the game with three lives. Luckily, there are checkpoints at levels four and eight.

Key	Action
Scroll Forward, **Scroll Backward**, **Left**, **Right**	Move Character
Power	Menu

10.1.9. Minesweeper

Figure 10.9.: Minesweeper plugin

The classic game of minesweeper. Use the **Play** and **Submenu** keys to select the required percentage of mines to set the difficulty then press the **Select** key to begin.

The aim of the game is to uncover all of the squares on the board. If a mine is uncovered then the game is over. If a mine is not uncovered, then the number of mines adjacent to the current square is revealed. The aim is to use the information you are given to work out where the mines are and avoid them. When the player is certain that they know the location of a mine, it can be tagged to avoid accidentally "stepping" on it.

Key	Action
Play/Submenu/Left/Right	Move the cursor across the minefield
Scroll Forward/Scroll Backward	Scroll through the entire minefield
Rec	Toggle flag on / off
Select	Reveal the contents of the current square
Long **Rec**	Display the current game status
Power	Exit the game

10.1.10. Pacbox

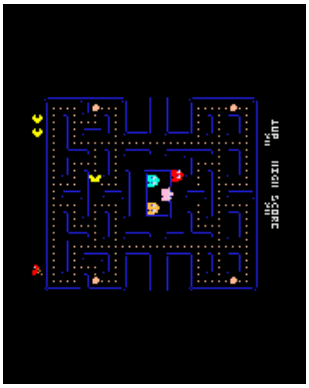

Figure 10.10.: Pacbox

Pacbox is an emulator of the Pacman arcade machine hardware. It is a port of *PIE – Pacman Instructional Emulator* (http://www.ascotti.org/programming/pie/pie.htm).

ROMs

To use the emulator to play Pacman, you need a copy of ROMs for "Midway Pacman".

Filename	MD5 checksum
pacman.5e	2791455babaf26e0b396c78d2b45f8f6
pacman.5f	9240f35d1d2beee0ff17195653b5e405
pacman.6e	290aa5eae9e2f63587b5dd5a7da932da
pacman.6f	19a886fcd8b5e88b0ed1b97f9d8659c0
pacman.6h	d7cce8bffd9563b133ec17ebbb6373d4
pacman.6j	33c0e197be4c787142af6c3be0d8f6b0

These need to be stored in the `/.rockbox/pacman/` directory on your player. In the MAME ROMs collection the necessary files can be found in `pacman.zip` and `puckman.zip`. The MAME project itself can be found at http://www.mame.net.

Keys

Key	Action
Right	Move Up
Left	Move Down
Play	Move Left
Submenu	Move Right
Select+Submenu	Insert Coin
Select	1-Player Start
Rec	2-Player Start
Power	Menu

10.1.11. Pegbox

WARNING! Image not found

Figure 10.11.: pegbox

To beat each level, you must destroy all of the pegs. If two like pegs are pushed into each other they disappear except for triangles which form a solid block and crosses which allow you to choose a replacement block.

Key	Action
	In game
Play, **Submenu**, **Left**, **Right**	to move around
Select	to select/save
Power	to quit
Rec	to restart level
Scroll Backward	to go up a level
Scroll Forward	to go down a level

10.1.12. Pong

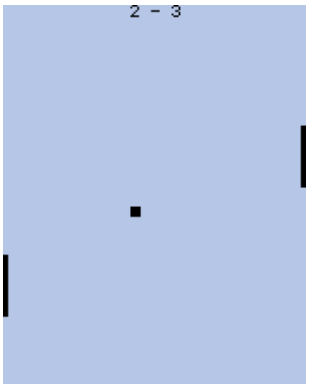

Figure 10.12.: Pong

Pong is a simple two player "tennis game". Whenever a player misses the ball the other scores.

Key	Action
Left	Left player up
Submenu	Left player down
Play	Right player up
Right	Right player down
Power	Quit

10.1.13. Robotfindskitten

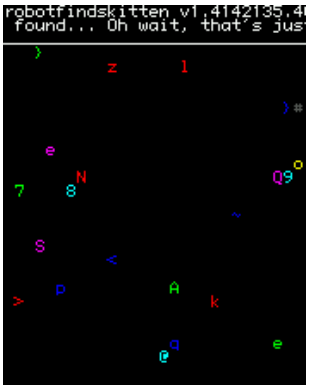

Figure 10.13.: Robotfindskitten

In this game, you are robot (#). Your job is to find kitten. This task is complicated by the existence of various things which are not kitten. Robot must touch items to determine if they are kitten or not. The game ends when robotfindskitten.

Key	Action
Scroll Forward, Scroll Backward, Left, Right	Move robot
Power	Quit

10.1.14. Rockblox

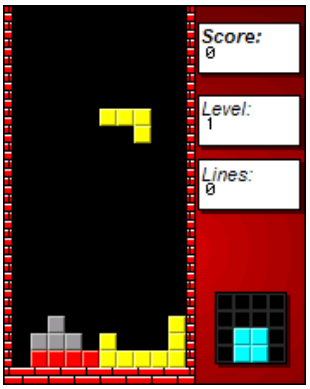

Figure 10.14.: Rockblox

Rockblox is a rockbox version of the classic falling blocks game. The aim of the game is to make the falling blocks of different shapes form full rows. Whenever a row is complete it will be cleared and the game score will increase. For every ten lines completed the game level increases, making the blocks fall faster. If the pile of blocks reach the ceiling the game is over.

Key	Action
Rec	Restart game
Left	Move left
Right	Move right
Submenu	Move down
Scroll Forward	Rotate left
Scroll Backward	Rotate right
Select	Drop
Hold switch	Pause
Power	Quit

10.1.15. Sliding Puzzle

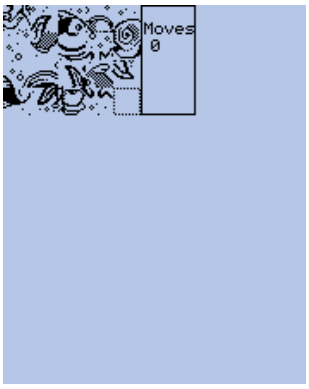

Figure 10.15.: Sliding puzzle

The classic sliding puzzle game. Rearrange the pieces so that you can see the whole picture, or switch to number tiles if you like it a little easier

Key controls:

Key	Action
Left, **Right**, **Play** and **Submenu**	Move Tile
Rec	Shuffle
Select	Change between picture and numbered tiles
Power	Stop the game

10.1.16. Snake

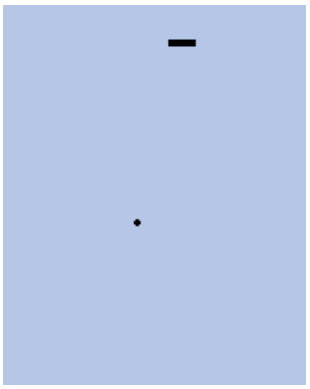

Figure 10.16.: Snake

This is the popular snake game. The aim is to grow your snake as large as possible by eating the dots that appear on the screen. The game will end when the snake touches either the borders of the screen or itself.

Key	Action
Play/Submenu	Change levels (1 is slowest, 9 is fastest)
Select	Toggle Play/Pause

10.1.17. Snake 2

Figure 10.17.: Snake 2 – The Snake Strikes Back

Another version of the Snake game. Move the snake around, and eat the apples that pop up on the screen. Each time an apple is eaten, the snake gets longer. The game ends when the snake hits a wall, or runs into itself.

Key	Action
	In menu
Play/Submenu	Set game speed
Right/Left	Select starting maze
Rec	Select game type (A or B)
Select	Start the game
	In game
Play/Submenu/Left/Right	Steer the snake
Select	Pause and resume the game
Power	Quit

In game A, the maze stays the same, in game B after an increasing number of apples eaten the maze is replaced by a new one.

10.1.18. Sokoban

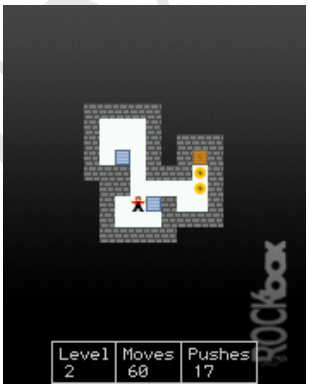

Figure 10.18.: Sokoban

The object of the game is to push boxes into their correct position in a crowded warehouse with a minimal number of pushes and moves. The boxes can only be pushed, never pulled, and only one can be pushed at a time.

Sokoban may be used as a viewer for viewing saved solutions and playing external level sets with the `.sok` extension. Level sets should be in the standard Sokoban text

format or RLE (Run Length Encoded). For more information about the level format, see http://sokobano.de/wiki/index.php?title=Level_format

Key	Action
	In game
Play, Submenu, Left, Right	Move the "sokoban" up, down, left, or right
Power	Menu
Select	Undo last movement
Rec	Redo previously undone move
Select+Submenu	Back to previous level
Select+Right	Restart level
Select+Play	Go to next level
	Solution playback
Select	Pause/resume
Play/Submenu	Increase/decrease playback speed
Left/Right	Go backward/forward (while paused)
Power	Quit

Some places where can you can find level sets:

- http://www.sourcecode.se/sokoban/levels.php
- http://sokobano.de/en/levels.php

Note that some level sets may contain levels that are too large for this version of Sokoban and are unplayable as a result.

10.1.19. Solitaire

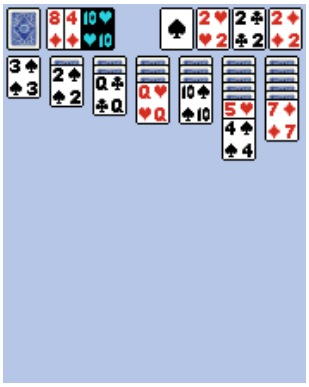

Figure 10.19.: Klondike solitaire

This is the classic Klondike solitaire game for Rockbox. This is probably the best-known solitaire in the world. Many people do not even realize that other games exist. Though the name may not be familiar, the game itself certainly is. This is due in no small part to Microsoft's inclusion of the the game in every version of Windows. Though popular, the odds of winning are rather low, perhaps one in thirty hands.

For the full set of rules to the game, and other facinating information visit http://www.solitairecentral.com/rules/klondike.html

Key	Action
Left/Right/ Scroll Forward/Scroll Backward	Move Cursor around.
Select	Select cards, move cards, reveal hidden cards...
Rec	If a card was selected – unselect it, else Draw 3 new cards from the remains stack
Left	Put the card from the top of the remains stack on top of the cursor
Rec+Right	Put the card under the cursor on one of the 4 final colour stacks.
Right	Put the card on top of the remains stack on one of the final colour stacks.
Power	Show menu

10.1.20. Spacerocks

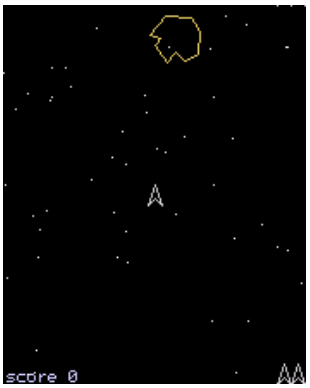

Figure 10.20.: Spacerocks

Spacerocks is a clone of the old arcade game Asteroids. The goal of the game is to blow up the asteroids and avoid being hit by them. Once in a while, a UFO will appear – shoot this for extra points.

