MSSIAH

MIDI SID SOFTWARE

Wave-Player

Introduction

The Wave-Player application is a sample player tool with full MIDI control probably the first and only of its kind on the C64 platform.
Wave-Player plays samples in 4-bit at 6 kHz. A format not very impressive by today's standards so the first question that comes into mind is why anyone would be interested in restricting themselves to this ancient standards of digital sampling technology?
Well, for an invited musician fully equipped with retro gear the reason is as obvious as putting a C64 with an inserted MSSIAH Cartridge next to their latest Japanese synthesizer flagship: *Lo-Fi*!
Why use your latest "bit crusher" plugin when you can let the real machines do the work?
Why do people still hook up old samplers and drum machines in their modern facilities?
Well, they want that special "sound". The coloration of the C64 SID chip is an important building block in their music just like that hand crafted guitar is to Eric Clapton. Not to mention the PR value of using a 25 year old Commodore computer in your music that just cannot be beaten. It raises more than one eyebrow and gives that extra flavor to your sound at the same time.
Not to forget, the Wave-Player is an addictive piece of software. Start it up, lay out some preset drum sounds, dump your favorite vocal hooks via MIDI and hit it! We promise you'll get stuck with it for many hours!!

Designing the Wave-Player we wanted an easy way to trigger digital samples via MIDI so that C64 musicians could nail those dance floor beats just like the Gameboy users have been doing for some time already (and it's time to take away that advantage, isn't it?).
We knew early on that people needed easy ways to transfer samples into it so that recording and editing didn't have to be built into the software. That would consume valuable internal memory as well as forcing people to either get hold of rare samplers or try to build their own.
Also, the limited memory made us drop any ideas of an internal sequencer and go for MIDI only.

Due to technical restrains (mostly CPU power) the samples can't be played back in different pitch individually. We compensated that by adding three channels of sample audio (routed to either SID #1 or #2) and MIDI velocity. With those features we feel the Wave-Player will be a useful sample player / drum machine and as we stated in the beginning: making Wave-Player definite one-of-its-kind software for the C64 platform.

Digital Audio on the SID
The SID being a completely analog synthesizer circuit, it wasn't really designed to produce digital audio in the first place.
Thanks to the ingenuity among the clever SID-composers back in the day, a flaw in the circuit's design was revealed that made it possible to play back 4-bit samples (and what do you know, the secret key turned out to be a simple feed of sample data to the volume register!). As it rapidly changed its value thus changing the internal voltage it miraculously made samples! Though the later SID 8580 corrected this flaw there is, fortunately, a workaround to make it behave in the exact same way.

Because of the memory intense nature of digitized sound as well as the difficulties of providing a simple interface, using sampled sounds hasn't been that easy to create in practice on the C64.
We hope the Wave-Player will be your bridge to overcome such obstacles and offer a neat program to fully explore the world of SID digital audio as a complement to the other MSSIAH applications. -Have lots of fun!

Using the MSSIAH Wave-Player

Starting Up

To start the Wave-Player, select *Wave-Player* in the startup menu and press return.
The program loads from the cartridge and starts up within 3 seconds.

Note:

The user is strongly advised to carefully read the instructions on how to properly handle the cartridge in the booklet *MSSIAH - Getting Started* available for download on our site at http://www.mssiah.com.
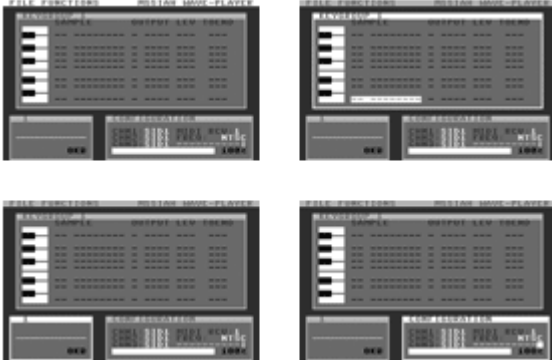
Windows

The Wave-Player consists of three windows, the Key group window, the Sample window and the Configuration window. On top of that is the main menu to access file operations and activate the MIDI mode.

To step through the windows activating one after the other, press the **CTRL** key to get the next window. Keep the **LEFT SHIFT** key depressed while pressing the **CTRL** key to step the other way.
Active windows are white.

To use the menu, you need to fold down the drop down menus with the right **CRSR** key to activate it. As you do that, **CTRL** key can no longer navigate to the next window until you inactivate the menu with the ← key.

