PocketMC 2.0 Documentation

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PocketMC 2.0 Overview

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1.1 Introduction

PocketMC turns a PocketPC into a real time audio effects machine and Digital Signal Processor (DSP). A DSP is a type of processor used to constantly process a type of data, allowing calculations to be performed on this data and usually in real time (instantly, no waiting required). PocketMC is a software DSP allowing audio input to be manipulated with special effects before leaving the machine. Therefore, you can talk into the microphone and hear your voice with an echo, flanger, pitchbender and many other effects added to it simultaneously in high quality! Audio can be recorded with all the effects and the recorded file can be played through the effects unit and can even be mixed with the microphone input.

1.2 Requirements

- Any PocketPC with at least Windows CE 3.0
- ARM CPU (StrongARM/XScale/Others)
- Microphone (input) and audio output
- 5 MB free memory for buffers
- 200 KB free storage memory

1.3 Installation

Simply copy the correct executable anywhere on your PocketPC and make a shortcut to the program file if desired.

There is a Special Edition (SE) version in the archive. See “SE Version” on page 6 for more details about this version.

1.4 Demo Note

The demo version of PocketMC has all the features except the following:

• The pitchbender, pitchbender display and modulator are disabled
• The recorder and player are disabled
• The presets are disabled
• The demo will timeout after approximately 5 minutes

2.1 Usage

First of all, make sure to decrease the volume of your machine or output source! If the microphone and speaker are too close to each other, it may cause distorted sounds and the so-called “howling effect” like when holding a microphone close to a speaker. So it is important to lower the volume in advance. It is always better to run the program by using a headphone or line out, unless you are only using recording mode. Click on the PocketMC icon to start the program.

When the program is started you will enter a screen as shown on page 2, containing preset controls (F), main controls (J), effects controls (A, B, C, D), slider controls (G, H), recorder/player controls (I, K) and the about requester (E).

2.1.1 Preset Controls

The presets (F) are used to switch between ten different user settings. These contain all settings of the audio DSP and therefore allows any of the effects to be stored and retrieved using the ten buttons. Any of the presets has their own recording slot for use with the player/recorder.

2.1.2 Main Controls

The four buttons (J) on the bottom right of the interface are used for general control.

The first button (speaker) is used to mute all the audio, thus removing any kind of output by silencing the audio data. Pressing the button again will allow audio output. The recorder bypasses the mute function, so it can be used without having the “howling effect” when the speaker and microphone are too close to each other. Mute mode disables the monitor function.

The second button (headphone) enables monitor mode. This mode is used to disable all the effects at once. Pressing the button again will enable the selected effects. Monitor mode disables the mute function.

The third button (floppy disk) is used to save away the presets. They will be saved to the PocketPC root directory and will be automatically loaded when PocketMC is started. Delete the “PresetFile” to reset all the presets.

The fourth button (power) will quit the program.

2.1.3 Effects controls

The effects DSP is controlled using the buttons (A, B, C, D) at the left, bottom-left and the middle of the interface. The eight buttons in the middle (A) of the interface are required for controlling and enabling the different effects units.

The “Echo” button enables the delay effector. Using the “Delay Control” (+/-) buttons (C) it is possible to increase or decrease the length of the delay. When “Echo” is enabled, it is possible to use the “Long” button to create near infinitely long echoes. Especially when the delay length is set at two seconds, this can create many nice effects when used in combination with the other effectors. **The echo can only be enabled if the Delay Control is set higher than OFF.**

The “Flng” button enables the flanger. There are no further settings connected to this.

The “Slcr” button enables the slicer. This “slicer” is used to enable or disable pieces of sound within every two seconds. The sixteen red buttons (B) below the eight effect control buttons allows enabling (red) or disabling (yellow) each 1/16th of those two seconds. When the slicer is enabled, it will follow the same selected pattern every two seconds.

The “Rvrs” button enables the real time reverse. The sound input will come out in reverse. However, since it is not possible to look into the future (a perfect reverse would play from the future to the past) it will constantly use a few seconds of the input and reverse it before playing.

The “Qntz” button can be used to enable the quantizer, removing a certain amount of bits of the sound resolution. The strength of the quantizer can be selected using the slider controls (G, H).

“Ptch” is used to change the pitch level of the sound. Again this is used in combination with the slider controls (G, H). Enabling the pitchbender will disable the modulator.