Key	Action
Select	Shoot
Play	Thrust
Scroll Backward/ Scroll Forward	Turn left/right
Submenu	Teleport
Rec	Pause game
Power	Quit

10.1.21. Star

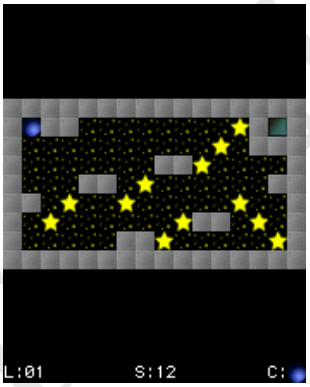

Figure 10.21.: Star game

This is a puzzle game. It is actually a rewrite of Star, a game written by CDK designed for the hp48 calculator.

Rules: Take all of the "o"s to go to the next level. You can switch control between the filled circle, which can take "o"s, and the filled square, which is used as a mobile wall to allow your filled circle to get to places on the screen it could not otherwise reach. The block cannot take "o"s.

Key	Action
Left	Move Left
Right	Move Right
Play	Move Up
Submenu	Move Down
Select	Switch between circle and square
Select+Left	Previous level
Select+Submenu	Reset level
Select+Right	Next level
Power	Exit the game

10.1.22. Sudoku

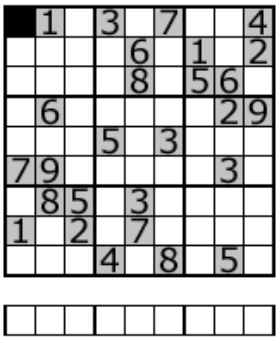

Figure 10.22.: Sudoku

Sudoku in Rockbox is implemented as both a plugin and a viewer. When you start Sudoku in plugin mode from the BROWSE PLUGINS menu, a random game will be generated automatically, and an estimate of its difficulty (very easy, easy, medium, hard or fiendish) will be displayed on the screen. New games can be generated from the GENERATE menu option.

When you use Sudoku as a viewer for playing pre-generated Sudoku games. You need sudoku games stored (one game per file) in text files with the `.ss` extension (see links below). You then browse these games using the normal FILE BROWSER, and open the file to launch Sudoku.

You can create and save your own grids under the NEW menu option. Enter the menu (as described in the key table below) when you have finished and enter the full path to save to including the `.ss` extension (e.g. `/sudoku/new.ss`).

The thing on the left (AKA the scratchpad)

When you play Sudoku on paper most people like to mark numbers in cells that are possible candidates for the cells. This can be done with the column on the left. Change the number under the cursor to a number which might be valid and press the scratchpad button, the number will then be added on the left. The column is stored seperatly for every cell on the board. These are *NOT* saved when saving the game.

Key	Action
Play/Submenu/Left/Right	Move the cursor
Scroll Backward/Scroll Forward	Change number under the cursor
Long **Scroll Backward/Scroll Forward**	Constantly changing the number under the cursor
Select	Open Menu
Rec	Add/Remove number to scratchpad
Power	Quit

Some places where can you can find `.ss` files:

- Simple Sudoku (Advanced Puzzle Packs 1 and 2 located near the bottom of that page): http://www.angusj.com/sudoku/
- Kjell's Sudoku generator/solver: http://kjell.haxx.se/sudoku/

10.1.23. Wormlet

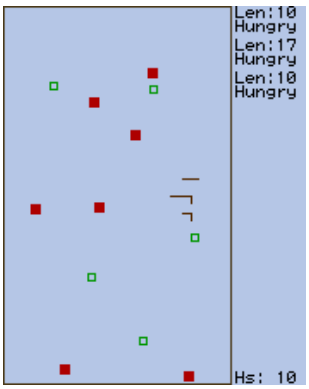

Figure 10.23.: Wormlet game

Wormlet is a multi-worm game on a multi-threaded multi-functional Rockbox console. You navigate a hungry little worm. Help your worm to find food and to avoid poisoned argh-tiles. The goal is to turn your tiny worm into a big worm for as long as possible.

Menu controls:

Key	Action
Left / Right	Controls number of worms in the game

Game controls:

Key	Action
Left	Turn left
Right	Turn right
Play	Turn Up
Submenu	Turn Down

The game

Use the control keys of your worm to navigate around obstacles and find food. Worms do not stop moving except when dead. Dead worms are no fun. Be careful as your worm will try to eat anything that you steer it across. It won't distinguish whether it is edible or not.

Food. The small square hollow pieces are food. Move the worm over a food tile to eat it. After eating the worm grows. Each time a piece of food has been eaten a new piece of food will pop up somewhere. Unfortunately for each new piece of food that appears two new "argh" pieces will appear, too.

Argh. An "argh" is a black square poisoned piece - slightly bigger than food - that makes a worm say "Argh!" when run into. A worm that eats an "argh" is dead. Thus eating an "argh" must be avoided under any circumstances. "Arghs" have the annoying tendency to accumulate.

Worms. Thou shall not eat worms. Neither other worms nor thyself. Eating worms is blasphemous cannibalism, not healthy and causes instant death. And it doesn't help anyway: the other worm isn't hurt by the bite. It will go on creeping happily and eat all the food you left on the table.

Walls. Don't crash into the walls. Walls are not edible. Crashing a worm against a wall causes it a headache it doesn't survive.

Game over. The game is over when all worms are dead. The longest worm wins the game.

Pause the game. Press **Select** to pause the game. Press **Select** again to resume the game.

Stop the game. There are two ways to stop a running game.

- If you want to quit Wormlet entirely simply hit **Power**. The game will stop immediately and you will return to the game menu.
- If you want to stop the game and still see the screen hit **Rec**. This freezes the game. If you hit **Rec** button again a new game starts with the same configuration. To return to the games menu you can hit **Power**. A stopped game can not be resumed.

The scoreboard

On the right side of the game field is the score board. For each worm it displays its status and its length. The top most entry displays the state of worm 1, the second worm 2 and the third worm 3. When a worm dies its entry on the score board turns black.

Len: Here the current length of the worm is displayed. When a worm is eating food it grows by one pixel for each step it moves.

Hungry: That's the normal state of a worm. Worms are always hungry and want to eat. It is good to have a hungry worm since it means that your worm is alive. But it is better to get your worm growing.

Growing: When a worm has eaten a piece of food it starts growing. For each step it moves over food it can grow by one pixel. One piece of food lasts for 7 steps. After your worm has moved 7 steps the food is used up. If another piece of food is eaten while growing it will increase the size of the worm for another 7 steps.

Crashed: This indicates that a worm has crashed against a wall.

Argh: If the score board entry displays "Argh!" it means the worm is dead because it tried to eat an "argh". Until we can make the worm say "Argh!" it is your job to say "Argh!" aloud.

Wormed: The worm tried to eat another worm or even itself. That's why it is dead now. Making traps for other players with a worm is a good way to get them out of the game.

Hints

- Initially you will be busy with controlling your worm. Try to avoid other worms and crawl far away from them. Wait until they curl up themselves and collect the food afterwards. Don't worry if the other worms grow longer than yours - you can catch up after they've died.

- When you are more experienced watch the tactics of other worms. Those worms controlled by artificial stupidity head straight for the nearest piece of food. Let the other worm have its next piece of food and head for the food it would probably want next. Try to put yourself between the opponent and that food. From now on you can 'control' the other worm by blocking it. You could trap it by making a 1 pixel wide U-turn. You also could move from food to food and make sure you keep between your opponent and the food. So you can always reach it before your opponent.

10.1.24. Xobox

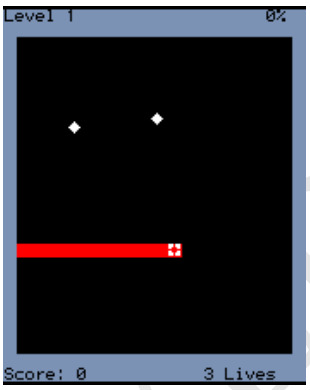

Figure 10.24.: Xobox

Xobox is a simple clone of the well known arcade game Qix. The aim of the game is to section off parts of the arena with your trail in order to remove that section from the game. Be careful not to get in the way of enemy balls because, if they hit you or your trail, you lose a life. To finish a level you have to section off more than 75%.

Key	Action
Play, **Submenu**, **Left**, **Right**	Move around the arena
Rec	Pause
Power	Open menu

10.2. Demos

10.2.1. Bounce

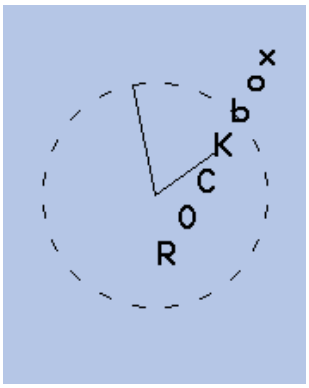

Figure 10.25.: Bounce

This demo is of the word "Rockbox" bouncing across the screen. There is also an analogue clock in the background. In SCROLL MODE the bouncing text is replaced by a different one scrolling from right to left.

Key	Action
Scroll Backward / Scroll Forward	Moves to next/previous option
Left / Right	Increases/decreases option value
Select	Toggles Scroll mode
Power	Exits bounce demo

Available options are:

Xdist/Ydist. The distance to X axis and Y axis respectively

Xadd/Yadd. How fast the code moves on the sine curve on each axis

Xsane/Ysane. Changes the appearance of the bouncing.

10.2.2. Credits

The credits plugin scrolls the entire list of the names of all the Rockbox contributors after displaying the Rockbox logo and version. This plugin is called when selecting ROCKBOX INFO from the INFO section of the Rockbox main menu.

10.2.3. Cube

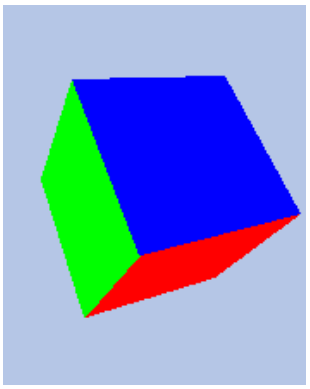

Figure 10.26.: Cube

This is a rotating cube screen saver in 3D.

Key	Action
Rec	Display at maximum frame rate
Select	Pause
Long **Select**	Cycle draw mode
Right/Left	Increase / decrease x axis
Scroll	Increase / decrease y axis
Forward/Scroll	
Backward	
PlaySubmenu	Increase / decrease z axis
Power	Quit

10.2.4. Demystify

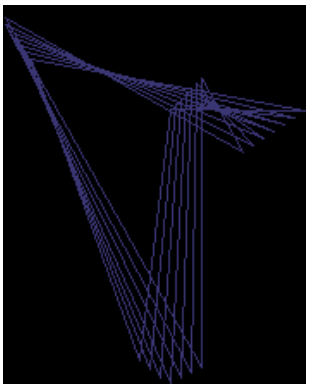

Figure 10.27.: Demystify

Demystify is a screen saver like demo.