Using the **CRSR** keys will navigate the cursor or alter values if pressed together with the **COMMODORE** (C=) key.
You can read more details on how to operate each window in their own chapters.

Exit

To quit the application, select the menu item *Exit* in the *File* menu. Confirm the action and you are returned to the MSSIAH startup menu.

Importing Samples

Wave-Player cannot record or edit samples. Therefore, importing samples is without a doubt the most important feature of this application.

There are three ways of importing samples: using MIDI transfers, using disk (Savyour with a USB memory or a real 1541 floppy) or importing the preset samples that we provided on the cartridge.

Preparations

When importing it is a good thing to shorten down the file as much as possible. First and foremost you are urged to shorten the start of the sound since not only does this take up valuable memory space but will also affect the time from when the sound triggers (you pressing the key on your MIDI keyboard) until any real audio comes through your speakers (if you are experienced in audio editing this is no news to you).

Any possible silence in the end of your file is automatically truncated after the transfer is done.

As for MIDI and disk transfers, Wave-Player MIDI sample dumps only work with 8-bit formatted mono samples. Disk imports take all formats 8-bit or 16-bit, mono or stereo, and converts it but it's a good idea to convert to the smallest format as it reduces load times.

Wave-Player plays back audio at 6 kHz so make sure to convert the sample to that frequency. Of course you are free to use any frequency (import function accepts all) but the sample plays back in the wrong pitch. If this isn't what you want, simply convert it to 6 kHz.

Imported samples are loaded into the current sample 'slot' selected in the sample window. When the import is finished the file menu closes and focus is set on the sample window. That way you can immediately preview what you imported using the **SPACE BAR** key.

The sample window is thoroughly covered in a separate chapter of this manual.

If there is no available memory left when you try to make an import you will be notified an "out of memory" message. In case this happens you must delete a sample to free up memory.

If there is memory left however, the import function will overwrite the sample (if any) residing in the current sample slot. How this is carried out is a little different depending on the type of transfer you have chosen.

If you run out of memory while importing (sample is bigger than the available memory) the import function stops importing when the memory is full and leave what was imported up to that point untouched.

MIDI Transfer

Wave-Player uses the MIDI Sample Dump Standard to import samples via MIDI.

Normally these transfers are carried out with two MIDI cables connected to the input and output of both sender and receiver (aka "Closed Loop transfer"). The MSSIAH Cartridge with only one MIDI input uses a simpler form of transfer known as "Open Loop" instead. That means using one MIDI cable only.

What you need is an audio editor application supporting the MIDI Sample Dump standard with Open Loop transfers. One such editor is *Sound Forge* by MAGIX Software and that is the program we will use for the examples in this manual.

Before transferring make sure your sample is converted to 8-bit mono and 6 kHz.

You will be asked if you are sure to import. If you answer YES in the dialog box, any possible current data residing in the current sample will be deleted. This is regardless of later cancelling of the MIDI transfer. The reason for this is that there is no time for deletion and further memory allocation once the transfer takes place.

Make sure your audio software (sender) is checked for "Open Loop" transfer.
Make sure Wave-Player's MIDI channel is set to the same channel as your audio software is using.
If applicable, make sure the sender is not set for "SCSI transfers" or anything else than "MIDI transfer".
Optional: Select a sample number between 1and 16 in the sender's transfer window. The number you choose becomes a part of the name for the imported sample (it can be changed later).

Now with the Wave-Player waiting for MIDI input, press the "Start transfer" button on your audio application and watch the progress bar advance as it receives the MIDI data chunks of your audio file.

You can stop the transfer with the **RUN/STOP** key at any time.

Troubleshooting

If both applications lock up and nothing happens it is very likely the sender is set to "Closed Loop". Some audio editing programs lack the Open Loop option.

Wrong format: If you end up with a "Wrong format" dialog you have either wrong bit-depth of your sample, wrong MIDI channel set for both sender and receiver or something just went wrong when sending the header and data blocks. Correct the settings and start over again.

The Wave-Player is a pretty fast receiver and shouldn't give you any nasty drop-outs while transferring. If that would happen, check your MIDI connections.

Importing from Disk

Wave-Player reads standard .wav files. With some basic preparations only thing you need to do is copy the file onto a storage media and import it.

Prepare the File

Start by making sure the filename is 16 letters long ending with .WAV. Fill out any space in between with a blank space:

Then add a .PRG suffix

Using Savyour (recommended)

1. Copy the prepared file onto a USB memory

2. Insert the USB memory into Savyour and import the file into Wave-Player

Using a Real 1541

1. Import the prepared file to a D64 disk image.
   A program great for this purpose is *D64 Editor*, written by Forrest Mook (download at http://www.d64editor.com).