“Mod” is an effect which uses the pitchbender to create a strange sound pitching up according to the pitch level settings selected using the slider controls (G, H). It can give very strange results especially when a low value is selected. Using the modulator will disable the pitchbender.

Finally, the “Downsampler” can be used to lower the frequency of the input source. Using the “+” and “-” buttons it is possible to increase or decrease the sample rate. The on/off switch next to the downsampler can be used as a master switch to switch back to full quality sample rate, but only if the downsampler is enabled (not “off”).

2.1.4 Slider Controls

There is one slider (H) on the right side of the interface which can be used to control some of the variable features. Using the slider control buttons (G) an effect can be assigned to the slider. The effects are as follows:

Q - The slider is used to control the quantizer. A high slider value means fewer bits.
N - The slider controls the simple noise gate. A high slider value means higher threshold.
Symbol - The slider is used for the “Gain” control. The middle is x1.0, the lowest value is x0.0 and the highest value x4.0
P - The slider controls the pitchbender. The middle is normal, going up pitches up and going down pitches down.
R - Resets the currently selected slider to its default position

WARNING: Putting the gain too high may cause clipping and distorted sound, be careful when using the gain slider!

2.1.5 Recorder/Player Controls

The recorder control buttons (I, K) are used to record or play files. The recorder will always bypass the Mute function, so it is possible to record without hearing the output. This can be used to prevent the sound from distorting when the speaker and microphone are too close too each other. Pressing the first button of (I) allows the user to select a storage medium for recording. **Make sure the storage medium is fast enough or it will cause sound skipping** When a medium is selected, every preset slot represents a file on the medium. This means that up to ten files can be recorded or played per storage medium. Pressing record enables recording, pressing again will disable recording. The same goes for playing, although there are some more features related to this.

PocketMC can play files through the effects unit, which means that another layer of effects will be added on top of the sound output. You can bypass the effects unit by pressing the “Bypass” button (K), effectively disabling the effects unit for playing.

Beside using the effects unit for playing, it is also possible to mix the played file with the microphone input, as well as the effects unit. Disabling the microphone throughput is performed by pressing the “Mute” button. Using both the “Mute” and “Bypass” button you can use four different ways of file playing (file without effects, file with effects, file mixed with microphone without effects, file mixed with microphone with effects).

2.1.6 About Requester

Pressing the PocketMC logo (E) on the bottom of the interface will give you some information about the program and the authors.

3.1 SE Version

There is a special version of the program available in the archive, called PocketMC SE. This Special Edition has been added because of a problem on some PocketPC's including a range of iPaq's. This is not caused by PocketMC (since it works well on other machines such as the PocketLoox and even the Windows PocketPC emulator), but by a possible problem in the Audio drivers of many Compaq Windows CE/PocketPC based machines. The possible problem has been known for a few years, but has (as far as we are concerned) not been fixed until now. Basically it means that the sound will skip a couple of times every few (up to 60) seconds when playing and recording is used simultaneously.

If this problem occurs, it is recommended to use the SE version. This version has both playing and recording placed within the same routine and therefore solves the problem as much as possible. However, if the above problem does not occur, always use the normal version, since it uses the official programming guidelines and has better synchronization routines (no (possible) ticks).

3.2 Tech Specs

- Full single routine heavily optimized audio effects system
- 32-bits calculations for all special effects
- Floating Point 32-bits precision gain control
- Input/Output quality 16-bits 32kHz
- Simultaneous high quality variable Delay, Flanger, programmable Slicer, variable Downsampler, Gain, variable Long Echo, variable Quantizer, variable Pitchbender/Modulator, variable Noise gate and RT Reverse with zero delay preset switching
- RIFF WAVE file recording and playing of recorded files. Files can be played through the effects unit and/or mixed with the microphone input.

4.1 Frequently Asked Questions (FAQ)

Q. The sound skips on my Compaq PocketPC!
A. Read the manual please. In the "SE Version" chapter on top of this page everything is explained.