Key	Action
Right / Left	Increase / decrease speed
Scroll Forward / Scroll Backward	Add / remove polygon
Power	Quit

10.2.5. Fire

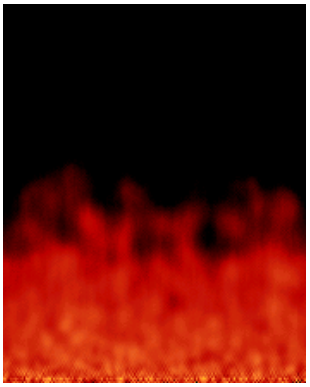

Figure 10.28.: Fire

Fire is a demo displaying a fire effect.

Key	Action
Scroll Forward / Scroll Backward	Increase / decrease number of flames
Left	Toggle flame type
Right	Toggle moving flames
Power	Quit

10.2.6. Logo

Demo showing the Rockbox logo bouncing around the screen.

Key	Action
Right / Left	Increase / decrease speed on the x-axis
Play / Submenu	Increase / decrease speed on the y-axis
Power	Quit

10.2.7. Mandelbrot

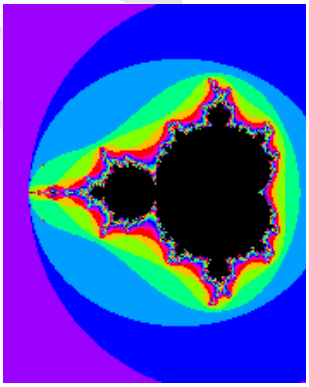

Figure 10.29.: Mandelbrot

This demonstration draws fractal images from the Mandelbrot set .

Key	Action
Direction keys	Move about the image
Scroll Forward	Zoom in
Scroll Backward	Zoom out
Select+Left	Decrease iteration depth (less detail)
Select+Right	Increase iteration depth (more detail)
Rec	Reset and return to the default image
Power	Quit

10.2.8. Mosaique

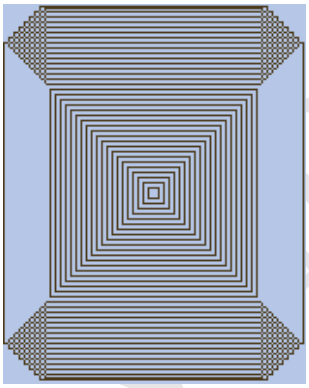

Figure 10.30.: Mosaique

This simple graphics demo draws a mosaic picture on the screen of the player. Press **Power** to quit.

10.2.9. Oscilloscope

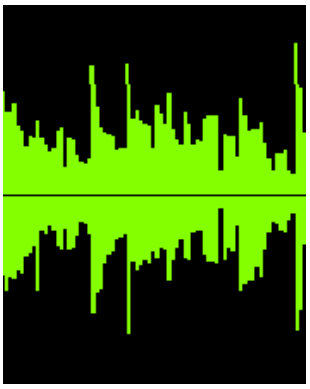

Figure 10.31.: Oscilloscope

This demo shows the shape of the sound samples that make up the music being played. At faster speed rates, the player is less responsive to user input and music may start to skip.

Keys

Key	Action
Select	Toggle filled / curve / plot
Submenu	Toggle whether to scroll or not
Play	Toggle drawing orientation
Rec	Pause the demo
Scroll	Increase / decrease volume
Forward/Scroll Backward	
Right/Left	Increase / decrease speed
Power	Exit demo

10.2.10. Plasma

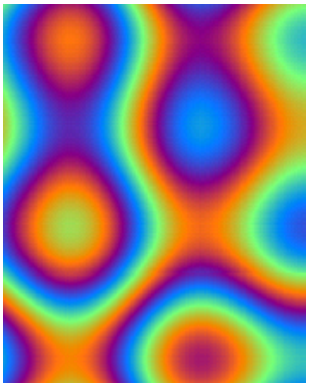

Figure 10.32.: Plasma

Plasma is a demo displaying a 80's style retro plasma effect.

Key	Action
Play / Submenu	Adjust frequency
Select	Change colours
Power	Quit

10.2.11. Snow

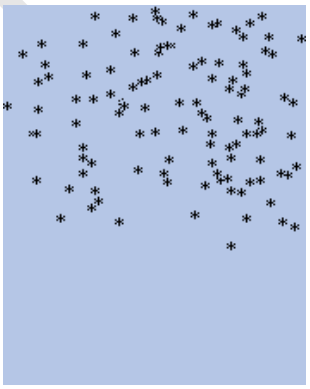

Figure 10.33.: Have you ever seen snow falling?

This demo replicates snow falling on your screen. If you love winter, you will love this demo. Or maybe not. Press **Power** to quit.

10.2.12. Starfield

Figure 10.34.: Starfield

Starfield simulation (like the classic screensaver).

Key	Action
Right / Left	Increase / decrease number of stars
Play / Submenu	Increase / decrease speed
Select	Change colours
Power	Quit

10.2.13. VU meter

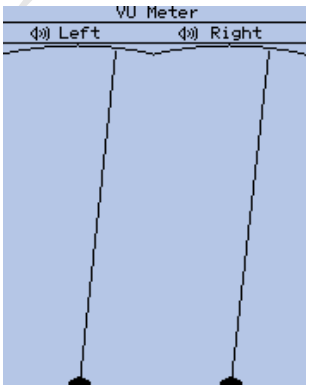

Figure 10.35.: VU-Meter

This is a VU meter, which displays the volume of the left and right audio channels. There are 3 types of meter selectable. The analogue meter is a classic needle style. The digital meter is modelled after LED volume displays, and the mini-meter option allows for the display of small meters in addition to the main display (as above). From the settings menu the decay time for the meter (its memory), the meter type and the meter scale can be changed.

Key	Action
Power	Save settings and quit
Rec	Help
Select	Settings
Scroll Forward	Raise Volume
Scroll Backward	Lower Volume

10.3. Viewers

Viewers are plugins which are associated with specific file extensions. They cannot be run directly but are started by "playing" the associated file. Viewers are stored in the **/.rockbox/viewers/** directory.

10.3.1. Shortcuts

The Shortcuts Plugin allows you to jump to places within the file browser without having to navigate there manually. The plugin works with `.link` files. A `.link` file is just a text file with every line containing the name of the file or the directory you want to quickly jump to. All names should be full absolute names, i.e. they should start with a `/`. Directory names should also end with a `/`.

How to create `.link` files

You can use your favourite text editor to create a `.link` file on the PC an then copy the file to the player. Or you can use the context menu on either a file or a directory in the file browser tree, and use the "Add to shortcuts" menu option. This will append a line with the full name of the file or the directory to the `shortcuts.link` file in the root directory of the player. (The file will be created if it does not exist yet.) You can later rename the automatically created `shortcuts.link` file or move it to another directory if you wish. Subsequent calls of the context menu will create it again.

How to use `.link` files, i.e. jump to desired places

To use a `.link` file just "play" it from the file browser. This will show you a list with the entries in the file. Selecting one of them will then exit the plugin and leave you within

the directory selected, or with the file selected in the file browser. You can then play the file or do with it whatever you want. The file will not be "played" automatically.

If the `.link` file contains only one entry no list will be shown, you will directly jump to that location. The file `shortcuts.link` in the root directory is an exception. After "playing" it, the list will be shown even if the file contains just one entry.

If the list you are seeing is from `shortcuts.link` in the root directory, you can delete the selected entry by pressing **Submenu**. Deleting entries from other `.link` files is not possible.

Advanced Usage

Placing the line "#Display last path segments=n" (where n is a number) in the beginning of a `.link` file will leave just the last n segments of the entries when they are shown. For example, if n is chosen to be 1, then the entry `/MyMusic/collection/song.mp3` will be shown as `song.mp3`. This allows you to hide common path prefixes.

You can also provide a custom display name for each entry individually. To do so, append a tabulator character after the entry's path followed by your custom name. That name will then be used for showing the entry. For example, `/MyMusic/collection/song.mp3<TAB>M` `favourite song!`

10.3.2. Chip-8 Emulator

Chip8 is a kind of assembly language for a long-gone architecture. This plugin runs games written using the chip8 instructions. To start a game open a `.ch8` file in the FILE BROWSER

There are lots of tiny Chip8 games (usually only about 256 bytes to a couple of KB) which were made popular by the HP48 calculator's emulator for them. The original Chip8 had 64x32 pixel graphics, and the new superchip emulator supports 128x64 graphics.

The only problem is that they are based on a 4x4 keyboard, but since most games do not use all of the buttons, this can easily be worked around.

To do this, one may put a `.c8k` file with the same name as the original program which contains new key mappings (for `BLINKY.ch8`, one writes a `BLINKY.c8k` file). That `.c8k` file contains 16 characters describing the mapping from the Chip8 keyboard to the default key mapping (that way, several Chip8 keys can be pressed using only one Rockbox key). For example, a file containing the single line:

CODE

```
0122458469ABCDEF
```

would correspond to the following non-default mappings:

$3 \rightarrow 2, 6 \rightarrow 8, 7 \rightarrow 4, 8 \rightarrow 6$.

The default keymappings are:

Chip8	Off	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
Key	**Power**			**Scroll Backward**	**Left**	**Select**	**Right**		**Scroll Forward**								

Some places where can you can find `.ch8` files:

- The PluginChip8 page on www.rockbox.org has several attached: ☞PluginChip8
- Check out the HP48 chip games section: http://www.hpcalc.org/hp48/games/chip/
- PC emulator by the guy who wrote the HP48 emulator: http://www.pdc.kth.se/~lfo/chip8/CHIP8.htm
- Links to other chip8 emulators: http://www.zophar.net/chip8.html

10.3.3. JPEG viewer

Open a JPEG file in the FILE BROWSER to view it.
Note: When an audio file is playing the size of the image is limited as the decoding process needs to share memory with audio tracks. To be able to view a bigger file you may need to stop playback.

Key	Action
Play / Submenu / Left / Right	Move around in zoomed in image
Select	Zoom in
Long **Select**	Zoom out
Scroll Forward	Next jpeg in directory
Scroll Backward	Previous jpeg in directory
Rec	Show menu

The menu has the following entries.

Quit. Quits the viewer and returns to the FILE BROWSER.

Toggle Slideshow Mode. Enables or disables the slideshow mode.

Change Slideshow Timeout. You can set the timeout for the slideshow between 1 second and 20 seconds.

Show Playback Menu. From the playback menu you can control the playback of the currently loaded playlist and change the volume of your player.

Return. Returns you to the image

Note: Progressive scan and other unusual JPEG files are not supported, and will result in various "unsupported xx" messages. Processing could also fail if the image is too big to decode which will be explained by a respective message.