2. Transfer the D64 file to a real 1541 floppy (not covered by this manual).

3. Import the file into Wave-Player.

The Wave-Player application reads the file and converts it to 8-bit (if it's not). If the format is stereo only the left channel is used.
It is highly recommended to only import 8-bit mono files since reading and converting extra data only takes extra time when loading. And, if you wish for your audio file to play back properly, don't forget to convert the frequency to 6 kHz.
(44.1 kHz files will play veeeery slowly as well as taking forever to load AND use up all your memory).

Contrary to importing files via MIDI, any possible sample that resides in the sample slot you selected for your new audio file will stay put until the actual transfer starts. The disk transfer simply waits for Wave-Player to purge and allocate memory.
When the file is loaded the name given is the first eight letters of the file's name on the disk.

Be aware!
The Wave-Player disk import function reads ALL the data that follows the audio data chunk start in the wave file. Some programs add other data chunks after the audio data making an ugly ending to your imported sound.
Tests have shown that a reliable program to use preparing samples for the Wave-Player is *Steinberg Wavelab* whereas Sound Forge, though serves better for MIDI transfers, often does the opposite.
(Simply downloading wave files with an unknown origin off the internet and importing them with the disk import function is therefore likely to cause format errors.)

Importing Preset Samples

We have put together a total of 130 sounds on the MSSIAH Cartridge ROM for you to quickly import whenever it comes in handy. It is also terrific for new users wishing to explore the application without having any samples of their own readily available.

Simply choose the sample you want and press the **RETURN** key. The sample loads instantly.
(If you're overwriting a sample in the slot selected, it won't be deleted until you actually press the **RETURN** key)
While browsing through the available presets you can press the **SPACE BAR** key at any time to have a quick preview of the highlighted sound.
We hope that these sounds will be of much use to you as a "base library" to pick from.
There is a complete list of all the samples in the back of this manual.

Deleting samples

The available working memory in the Wave-Player app is enough to load approx. 5,5 seconds of audio.
You can monitor the remaining memory in the Configuration Window as you import samples and the bar gets fuller and fuller. When there is no memory left you will get the "Out of memory" notification as you try to import another sample. Either you are fine with that or you need to remove another sample to fit the new one.


You find the delete function in the Functions menu. When you activate it with the **RETURN** key the current sample selected is deleted. You are first asked for a confirmation. If you answer NO, the action is cancelled.

Sample Window

The second window in the lower left of the screen is the Sample Window. It displays the current sample selected.
Having a sample selected means that the 'slot' is selected for importing or deleting samples. To play it via MIDI you need to assign the samples to a key group, more on that in the next chapter.

If the currently selected sample slot contains audio data you will see a graphic display of it.
In the lower right corner is the approximated size of the sample.
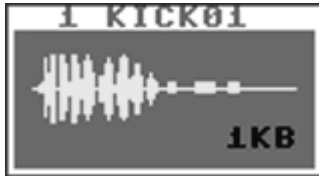
Use the **CRSR** keys to increase or decrease the number of the current sample.
Use the **SPACE BAR** key to preview (play back the sample). The screen blanks out momentarily as the sample plays.

Renaming a Sample

If you press the **RETURN** key while the sample window is active you can enter a new name for the sample. The sample name is edited directly in the title bar.
Press **RETURN** key once again when you are finished.
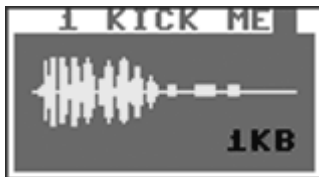
Key Groups

When active in MIDI mode Wave-Player uses the current key group to respond to notes and trigger the dedicated sounds accordingly.
Navigate the window with the **CRSR** up/down key (press and hold **RIGHT SHIFT** key for up).
Press and hold the **COMMODORE (C=)** key and use the **CRSR** keys to alter the value on the current position.

Selecting Key Group

The key groups are where you arrange your samples into a key map and set individual settings for every sample.
Wave-Player provides two key groups each holding a key map with up to eight samples in each.
Select key group 1 by pressing the **F1** key and select key group 2 by pressing the **F2** key.

```
| KEYGROUP 1              | KEYGROUP 2
```

You can't change key groups in MIDI mode. Those must be switched manually. Wave-Player does not recognize program change messages.