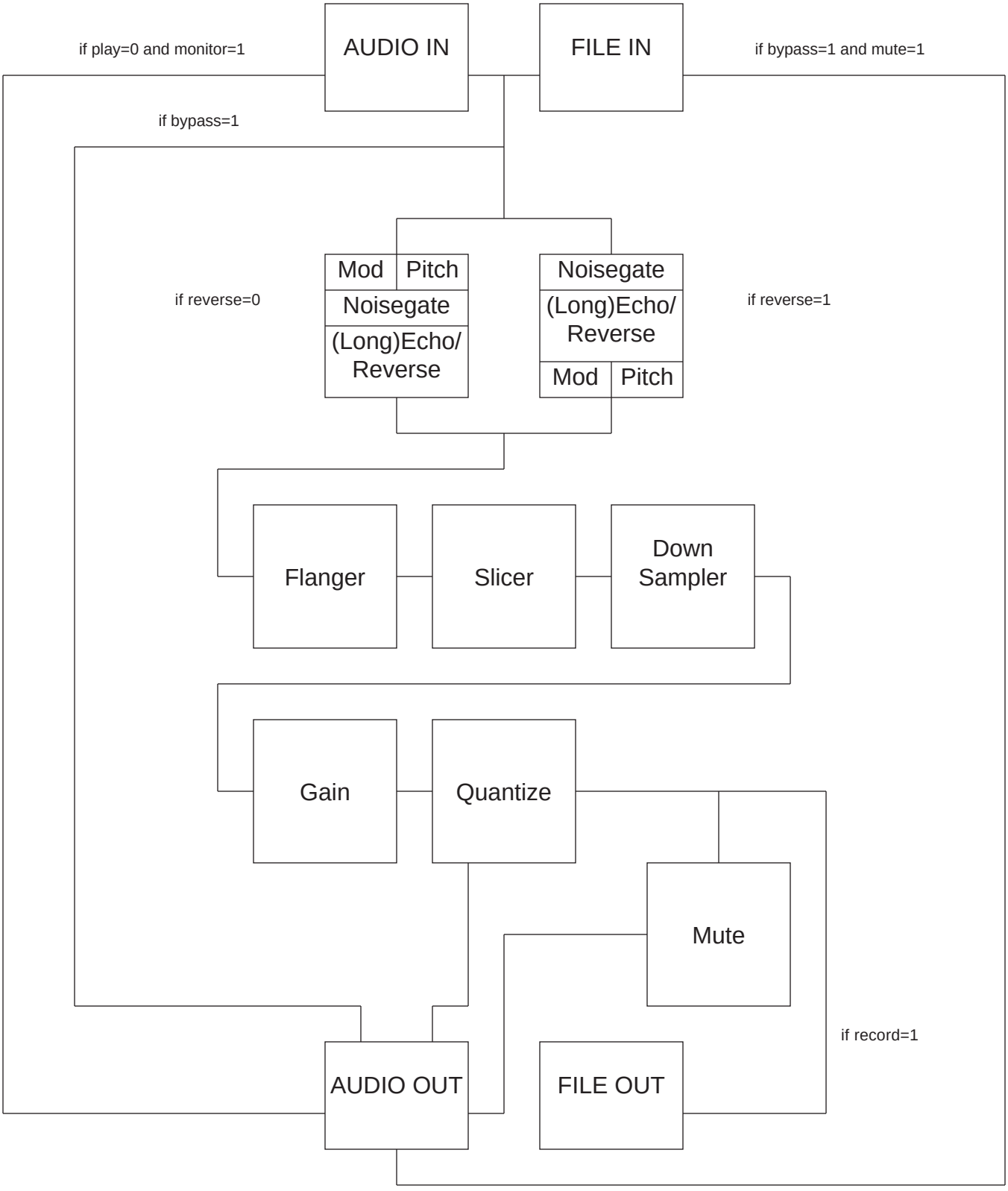
Q. Where is the Preset File saved to?
A. To the main directory of the PocketPC. The file is named PresetFile.

Q. There is no sound at all, what should I do?
A. Check if "Mute" mode is enabled by pressing the speaker button on the bottom right of the interface. Try this twice!

Q. Recording/playing skips, why?
A. Your selected storage medium is too slow, try recording to main memory or a faster medium than the one selected.

Q. The sound is heavily distorted!
A. 1. Try lowering the gain inside PocketMC.
2. Try lowering the gain of the PocketPC Microphone settings.
3. Try the SE version.

5.1 Effects Schematics



6.1 Support

For other questions or information, contact Coyote Flux at:

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6.2 Disclaimer