10.3.4. Midiplay

To get MIDI file playback, a patchset is required. This file contains the instruments required to synthesize the music. A sample patchset is available through the wiki at ☞PluginMidiPlay, and needs to be extracted to the `.rockbox` directory in the root of your player. There should now be a `/.rockbox/patchset/` directory, with the patchset directory containing several `.pat` files and two `.cfg` files. Just select a MIDI file with either the `.mid` or `.midi` extension in the file browser to start playback.
Note: Currently playing MIDI files is still in its early stages and you might experience "Buffer miss!" with many files, except simple ones.

Key	Action
Scroll Forward/ Scroll Backward	Volume up/ Volume down
Right/ Left	Skip 3 seconds forward/ backward
Play	Pause/Resume playback
Power	Stop playback and quit

10.3.5. MPEG Player

The Mpeg Player is a video player plugin capable of playing back MPEG-1 and MPEG-2 video streams with MPEG audio multiplexed into `.mpg` files.

To play a video file, you just select it in the Rockbox FILE BROWSER. If your file does not have the `.mpg` extension but is encoded in the supported format, you will need to use the OPEN WITH... context menu option and choose MPEGPLAYER.

Key	Action
Play	Pause/Resume
Power	Stop
Scroll Backward / Scroll Forward	Adjust volume up / down
Select	Open the MPEG Player menu

When a video file is selected, the start Menu will be displayed, unless it is disabled via the option "start menu" (see below). In the latter case the video will start playing immediately - unless a resume point is found, in which case the resume menu is presented.

Start Menu

Play from beginning Resume information is discarded and the video plays from the start.

Resume time (min): x.x Resume video playback at stored resume time x.x (start of the video if no resume time is found).

Set start time (min) A preview screen is presented consisting of a thumbnail preview and a progress bar where the user can select a start time by 'seeking' through the video. The video playback is started by pressing the select button.

Quit mpegplayer Exit the plugin.

Resume Menu

Yes (min): x.x Resume video playback at stored resume time x.x.

No Play video from the beginning.

Main Menu

Display Options Opens "Display Options" submenu - see below.

Start Menu (default: on) Enable/disable the start menu.

Clear all resumes: x Discard all x resume points.

Quit mpegplayer Exit the plugin.

Display Options Menu

Dithering (default: off) Prevent banding effects in gradients by blending of colours. (only available on Sansa e200, Sansa c200 and Gigabeat F/X)

Show FPS (default: off) This option displays (once a second - if your video is full-screen this means it will get overwritten by the video and appear to flash once per second) the average number of frames decoded per second, the total number of frames skipped (see the Skip Frames option), the current time (in 100Hz ticks) and the time the current frame is due to be displayed.

Limit FPS (default: on) With this option disabled, mpegplayer will display the video as fast as it can. Useful for benchmarking.

Skip frames (default: on) This option causes mpegplayer to attempt to maintain real-time playback by skipping the display of frames - but these frames are still decoded. Disabling this option can cause loss of A/V sync.

See this page in the Rockbox wiki for information on how to encode your videos to the supported format. ☞PluginMpegplayer

10.3.6. Rockboy

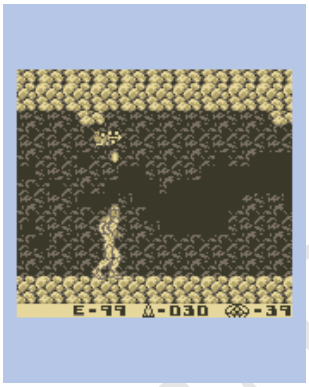

Figure 10.36.: Rockboy

Rockboy is a Nintendo Game Boy and Game Boy Color emulator for Rockbox based on the gnuboy emulator. To start a game open a ROM file saved as `.gb` or `.gbc` in the file browser.

Default keys

Key	Action
Select	A button
Rec	B button
Scroll Backward	Start
Scroll Forward	Select
Power	Open Rockboy menu

Rockboy menu

Back to Game. Takes you back to the game.

Load State... Loads a previously saved state.

Save State... Saves your current state.

Options... Frameskip. Change frameskip setting to improve speed.

Sound ON/OFF. Toggle sound.

Stats ON/OFF. Toggle showing fps and current frameskip.

Set Keys (BUGGY) Select this option to set a new keymapping.

Quit RockBoy. Quits the Rockboy plugin.

10.3.7. Search

This plugin can be used on playlists. It searches through the playlist that it opened on looking for any occurrences of the string entered by the user. The results of this search are saved to a new playlist, **search_results.m3u**, within the same directory as the original playlist.

10.3.8. Sort

This plugin takes a file and sorts it in ascending alphabetical order. Case is ignored. This is useful for ordering playlists generated by the CREATE PLAYLIST menu option (see section **??** (page **??**)).

10.3.9. Text Viewer

This is a Viewer for text files with word wrap. Just open a .txt file to display it. The text viewer features controls to handle various styles of text formatting, has top-of-file and bottom-of-file buttons. You can view files without a `.txt` extension by using *Open with* from the *Context Menu* (see section 4.1.2 (page 23)).

Mode settings

Word mode toggles between Wrap and Chop.

Wrap breaks lines at white space or hyphen.

Chop breaks lines at the maximum column limit.

Line mode cycles through Normal, Join and Expand.

Normal breaks lines at newline characters.

Join ignores unpaired newline characters (i.e., joins lines). Useful for adopting the orphans that occur with e-mail style (i.e.,pre-wrapped) text files.

Expand doubles unpaired newlines (i.e., adds a blank line). Useful for making the paragraphs clearer in some book style text files.

View mode toggles between Narrow and Wide.

Narrow sets maximum column to the screen width.

Wide sets maximum column to 114. Useful for navigating large files. (Currently, Wide and Join cannot be selected together.)

Page mode toggles between Normal and Overlap.

Normal sets page-down/page-up to one full screen.

Overlap tells page-down/page-up to retain one line from previous screen.

Scrollbar mode toggles scrollbar for the current View mode.

Narrow mode has no scrollbar by default, until toggled.

Wide mode has a scrollbar by default, until toggled.

Settings are not remembered after the viewer has been exited.

Key	Action
Play	Page-up (one screen up)
Submenu	Page-down (one screen down)
Left	Top of file (Narrow mode) One screen left (Wide mode)
Right	Bottom of file (Narrow mode) One screen right (Wide mode)
Scroll Backward	Toggles Word mode
n/a	Cycles line mode
n/a	Toggles view mode
Power	Exit text viewer

Compatibility

- Correctly reads plain text files in Unix, Win/DOS, or Macintosh format. Latin-alphabet Unicode files are *almost* readable.
- Currently prefers fixed-width fonts. With proportional fonts, pretends all characters are the width of a lower-case 'o'.
- Currently messages are in English
- Does not currently support right-to-left languages.

10.3.10. VBRfix

This function scans a VBR (Variable Bitrate) MP3 file and updates/creates the Xing VBR header. The Xing header contains information about the VBR stream used to calculate average bit rate, time information and to more accurately fwd/rew in the stream. This function is especially useful when the playback of a file skips, fwd/rew does not work correctly or the time display is incorrect.
Note: VBRfix can only run when music is turned off (since it uses the same memory as the player) and can take a while to complete if run on big files.

10.3.11. ZXBox

Figure 10.37.: ZXBox

ZXBox is a port of the "Spectemu" ZX Spectrum 48k emulator for Rockbox (☞project's homepage). To start a game open a tape file or snapshot saved as `.tap`, `.tzx`, `.z80` or `.sna` in the file browser.

Note: As ZXBox is a 48k emulator only loading of 48k z80 snapshots is possible.

Default keys

The emulator is set up for 5 different buttons: Up, Down, Left, Right and Jump/Fire. Each one of these can be mapped to one key of the Spectrum Keyboard or they can be used like a "Kempston" joystick. Per default the buttons, including an additional but fixed menu button, are assigned as follows:

Key	Action
Play/Submenu/ Left/Right	Directional movement
Select	Jump/Fire
Power	Open ZXBox menu

ZXBox menu

Vkeyboard. This is a virtual keyboard representing the Spectrum keyboard. Controls are the same as in standard Rockbox, but you just press one key instead of entering a phrase.

Play/Pause Tape. Toggles playing of the tape (if it is loaded).

Save Quick Snapshot. Saves snapshot into `/.rockbox/zxboxq.z80`.

Load Quick Snapshot. Loads snapshot from `/.rockbox/zxboxq.z80`.

Save Snapshot. Saves a snapshot of the current state. You would enter the full path and desired name - for example `/games/zx/snapshots/chuckie.sna`. The snapshot format will be chosen after the extension you specified, per default `.z80` will be taken in case you leave it open.

Toggle Fast Mode. Toggles fastest possible emulation speed (no sound, maximum frameskip etc.). This is Useful when loading tapes with some specific loaders.

Options. **Map Keys To Kempston.** Controls whether the player's buttons should simulate a "Kempston" joystick or some assigned keys of the Spectrum keyboard.

Display Speed. Toggle displaying the emulation speed (in percent).

Invert Colors. Inverts the Spectum colour palette, sometimes helps visibility.

Frameskip Sets the number of frames to skip before displaying one. With zero frameskip ZXBox tries to display 50 frames per second.

Sound. Turns sound on or off.

Volume. Controls volume of sound output.

Predefined Keymap Select one of the predefined keymaps. For example 2W90Z means: map ZXBox's **Up** to 2, **Down** to W, **Left** to 9, **Right** to 0 and **Jump/Fire** to Z. This example keymap is used in the "Chuckie Egg" game.

Custom Keymap This menu allows you to map one of the Spectrum keys accessible through the plugin's virtual keyboard to each one of the buttons.

Quit. Quits the emulator..

Hacking graphics

Due to ZXBox's simple (but fast) scaling to the screen by dropping lines and columns some games can become unplayable. It is possible to hack graphics to make them better visible with the help of an utility such as the "Spectrum Graphics Editor". Useful tools can be found at the "World of Spectrum" site (http://www.worldofspectrum.org/utilities.html).

See also the plugin's wiki page ☞PluginZXBox.

10.4. Applications

10.4.1. Battery Benchmark

The Battery Benchmark Plugin enables you to test your battery's performance, while making normal use of your player. Once loaded it will run in the background (TSR plugin), reading various info about your battery while you use it. Once you finish your session you can find the benchmark output data in a file on your player `/battery_bench.txt`. Please submit your results to the Rockbox wiki. ☞BatteryRuntime

How it works

After you load the plug-in the operation of your player continues as normal. You can do whatever you could do before loading the plugin except loading another plugin. If you happen to load a plugin while benchmarking, a splash screen will inform you about the termination of the benchmark. While you operate it will log various battery related information every time the disk is activated by external causes, (buffer refill, open directory, USB mode) or an hour passes without updating the log file.
The plugin will continue to log info until:

- Another plugin is loaded.
- The player is shut down.
- The battery is empty.

Between disk activity (or an hour), it will log info in memory (every measurement is captured when the voltage changes). If there are too many measurements older entries will be deleted and the log file will inform the user about the interval where entries were lost. Benchmarks can be resumed if you accidentally load a plugin, or turn off your player, as long as the log file `/battery_bench.txt` is not deleted.