Assigning Sounds to Keys

Move the cursor to the key on which you wish to assign a sample and press the **Commodore (C=)** key and **CRSR** key left/right or up/down simultaneously.

```
KEYGROUP 1
       SAMPLE        OUTPUT LEV TOEND
    ███▄   1 KICK ME  1 SID1  -0    NO
```

Output

The output parameter selects to which voice the sound is to be assigned.
The Wave-Player plays back the sounds on any of three virtual voices. Standard rules of polyphony apply: two sounds that share the same voice can never play simultaneously.
You can use this to your advantage to create a so called "mute group", e.g., letting a closed hihat cut off an open one.
By being smart you can select the same voice for two or more samples that you are pretty sure will never play at the same time.
With some simple planning you have two separate outputs since any of the voices are freely assignable to SID #1 and SID #2 (if installed).

Level

You can set the level of the sample playback volume in twelve steps, 0 being unaltered and -11 being the lowest. If you want the sound to respond directly to MIDI velocity instead, select *VEL*.

To End

This setting determines whether the sound is a one-shot trigger or stops playing as you release its key on your MIDI keyboard.
For one-shot triggers, choose "YES" and to stop on release, choose "NO".

Previewing Samples in the Key Group Window

When pressing the **SPACE BAR** key inside the key group window the audio previewer selects the current sample on the key selected. The sample plays with the same criteria selected (output, level, one-shot etc.).

If there is no sample selected on the cursor's current position you will hear no sound when pressing the space bar key.

Configuration

In the configuration window you can alter the output of each voice as well as MIDI channel and overall tuning.

Use the **CRSR** keys to navigate inside the window and **COMMODORE** (**C=**) key together with **CRSR** keys to alter the value, alternatively pressing **RETURN** key will advance the value by one step.

Configuring Outputs

Select the SID chip to which you want the output of the virtual channel using **CRSR** keys or **RETURN** key to toggle.

You can at any point during MIDI mode send the control change message #66 followed by a number 0-7 to alter this configuration according to the list in this manual's MIDI specs (though any MIDI sent output config. is reset when you quit MIDI mode).

Setting the MIDI Channel

Set the MIDI receive channel for the Wave-Player. A dash sign indicates no channel selected. This is pretty useless as the Wave-Player does not receive MIDI messages while not in MIDI mode anyway but it's there for compatibility reasons. All of the MSSIAH applications share the base channel with MSSIAH Sequencer's channel for the first track. Since Sequencer can turn them on and off so can all the other applications too.

Selecting PAL or NTSC

There isn't really that much difference between choosing PAL or NTSC when playing back samples, especially percussive sounds or sound effects.

This option relates to the next control if tune is of big importance.

Tuning

The 11-segment switch lets you set the overall tune for sample playback where the rightmost position represents 6 kHz and decreasing a semi-tone for each step to the left.

The tune setting affects all samples at once. It cannot be set on a per sample basis.

Memory Meter

The memory meter shows how much memory is filled up with sample data (meter bar) and how much is left (digits to the right of the bar).

MIDI Mode

To switch Wave-Player into MIDI mode, select the menu item *MIDI* in the *Functions* menu. MIDI mode blanks the screen and responds to MIDI notes only. Return to the edit mode by pressing the **RUN/STOP** key.

The sounds are played through the key map with the following notes:

Keyboard	MIDI note	
	A#$_1$	46
	G#$_1$	44
	G$_1$	43
	F#$_1$	42
	F$_1$	41
	D#$_1$	39
	D$_1$	38
	C$_1$	36

You can send control change messages to alter the volume setting for each sound in the key group as well as the current voice to SID configuration.

All the MIDI specs are featured in this manual's last chapters.

Files

Media

Wave-Player loads and saves from disk only.

All disk operations start by asking you to choose device number:

Unless you have changed your disk drive's device number, 8 is default, use **CRSR** keys to change device number.

Loading from disk means that a directory window opens with a list of valid files on your floppy (or USB memory using Savyour). You then select the file you wish to load.
The directory window shows the amount of free blocks in the upper right corner.

The file operations make use of the operating system's disk functionality. There are no delete-functions and no replace-and-save options built in. If you try to save the file onto disk using an already existing name the save is interrupted and the drive light flashes.

When reading the directory the correct type of files is automatically collected.
If there are no files of that particular type on the disk you will get a *No Files* error. It does not necessarily mean that the disk is empty rather than empty of that type of files.

The file type depends on the file operation you selected, whether it's a full project load or a specific import.