Information explained

On the top of the file you will see various info on how to use the plugin.

Time This column reports the total time of operation of the player. It is not the time that you started the plug-in. If you have your player on for 5 minutes and then start the plugin, it will start measuring from 5 minutes.

Seconds As time, it shows time passed in seconds. Nothing special, it is there because it is free and maybe someone might want to make graphs with seconds.

Level The percent level of the battery estimated by Rockbox. This is an estimation and not an accurate result. Using the real percentage (current battery voltage / top battery voltage) * 100) we can calculate the difference between the estimation. Goal of this column is to make the estimation algorithm of Rockbox more accurate.

Time Left It shows the estimated (by Rockbox) remaining time until shutdown. Again, as with Level(above), this column can be used to see differences between real time left and estimated time left. This could help make time left more accurate.

Voltage The battery voltage, the moment the measurement was captured. Measurements are captured when this number changes while benchmarking. This column can be used to give quite interesting graphs in a spreadsheet program. (Excel, Calc, e.t.c)

M/DA (Measurements per Disk Activity) The number of measurements stored temporarily in memory, before written on the log file. This can give you an idea of how many voltage changes there are between disk activity (or one hour).

C Stands for Charger. An "A" in that column shows if there was the power adapter attached to the unit, at the time of the measurement.

S The "S" column shows the state of the device (Charging, or not). The "C" indicated that the unit was charging when the measurement was captured.

U USB powered. Only for targets that support this. A "U" will indicate if the unit was using the USB port for powering.

Making graphs

While you can tell how long your battery lasted, with a single look at the last line of the battery log (`/battery_bench.txt`), the most useful purpose of Battery Benchmark is to make graphs using a spreadsheet program like Excel or Calc. The battery log (`/battery_bench.txt`) is in CSV format (comma separated) so you can quite easily import it to a spreadsheet program.

10.4.2. Calculator

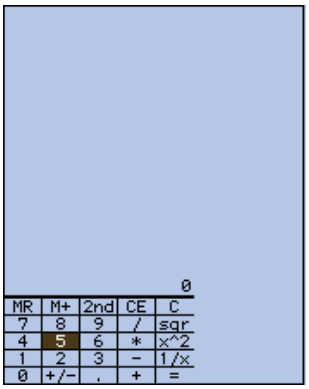

Figure 10.38.: Calculator

This is a simple scientific calculator for use on the player. It works like a standard calculator. Pressing the "1st" button will toggle between other available maths functions on the right hand side.

Key	Action
Direction keys	Move around the keypad
Select	Press a button on the keypad
Rec	Delete last entered digit or clear after calculation
Select	Calculate
Power	Quit

10.4.3. Chess Clock

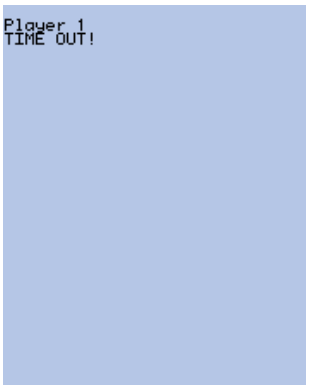

Figure 10.39.: Chess Clock

The chess clock plugin is designed to simulate a chess clock, but it can be used in any kind of game with up to ten players.

Setup

Key	Action
Right/Left	Increase / decrease displayed Value
Select	Move to next screen
Power	Move to previous screen

- First enter the number of players (1–10)
- Then set the total game time in mm:ss
- Then the maximum round time is entered. For example, this could be used to play Scrabble for a maximum of 15 minutes each, with each round taking no longer than one minute.
- Done. Player 1 starts in paused mode.

While playing

The number of the current player is displayed on the top line. The time below is the time remaining for that round (and possibly also the total time left if different).

Keys are as follows:

Key	Action
Power	Exit plugin
Submenu	Restart round for the current player
Select	Pause the time (press again to continue)
Right	Switch to next player
Left	Switch to previous player
Play	Open menu (**Select** to select.)

From the menu it is possible to delete a player, modify the round time for the current player or set the total time for the game. When the round time is up for a player the message "ROUND UP!" is shown (press NEXT to continue). When the total time is up for a player the message "TIME UP!"is shown. Then player will then be removed from the timer.

10.4.4. Clock

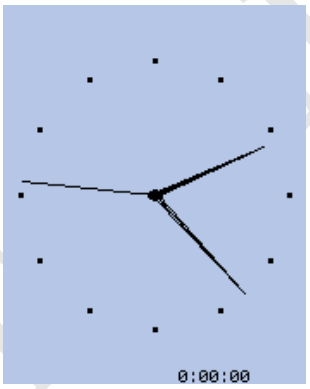

Figure 10.40.: Clock

This is a fully featured analogue and digital clock plugin.

Key configuration

Key	Action
Play	Start / Stop Counter
(Hold)	Reset Counter
Select	Main Menu
Power	Save Settings (if enabled) and Exit

Clock Menu

View Clock Exits the menu and returns to the current clock mode display.

Mode Selector Opens a menu from which you can select a clock mode to view.

Counter Settings Opens a menu from which you can adjust settings pertaining to the counter.

Mode Settings Opens a menu from which you can adjust settings pertaining to the current clock mode.

General Settings **Reset Settings** Reset all settings to their default values.

Save Settings Save all settings to disk.

Show Counter Toggle Counter display.

Save Choose whether to disable automatic saving, saving to disk on exit, or saving to disk every settings change.

Backlight Choose whether to disable the backlight, use the user's timeout setting, or keep the backlight on.

Idle Poweroff Toggle Idle Poweroff.

Note: This setting is not saved to disk.

Help Opens a brief help screen with key mappings and functionality.

Credits Displays a credits roll.

Analog mode

Small, round, analog clock is displayed in the middle of the LCD. Time readout, if enabled, is displayed at the upper left. If Time readout is in 12-hour ("12h") mode, AM or PM will be displayed at the upper right. The Date readout, if enabled, is displayed at the lower left. The Counter, if enabled, is displayed at the lower right. The second hand, if enabled, is displayed along with the hour and minute hands. Digit display, if enabled, places "12", "3", "6", and "9" around the face of the clock in their respective positions.

Digital mode

An imitation of an LCD, this mode shows a Clock comprised of digital "segments". The Date readout, if enabled, is displayed at the bottom, center. The Second readout, if in "Text" mode, is displayed at the top, center; if in "Bar" mode, is displayed as a progress bar at the top of the LCD; if in "Invert" mode, will invert the LCD left-to-right as the seconds pass (a fully-inverted LCD means the entire minute has passed). The Counter, if displayed, is shown at the upper left. The Blinking Colon, if enabled, blinks the colon once every second. 12-hour mode, if enabled, will display the time in a 12-hour format.

LCD mode

Based on the Digital Mode, the LCD mode is another imitation of an LCD. The settings available in this mode are exactly the same as Digital Mode, but they are independent of Digital Mode. For example, you can have the Date Readout enabled in Digital Mode and disabled in LCD Mode.

Fullscreen

A Fullscreen clock is displayed. Show Border, if enabled, will draw a small box at every hour position (1 through 12). Invert Seconds, if enabled, will invert the LCD as the seconds pass. Second Hand, if enabled, will draw a second hand among the hour and minute hands.

Binary mode

This mode shows a Binary clock. The hour is displayed on the top line, the minute is displayed on the middle line, and the seconds are on the last line. Circle mode, if enabled, draws empty and full circles, instead of zeros and ones. For help on reading binary, please visit: http://en.wikipedia.org/wiki/Binary_numeral_system

Plain mode

This mode shows a "plain" clock in large text that takes up nearly the whole LCD.

10.4.5. Dice

Dice is a simple dice rolling simulator. You can select number and type of dice to roll, it shows individual numbers as well as the total of the rolled dice.

Key	Action
Left/Right	Pick between type and number of dice
Scroll	Select number of sides or number of dice
Forward/Scroll Backward	
Select	Roll dice
Power	Quit

10.4.6. Disk Tidy

Disk Tidy deletes junk files left behind by Windows, Linux or OS X after a USB connection. Select the OS's files you want to delete in the 'Files to Clean' menu and select 'Start Cleaning' to begin to process.

Available Options

All deletes Linux, OS X and Windows files.

Linux deletes Linux files, `.dolphinview`, and `.d3lphinview`.

Win deletes Windows files, `Thumbs.db`, `/Recycled` and `/System Volume Information`.

Mac deletes OS X files, `._*`, `.DS_Store` and `/.Trashes`.

Key	Action
Power	Exit / Abort

10.4.7. Lamp

Lamp is a simple plugin to use your player as a lamp (flashlight, torch). You get an empty screen with maximum brightness.

Key	Action
Left/Right	Toggle between colours
Power	Quit

10.4.8. Metronome

This plugin can be used as a metronome to keep time during music practice. Adjust the tempo through the interface or by tapping it out on the appropriate button.

Key	Action
Power	Exit plugin
	Start / Stop
	Tap tempo
Left / Right	Adjust tempo
	Adjust volume

10.4.9. Stats

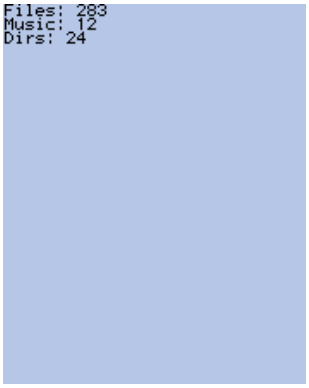

Figure 10.41.: The stats-plugin

The stats-plugin simply counts the number of files and directories on your player. Press to exit the plugin.

10.4.10. Stopwatch

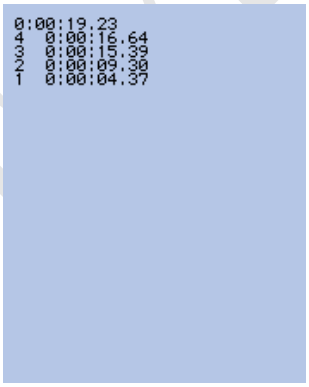

Figure 10.42.: Stopwatch

A simple stopwatch program with support for saving times.

Key	Action
Power	Quit Plugin
Left	Start / stop
Rec	Reset timer (only when timer is stopped)
Select	Take lap time
Play/Submenu	Scroll through lap times

10.4.11. Text Editor

This plugin allows you to view and edit simple text documents on your DAP. You can view files by using OPEN WITH from the CONTEXT MENU (see section 4.1.2 (page 23)).

Usage

If you start the Text Editor from the plugin browser you will be greeted with a blank screen. When started from the OPEN WITH menu item your file should be shown on the screen. You can now edit the file. The Text Editor is line based. This means you can edit one line at a time using the VIRTUAL KEYBOARD (see section 4.1.3 (page 25)).

- Move the selection bar to the line you want to edit.
- Edit the highlighted text line or insert a new one using the Item Menu.
- When finished editing exit the Text Editor. You'll be shown a list of save options.

Note: When you have not changed the file the Text Editor will quit immediately.

Key	Action
Select or **Right**	Edit Line / Select Character
Left	Exit / Abort Editing
Submenu	Show Item Menu
Long **Select**	Delete Line

11. Advanced Topics

11.1. Customising the userinterface

11.1.1. Getting Extras

Rockbox supports custom fonts. A collection of fonts is available for download in the font package at http://www.rockbox.org/daily.shtml.

11.1.2. Loading Fonts

Rockbox can load fonts dynamically. Simply copy the `.fnt` file to the player and "play" it in the FILE BROWSER. If you want a font to be loaded automatically every time you start up, it must be located in the `/.rockbox/fonts` directory and the filename must be at most 24 characters long. You can browse the fonts in `/.rockbox/fonts` under SETTINGS → GENERAL SETTINGS → DISPLAY → BROWSE FONTS in the MAIN MENU.
Warning: Advanced Users Only: Any BDF font file up to 16 pixels high should be usable with Rockbox. To convert from `.bdf` to `.fnt`, use the `convbdf` tool. This tool can be found in the `tools` directory of the Rockbox source code.

11.1.3. Loading Languages

Rockbox can load language files at runtime. Simply copy the `.lng` file *(do not use the .lang file)* to the player and "play" it in the Rockbox directory browser or select SETTINGS → GENERAL SETTINGS → LANGUAGES from the MAIN MENU.
Note: If you want a language to be loaded automatically every time you start up, it must be located in the `/.rockbox/langs` directory and the filename must be a maximum of 24 characters long.

If your language is not yet supported and you want to write your own language file find the instructions on the Rockbox website: ☞LangFiles

11.1.4. Changing Colours

The colours used in the Rockbox interface can be changed to any combination of background and foreground colour you like. To do this go to the SETTINGS → GENERAL SETTINGS → DISPLAY and select BACKGROUND COLOUR or FOREGROUND COLOUR. The colours set here are used in all menus, browsers and in the WHILE PLAYING SCREEN.

11.1.5. Loading Backdrops

Rockbox supports showing an image as a backdrop in the FILE BROWSER and the menus. The backdrop image must be a `.bmp` file of the exact same dimensions as the display in your player (176x220x16 with the last number giving the colour depth in bits). To use an image as a backdrop browse to it in the FILE BROWSER and open the CONTEXT MENU (see section 4.1.2 (page 23)) on it and select the option SET AS BACKDROP. If you want rockbox to remember your backdrop the next time you start your player the backdrop must be placed in the `/.rockbox/backdrops` directory.

11.2. Configuring the WPS

11.2.1. WPS – General Info

Description: The WPS or While Playing Screen is the name used to describe the information displayed on the player's screen whilst an audio track is being played. The default WPS is a relatively simple screen displaying Track name, Artist, Album etc. in the default font as a purely text based layout. There are a number of WPS files included in Rockbox, and you can load one of these at anytime by selecting it in GENERAL SETTINGS → DISPLAY → BROWSE .WPS FILES.

Note: "Playing" a `.wps` from the file browser has the same effect.

File Location: Custom WPS files may be located anywhere on the drive. The only restriction is that they must end in `.wps`. When you "play" a `.wps` file, it will be used for future WPS screens, and if the "played" `.wps` file is located in the `/.rockbox/wps` directory, it will be remembered and used after reboot. The `.wps` filename must be no more than 24 characters long for it to be remembered.

11.2.2. WPS – Build Your Own

Quite simply, enter the WPS code in your favourite text editor, Notepad on Windows works fine. When you save it, instead of saving it as a `.txt` file, save it as a `.wps` file. Example: Instead of `Rockbox.txt`, save the file as `Rockbox.wps`. To make sure non english characters display correctly in your WPS you must save the .wps file with UTF-8 character encoding. This can be done in most editors, for example Notepad in Windows 2000 or XP (but not in 9x/ME) can do this. See appendix section B (page 132) for all the tags that are available.

- All characters not preceded by % are displayed as typed.
- Lines beginning with # are comments and will be ignored.
- Maximum file size used is 1600 bytes. If you have a bigger WPS file, only the first part of it will be loaded and used.

Note: Keep in mind that your player resolution is 176x220x16 (with the last number giving the colour depth in bits) when designing your own WPS, or if you use a WPS designed for another target.

Conditional Tags

If/else: Syntax: `%?xx<true|false>`

If the tag specified by "`xx`" has a value, the text between the "<" and the "|" is displayed (the true part), else the text between the "|" and the ">" is displayed (the false part). The else part is optional, so the "|" does not have to be specified if no else part is desired. The conditionals nest, so the text in the if and else part can contain all `%` commands, including conditionals.

Enumerations: Syntax: `%?xx<alt1|alt2|alt3|...|else>`

For tags with multiple values, like Play status, the conditional can hold a list of alternatives, one for each value the tag can have. Example enumeration:

EXAMPLE

```
%?mp<Stop|%Play|Pause|Ffwd|Rew>
```

The last else part is optional, and will be displayed if the tag has no value. The WPS parser will always display the last part if the tag has no value, or if the list of alternatives is too short.

Next Song info

You can display information about the next song – the song that is about to play after the one currently playing (unless you change the plan).

If you use the upper-case versions of the three tags: `F`, `I` and `D`, they will instead refer to the next song instead of the current one. Example: `%Ig` is the genre name used in the next song and `%Ff` is the mp3 frequency.

Note: The next song information *will not* be available at all times, but will most likely be available at the end of a song. We suggest you use the conditional display tag a lot when displaying information about the next song!

Alternating sublines

It is possible to group items on each line into 2 or more groups or "sublines". Each subline will be displayed in succession on the line for a specified time, alternating continuously through each defined subline.

Items on a line are broken into sublines with the semicolon '`;`' character. The display time for each subline defaults to 2 seconds unless modified by using the '`%t`' tag to specify an alternate time (in seconds and optional tenths of a second) for the subline to be displayed.

Subline related special characters and tags:

; Split items on a line into separate sublines

%t Set the subline display time. The '%t' is followed by either integer seconds (%t5), or seconds and tenths of a second (%t3.5).

Each alternating subline can still be optionally scrolled while it is being displayed, and scrollable formats can be displayed on the same line with non-scrollable formats (such as track elapsed time) as long as they are separated into different sublines. Example subline definition:

EXAMPLE

```
%s%t4%ia;%s%it;%t3%pc %pr : Display id3 artist for 4 seconds,
                            Display id3 title for 2 seconds,
                            Display current and remaining track time
                            for 3 seconds,
                            repeat...
```

Conditionals can be used with sublines to display a different set and/or number of sublines on the line depending on the evaluation of the conditional. Example subline with conditionals:

EXAMPLE

```
%?it<%t8%s%it|%s%fn>;%?ia<%t3%s%ia|%t0>
```

The format above will do two different things depending if ID3 tags are present. If the ID3 artist and title are present:

- Display id3 title for 8 seconds,
- Display id3 artist for 3 seconds,
- repeat...

If the ID3 artist and title are not present:

- Display the filename continuously.

Note that by using a subline display time of 0 in one branch of a conditional, a subline can be skipped (not displayed) when that condition is met.

Using Images

You can have as many as 52 images in your WPS. There are various ways of displaying images:

1. Load and always show the image, using the %x tag
2. Preload the image with %xl and show it with %xd. This way you can have your images displayed conditionally.

3. Load an image and show as backdrop using the `%X` tag. The image must be of the same exact dimensions as your display.

Example on background image use:

EXAMPLE
```
%X|background.bmp|
```

The image with filename `background.bmp` is loaded and used in the WPS.

Example on bitmap preloading and use:

EXAMPLE
```
%x|a|static_icon.bmp|50|50|
%xl|b|rep_off.bmp|16|64|
%xl|c|rep_all.bmp|16|64|
%xl|d|rep_one.bmp|16|64|
%xl|e|rep_shuffle.bmp|16|64|
%?mm<%xdb|%xdc|%xdd|%xde>
```

Four images at the same x and y position are preloaded in the example. Which image to display is determined by the `%mm` tag (the repeat mode).

Example File

EXAMPLE
```
%s%?in<%in - >%?it<%it|%fn> %?ia<[%ia%?id<, %id>]>
%pb%pc/%pt
```

That is, "tracknum – title [artist, album]", where most fields are only displayed if available. Could also be rendered as "filename" or "tracknum – title [artist]".

11.3. Managing Rockbox settings

11.3.1. Changing the Playlist Catalog location

The location of the PLAYLIST CATALOG can be changed as follows: Save a configuration file. See section 11.3.4 (page 130). Open the file in a text editor and find the following line:

`playlist catalog directory: /Playlists`

Change the target directory to the one of your choice and save the file. 'Play' the configuration file to make the change take effect.

11.3.2. Introduction to `.cfg` files.

Rockbox allows users to store and load multiple settings through the use of configuration files. A configuration file is simply a text file with the extension `.cfg`.

A configuration file may reside anywhere on the disk. Multiple configuration files are permitted. So, for example, you could have a `car.cfg` file for the settings that you use while playing your jukebox in your car, and a `headphones.cfg` file to store the settings that you use while listening to your player through headphones.

See section 11.3.3 (page 129) below for an explanation of the format for configuration files. See section 11.3.4 (page 130) for an explanation of how to create, edit and load configuration files.

11.3.3. Specifications for `.cfg` files.

The Rockbox configuration file is a plain text file, so once you use the SAVE .CFG FILE option to create the file, you can edit the file on your computer using any text editor program. See Appendix section C (page 139) for available settings. Configuration files use the following formatting rules:

1. Each setting must be on a separate line.
2. Each line has the format "setting: value".
3. Values must be within the ranges specified in this manual for each setting.
4. Lines starting with # are ignored. This lets you write comments into your configuration files.

Example of a configuration file:

EXAMPLE

```
Example configuration file
volume: 70
bass: 11
treble: 12
balance: 0
time format: 12hour
volume display: numeric
show files: supported
wps: /.rockbox/car.wps
lang: /.rockbox/afrikaans.lng
```

Note: As you can see from the example, configuration files do not need to contain all of the Rockbox options. You can create configuration files that change only certain settings. So, for example, supppose you typically use the player at one volume in the car, and another when using headphones. Further, suppose you like to use an inverse LCD when you are in the car, and a regular LCD setting when you are using headphones. You could create configuration files that control only the volume and LCD settings. Create a few different files with different settings, give each file a different name (such as `car.cfg`, `headphones.cfg`, etc.), and you can then use the BROWSE .CFG FILES option to quickly change settings.

A special case configuration file can be used to force a particular setting or settings every time rockbox starts up e.g., to set the volume to a low level. Format a new configuration file as above with the required setting(s) and save it into the `/.rockbox` directory with the filename `fixed.cfg`.

11.3.4. The MANAGE SETTINGS menu

The MANAGE SETTINGS menu can be found in the MAIN MENU. The MANAGE SETTINGS menu allows you to save and load `.cfg` files.

Browse .cfg Files. Opens the file browser in the `/.rockbox` directory and displays all `.cfg` (configuration) files. Selecting a `.cfg` file will cause Rockbox to load the settings contained in that file. Pressing **Left** will exit back to the MANAGE SETTINGS menu. See the WRITE .CFG FILES option on the MANAGE SETTINGS menu for details of how to save and edit a configuration file.

Reset Settings. This wipes the saved settings in the player and resets all settings to their default values.

Note: You can also reset all settings to their default values by turning off the player, turning it back on, and pressing the **Rec** button immediately after the player turns on.

Save .cfg file. This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the user settings that are described throughout this manual.

Hint: Use the SAVE .CFG FILE feature (MAIN MENU → GENERAL SETTINGS) to save the current settings, then use a text editor to customize the settings file. See Appendix section C (page 139) for the full reference of available options.

Save Sound Settings. This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the sound related settings.

Save Theme Settings. This option writes a `.cfg` file to your player's disk. The configuration file has the `.cfg` extension and is used to store all of the theme related settings.

11.4. Firmware Loading

11.4.1. Using ROLO (Rockbox loader)

Rockbox is able to load and start another firmware file without rebooting. You just "play" a file with the extension `.mi4`. This can be used to test new firmware versions without deleting your current version.

A. File formats

A.1. Supported file formats

Icon	File Type	Extension	Action when selected
	Directory	*none*	The browser enters that directory
	Audio file	*various*	Rockbox takes you to the WPS and starts playing the file
	Cuesheet	`.cue`	View a cuesheet file
	Wave Audio File	`.wav`	Play a WAV file
	Playlist	`.m3u`, `.m3u8`	Rockbox loads the playlist and starts playing the first file
	Rockbox firmware	`.mi4`	ROLO will load the new firmware
	While Playing Screen	`.wps`	The new WPS display configuration will be loaded
	Language File	`.lng`	Loads a language file
	Text File	`.txt`	This will display the text file using Rockbox text browser plugin
	Configuration File	`.cfg`	The settings file will be loaded
	Font	`.fnt`	This font will replace the current one
	Plugin	`.rock`	Starts a Rockbox plugin
	Chip8 game	`.ch8`	Play a Chip8 game
	Image	`.jpg`	View a JPEG image

B. WPS Tags

B.1. Status Bar

Tag	Description
`%we`	Status Bar Enabled
`%wd`	Status Bar Disabled

These tags override the player setting for the display of the status bar. They must be noted on their own line.

B.2. ID3 Info

Tag	Description
`%ia`	ID3 Artist
`%ic`	ID3 Composer
`%id`	ID3 Album Name
`%ig`	ID3 Genre Name
`%in`	ID3 Track Number
`%it`	ID3 Track Title
`%iv`	ID3 Version (1.0, 1.1, 2.2, 2.3, 2.4 or empty if no id3 tag)
`%iy`	ID3 Year

Remember that this information is not always available, so use the conditionals to show alternate information in preference to assuming.

B.3. Power Related Information

Tag	Description
%bl	Show numeric battery level in percent. Can also be used in a conditional: %?bl<-1|0|1|2|...|N> Where the -1 value is used when the battery level isn't known (it usually is).
%bv	Show the battery level in volts
%bt	Show estimated battery time left
%bp	"p" if the charger is connected (only on targets that can charge batteries)
%bc	"c" if the unit is currently charging the battery (only on targets that have software charge control or monitoring)
%bs	Sleep timer. Shows the remaining time if the sleeptimer is set

B.4. File Info

Tag	Description
%fb	File Bitrate (in kbps)
%fc	File Codec (e.g. "MP3" or "FLAC"). This tag can also be used in a conditional tag, %?fc<mp1|mp2|mp3|aiff|wav|vorbis|flac|mpc|a52|wavpack|alac-|aac|shn|sid|adx|unknown>. The codec order is as follows: MP1, MP2, MP3, AIFF, WAV,Ogg Vorbis (OGG), FLAC, MPC, AC3, WavPack (WV), ALAC, AAC,Shorten (SHN), SID, ADX, NSF, Speex, SPC, APE.
%ff	File Frequency (in Hz)
%fm	File Name
%fn	File Name (without extension)
%fp	File Path
%fs	File Size (In Kilobytes)
%fv	"(avg)" if variable bit rate or "" if constant bit rate
%d1	First directory from end of file path.
%d2	Second directory from end of file path.
%d3	Third directory from end of file path.

Example for the %dN commands: If the path is "/Rock/Kent/Isola/11 - 747.mp3", %d1 is "Isola", %d2 is "Kent" ... You get the picture.

B.5. Playlist/Song Info

Tag	Description
%pb	Progress Bar This will replace the entire line with a progress bar. You can set the height, position and width of the progressbar (in pixels): %pb|height|leftpos|rightpos|toppos|
%px	Percentage Played In Song
%pc	Current Time In Song
%pe	Total Number of Playlist Entries
%pm	Peak Meter. The entire line is used as volume peak meter.
%pn	Playlist Name (Without path or extension)
%pp	Playlist Position
%pr	Remaining Time In Song
%ps	Shuffle. Shows 's' if shuffle mode is enabled.
%pt	Total Track Time
%pv	Current volume (x dB). Can also be used in a conditional: %?pv<0|1|2|...|N>

B.6. Runtime Database

Tag	Description
%rp	Song playcount
%rr	Song rating (0-10). This tag can also be used in a conditional tag, %?rr<0|1|2|3|4|5|6|7|8|9|10>

B.7. Sound (DSP) settings

Tag	Description
%Sp	Display current playback pitch
%xf	Crossfade setting, in the order: Off, Shuffle, Skip, Always
%rg	ReplayGain value in use (x.y dB). If used as a conditional, Replaygain type in use: %?rg<Off|Track|Album|TrackShuffle|AlbumShuffle|No tag>

B.8. Virtual LED

Tag	Description
`%lh`	"h" if the flash storage is accessed

B.9. Repeat Mode

Tag	Description
`%mm`	Repeat mode, 0-4, in the order: Off, All, One, Shuffle

Example: `%?mm<Off|All|One|Shuffle|A-B>`

B.10. Playback Mode Tags

Tag	Description
`%mp`	Play status, 0-4, in the order: Stop, Play, Pause, Fast forward, Rewind

Example: `%?mp<Stop|Play|Pause|Ffwd|Rew>`

B.11. Images

Tag	Description
%X|filename.bmp|	Load and set a backdrop image for the WPS. This image must be exactly the same size as your LCD.
%P|filename.bmp|	Load a Progress bar image for the WPS. Use %pb tag to show the progress bar
%x|n|filename|x|y|	Load and display an image n: image ID (a-z and A-Z) for later referencing in %xd filename: filename relative to /.rockbox/ and including .bmp x: x coordinate y: y coordinate.
%xl|n|filename|x|y|[nimages|]	Preload an image for later display (useful for when your images are displayed conditionally) n: image ID (a-z and A-Z) for later referencing in %xd filename: filename relative to /.rockbox/ and including .bmp x: x coordinate y: y coordinate. nimages: (optional) number of sub-images (tiled vertically, of the same height) contained in the bitmap. Default is 1.
%xdn[i]	Display a preloaded image n: image ID (a-z and A-Z) as it was specified in %x or %xl i: (optional) number of the sub-image to display (a-z for 1-26 and A-Z for 27-52). By default the first (i.e. top most) sub-image will be used.

Examples:

1. Load and display the image /.rockbox/bg.bmp with ID "a" at 37, 109:
   %x|a|bg.bmp|37|109|

2. Load a bitmap strip containing 5 volume icon images (all the same size) with image ID "M", and then reference the individual sub-images in a conditional:

```
%xl|M|volume.bmp|134|153|5|
%?pv<%xdMa|%xdMb|%xdMc|%xdMd|%xdMe>
```

Note:

- The images must be in a rockbox compatible format (1 bit per pixel BMP)
- The image tag must be on its own line
- The ID is case sensitive, giving 52 different ID's
- The size of the LCD screen for each player varies. See table below for appropriate sizes of each device. The x and y coordinates must repect each of the players' limits.

B.12. Alignment

Tag	Description
`%al`	Text is left aligned
`%ac`	Text is center aligned
`%ar`	Text is right aligned

All alignment tags may be present in one line, but they need to be in the order left – center – right. If the aligned texts overlap, they are merged.

B.13. Conditional Tags

Tag	Description
`%?xx<true|false>`	If / Else: Evaluate for true or false case
`%?xx<alt1|alt2|alt3|...|else>`	Enumerations: Evaluate for first / second / third / ... / last condition

B.14. Real Time Clock

Tag	Description
%cd	Day of month
%ce	Zero padded day of month
%cH	Zero padded hour from 00 to 24
%ck	Hour from 0 to 24
%cI	Zero padded hour from 12 to 12
%cl	Hour from 12 to 12
%cm	Month
%cM	Minutes
%cS	Seconds
%cy	2-digit year
%cY	4-digit year
%cP	Capital AM/PM
%cp	Lowercase am/pm
%ca	Weekday name
%cb	Month name
%cu	Day of week from 1 to 7, 1 is Monday
%cw	Day of week from 0 to 6, 0 is Sunday

B.15. Other Tags

Tag	Description
%%	Display a '%'
%<	Display a '<'
%|	Display a '|'
%>	Display a '>'
%;	Display a ';'
%s	Indicate that the line should scroll. Can occur anywhere in a line (given that the text is displayed; see conditionals above). You can specify up to 10 scrolling lines. Scrolling lines can not contain dynamic content such as timers, peak meters or progress bars.

C. Config file options

Setting	Allowed Values	Unit
volume		dB
bass		dB
treble		dB
balance	-100 to +100	%
channels	stereo, mono, custom, mono left, mono right, karaoke	N/A
shuffle	on, off	N/A
repeat	off, all, one, shuffle, ab	N/A
play selected	on, off	N/A
resume	on, off	N/A
scan min step	1, 2, 3, 4, 5, 6, 8, 10, 15, 20, 25, 30, 45, 60	seconds
scan accel	0 to 15	seconds
antiskip	0 to 7	seconds
volume fade	on, off	N/A
id3 tag priority	v2-v1, v1-v2	N/A
sort case	on, off	N/A
show files	all, supported, music, playlists	N/A
follow playlist	on, off	N/A
playlist viewer icons	on, off	N/A
playlist viewer indices	on, off	N/A
playlist viewer track display	track name,full path	N/A
recursive directory insert	on, off	N/A
scroll speed	1 to 25	Hz
scroll delay	0 to 250	1/10s
scroll step	1 to 112	pixels
bidir limit	0 to 200	% screen
contrast	0 to 63	N/A
backlight timeout	off, on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90	seconds
backlight timeout plugged	off, on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90	seconds
disk spindown	3 to 254	seconds
battery capacity	1500 - 3200	mAh

Setting	Allowed Values	Unit
idle poweroff	off, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 30, 45, 60	minutes
lang	/path/filename.lng	N/A
wps	/path/filename.wps	N/A
autocreate bookmarks	off, on	N/A
autoload bookmarks	off, on	N/A
use most-recent-bookmarks	off, on	N/A
talk dir	off, number, spell, enter, hover	N/A
talk file	off, number, spell	N/A
talk menu	off, on	N/A
tagcache_autoupdate	on, off	N/A
warn when erasing dynamic playlist	on, off	N/A
cuesheet support	on, off	N/A
replaygain	on, off	N/A
replaygain type	track, album, track shuffle	N/A
replaygain noclip	on, off	N/A
replaygain preamp	-120 to 120	0.1dB
crossfade	off, shuffle, track skip, always	N/A
crossfade fade in delay	0 to 7	seconds
crossfade fade out delay	0 to 7	seconds
crossfade fade in duration	0 to 15	seconds
crossfade fade out duration	0 to 15	seconds
crossfade fade out mode	crossfade, mix	N/A
crossfeed	on, off	N/A
crossfeed direct gain	0 to 60	0.1dB
crossfeed cross gain	30 to 120	0.1dB
crossfeed hf attenuation	60 to 240	0.1dB
crossfeed hf cutoff	500 to 2000	Hz
eq enabled	on, off	N/A
eq precut	0 to 240	0.1dB
eq band 0 cutoff	0 to 32768	Hz
eq band 1 cutoff	0 to 32768	Hz
eq band 2 cutoff	0 to 32768	Hz
eq band 3 cutoff	0 to 32768	Hz
eq band 4 cutoff	0 to 32768	Hz
eq band 0 q	0 to 64	N/A
eq band 1 q	0 to 64	N/A
eq band 2 q	0 to 64	N/A
eq band 3 q	0 to 64	N/A
eq band 4 q	0 to 64	N/A
eq band 0 gain	-240 to 240	0.1dB

Setting	Allowed Values	Unit
eq band 1 gain	-240 to 240	0.1dB
eq band 2 gain	-240 to 240	0.1dB
eq band 3 gain	-240 to 240	0.1dB
eq band 4 gain	-240 to 240	0.1dB
beep	off, weak, moderate, strong	N/A
dircache	on, off	N/A
tagcache_ram	on, off	N/A
peak meter release	1 to 126	?
peak meter hold	off, 200ms, 300ms, 500ms, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 30, 1min	N/A
peak meter clip hold	on, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 15, 20, 25, 30, 45, 60, 90, 2min, 3min, 5min, 10min, 20min, 45min, 90min	N/A
peak meter busy	on, off	N/A
peak meter dbfs	on, off	on: dbfs, off: linear
peak meter min	0 to 89 (dB) or 0 to 100 (%)	dB or %
peak meter max	0 to 89 /(dB) or 0 to 100 (%)	dB or %
statusbar	on, off	N/A
scrollbar	on, off	N/A
volume display	graphic, numeric	N/A
battery display	graphic, numeric	N/A
font	/path/filename.fnt	N/A
invert	on, off	N/A
backdrop	/path/filename.bmp	N/A
foreground color	000000 to FFFFFF	RRGGBB
background color	000000 to FFFFFF	RRGGBB
line selector start color	000000 to FFFFFF	RRGGBB
line selector end color	000000 to FFFFFF	RRGGBB
time format	12hour, 24hour	N/A
rec quality	0 to 7	0: small size, 7: high quality
rec frequency	48, 44, 32, 24, 22, 16	kHz
rec source	mic, line, spdif	N/A
rec channels	mono, stereo	N/A
rec mic gain	0 to 15	N/A
rec left gain	0 to 15	N/A
rec right gain	0 to 15	N/A
editable recordings	off,on	N/A
rec timesplit	off, 0:05, 0:10, 0:15, 0:30, 1:00, 2:00, 4:00, 6:00, 8:00, 16:00, 24:00	h:mm
pre-recording time	off, 1 to 30	seconds
rec directory	/recordings,current	N/A

Setting	Allowed Values	Unit
force fm mono	off, on	N/A

D. User feedback

D.1. Bug reports

If you experience inappropriate performance from any supported feature, please file a bug report on our web page. Do not report missing features as bugs, instead file them as feature requests (see below).

For open bug reports refer to http://www.rockbox.org/tracker/index.php?type=2

D.1.1. Rules for submitting new bug reports

1. Check that the bug has not already been reported
2. Always include the following information in your bug report:

- Which exact player you have.
- Which exact Rockbox version you are using (Menu->Info -> Version)
- A step-by-step description of what you did and what happened
- Whether the problem is repeatable or a one-time occurrence
- All relevant data regarding the problem, such as playlists, MP3 files etc. (IMPORTANT!)

D.2. Feature requests

For open feature requests refer to http://www.rockbox.org/tracker/index.php?type=1

D.2.1. Rules for submitting a new feature request

1. Check that the feature has not already been requested. Duplicates are really boring!
2. Check that the feature has not already been implemented. Download the latest current/daily build and/or search the mail list archive.
3. Check that the feature is possible to implement (see section D.2.2 (page 144)).

D.2.2. Features we will not implement

This is a list of Feature Requests we get repeatedly that we simply cannot do. View it as the opposite of a TODO!

- Interfacing with other USB devices (like cameras) or 2 player games over USB
  The USB system demands that there is a master that talks to a slave. The player can only serve as a slave, as most other USB devices such as cameras can. Thus, without a master no communication between the slaves can take place. If that is not enough, we have no ways of actually controlling the communication performed over USB since the USB circuit in the player is strictly made for disk-access and does not allow us to play with it the way we'd need for any good communication to work.

- Support other file systems than FAT32 (like NTFS or ext2 or whatever)!
  No. support for more file systems will just take away valuable ram for unnecessary features. You can partition your player fine, just make sure the first one is FAT32 and then make the other ones whatever file system you want. Just do not expect Rockbox to understand them.

- Add scandisk-like features!
  It would be a very slow operation that would drain the batteries and take a lot of useful ram for something that is much better and faster done when connected to a host computer.

E. Changelog

E.1. What is new since v2.5?

Changes in version 2.5

F. Credits

People that have contributed to the project, one way or another. Friends!

▶ BJÖRN STENBERG ▶ LINUS NIELSEN FELTZING ▶ ANDY CHOI ▶ ANDREW JAMIESON ▶ PAUL SUADE ▶ JOACHIM SCHIFFER ▶ DANIEL STENBERG ▶ ALAN KORR ▶ GARY CZVITKOVICZ ▶ STUART MARTIN ▶ FELIX ARENDS ▶ ULF RALBERG ▶ DAVID HÄRDEMAN ▶ THOMAS SAEYS ▶ GRANT WIER ▶ JULIEN LABRUYÉRE ▶ NICOLAS SAUZEDE ▶ ROBERT HAK ▶ DAVE CHAPMAN ▶ STEFAN MEYER ▶ ERIC LINENBERG ▶ TOM CVITAN ▶ MAGNUS ÖMAN ▶ JEROME KUPTZ ▶ JULIEN BOISSINOT ▶ NUUTTI KOTIVUORI ▶ HEIKKI HANNIKAINEN ▶ HARDEEP SIDHU ▶ MARKUS BRAUN ▶ JUSTIN HEINER ▶ MAGNUS HOLMGREN ▶ BILL NAPIER ▶ GEORGE STYLES ▶ MATS LIDELL ▶ LEE MARLOW ▶ NATE NYSTROM ▶ NICK ROBINSON ▶ CHAD LOCKWOOD ▶ JOHN PYBUS ▶ UWE FREESE ▶ RANDY WOOD ▶ GREGORY HAERR ▶ PHILIPP PERTERMANN ▶ GILLES ROUX ▶ MARK HILLEBRAND ▶ DAMIEN TENEY ▶ ANDREAS ZWIRTES ▶ KJELL ERICSON ▶ JIM HAGANI ▶ LUDOVIC LANGE ▶ MIKE HOLDEN ▶ SIMON ELÉN ▶ MATTHEW P. OREILLY ▶ CHRISTIAN SCHÖNBERGER ▶ HENRIK BACKE ▶ CRAIG SATHER ▶ JOSÉ MARIA GARCIA-VALDECASAS BERNAL ▶ STEVIE OH ▶ JÖRG HOHENSOHN ▶ DAVE JONES ▶ THOMAS PAUL DIFFENBACH ▶ ROLAND KLETZING ▶ ITAI SHAKED ▶ KEITH HUBBARD ▶ BENJAMIN METZLER ▶ FREDERIC DANG NGOC ▶ PIERRE DELORE ▶ HUW SMITH ▶ GARRETT DERNER ▶ BARRY MCINTOSH ▶ LESLIE DONALDSON ▶ LEE PILGRIM ▶ ZAKK ROBERTS ▶ FRANCOIS BOUCHER ▶ MATTHIAS WIENTAPPER ▶ BRENT COUTTS ▶ JENS ARNOLD ▶ GERALD VANBAREN ▶ CHRISTI SCARBOROUGH ▶ STEVE CUNDARI ▶ MAT HOLTON ▶ JAN GAJDOS ▶ ANTOINE CELLERIER ▶ BRIAN KING ▶ JIRI JURECEK ▶ JACOB ERLBECK ▶ JEAN-PHILIPPE BERNARDY ▶ DAVE HOOPER ▶ JONAS HÄGGQVIST ▶ THOM JOHANSEN ▶ RINAT ZAKIROV ▶ MANUEL DEJONGHE ▶ MARCOEN HIRSCHBERG ▶ MICHIEL VAN DER KOLK ▶ TONY MOTAKIS ▶ ANDY YOUNG ▶ ALEXANDRE BOURGET ▶ RICHARD S. LA CHARITÉ III ▶ CHRISTIAN GMEINER ▶ TOMAS SALFISCHBERGER ▶ MIIKA PEKKARINEN ▶ TAPIO KARPPINEN ▶ RICHARD OTTÓ O'BRIEN ▶ LUCA BURELLI ▶ ALESSIO LENZI ▶ DAVID BRYANT ▶ MARTIN ARVER ▶ ALEXANDER SPYRIDAKIS ▶ PEDRO BALTAZAR VASCONCELOS ▶ RAY LAMBERT ▶ DAVE WIARD ▶ PIETER BOS ▶ KONSTANTIN ISAKOV ▶ BRYAN VANDYKE ▶ HRISTO KOVACHEV ▶ SANDER SWEERS ▶ ANTONIUS HELLMAN ▶ RYAN JACKSON ▶ PER HOLMÄNG ▶ FREDERIC DEVERNAY ▶ JOSÉ M. FANDIÑO ▶ GADI COHEN ▶ NAFTALI GOLDSTEIN ▶ DAVID DENT ▶ FRANK DISCHNER ▶ LIBERMAN SHACHAR ▶ STEPHAN WEZEL ▶ ALYSSA MILBURN ▶ KEVIN FERRARE ▶ ANTON OLEYNIKOV ▶ MARK ARIGO ▶ MAGNUS WESTERLUND ▶ JAKE OWEN ▶ MUSTAPHA SENHAJI ▶ ADAM BOOT ▶ JONATHAN GORDON ▶ TAT TANG ▶ TOSHIHIKO ITOH ▶ DAVID J. SONG ▶ JEONG TAEK IN ▶ ANDERS KAGERIN ▶ PETER D'HOYE ▶ BEN BASHA ▶ BRANDON LOW

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