MSSIAH Wave-Player File Types	
File suffix	
.WPP	Wave-Player project (key groups + samples)
.WAV	Windows wave file imported to 1541 floppy

Save Project

A project save includes all the key groups and samples and configuration settings.
Make sure to save often to avoid losing your work!!

To save a MSSIAH Wave-Player project:

- Select *Save* in the *FILE* menu.

- Enter a non-existing filename in the filename dialog.

  You can use all letters from *a-z* and *0-9* as well as some additional characters. Use **INST/ DEL** key with and without the **LEFT SHIFT** key to insert/delete text.
  Press **RETURN** when ready or ← to cancel and go back.
- Select device (8 is default)
- File saves onto disk. After saving is done press ← key to return to the Main Screen.
- If the disk already contains a project file with the same filename the drive light flashes and you are notified with a Save Error message box.

- If you are using a USB memory with Savyour in *Light Mode* MSSIAH Wave-Player will detect it and ask if you want to use the burst function when saving.

  Your MSSIAH needs to have the Directory Viewer application in the start menu to be compatible with the Savyour burst mode.

Open Project

To open a Wave-Player project:

- Select *Open* in the *FILE* menu.

- Insert the disk with the project file you wish to open.
- Select device (8 is default)
- Wait until the directory is loaded.
- In the directory window use **CRSR** keys to navigate to the file you wish to load and press **RETURN** key to start loading. If you wish to cancel press ← key to go back one step.
  If there are no files on the disk you will be notified by a message box saying *No files*. In that case press ← key to go back, insert a new disk and try again.
- When the file is loaded you press the ← key to return to the Main Screen.

- Using a USB memory with Savyour in *Light Mode* enables burst mode.

  Your MSSIAH needs to have the Directory Viewer application in the start menu to be compatible with the Savyour burst mode.

Preset Samples

A full list of the preset samples provided with the MSSIAH Wave-Player. You can import them via File menu / Import / Preset.

606-BD	727-QUIJ	DMX-BD	RX5-TMBL	CLAPS6
606-SD	808-BD	DMX-SD	RX5-CUIC	SNAP1
606-LTOM	808-SD1	DMX-HH	RX5-CSTN	SNAP2
606-HTOM	808-SD2	DMX-OPHH	RX5-WHIS	SNAP3
606-HH	808-LTOM	DMX-RIM	KICK1	WDBLOCK1
606-OPHH	808-MTOM	DMX-CLAP	KICK2	WDBLOCK2
707-BD1	808-HTOM	LINN-BD	KICK3	GEORGE
707-BD2	808-RIM	LINN-SD1	KICK4	COSTANZA
707-SD1	808-CLVE	LINN-SD2	KICK5	GLW-GKIK
707-SD2	808-CLAP	LINN-RIM	KICK6	GLW-GSNR
707-LTOM	808-COW	LINN-HH	KICK7	GLW-RIM
707-MTOM	808-CYMB	LINN-OHH	KICK8	GLW-RIML
707-HTOM	808-OPHH	LINN-CLP	HIHAT1	GLW-COW
707-RIM	808-HH	LINN-TOM	HIHAT2	GLW-TOM1
707-COW	909-BD	LINN-COW	HIHAT3	GLW-TOML
707-CLAP	909-SD1	RX5-BD1	HIHAT4	GLW-TOM2
707-HH	909-SD2	RX5-BD2	HIHAT5	GLW-AKIK
707-OPHH	909-SD3	RX5-BD3	HIHAT6	GLW-ASNR
707-CRSH	909-SD4	RX5-SD1	HIHAT7	GLW-RIM2
727-HBNG	909-RIM	RX5-SD2	HIHAT8	GLW-RIM3
727-LBNG	909-CLAP	RX5-SD3	HIHAT9	V-BRNGIT
727-MCNG	909-HH1	RX5-HH	CLAPS1	V-CHEKIT
727-HCNG	909-HH2	RX5-OPHH	CLAPS2	V-NDOUBT
727-LCNG	909-OPHH	RX5-CLAP	CLAPS3	V-AH
727-HAGO	909-CRSH	RX5-COW	CLAPS4	V-WO1
727-LAGO	909-RIDE	RX5-TMBH	CLAPS5	V-WO2

MIDI Implementation Chart

MSSIAH Wave-Player		MIDI Implementation Chart		Version: 1.00
	Function	Transmitted *1	Recognized	Remarks
Basic Channel	Default	X	1-16, off	Memorized
	Changed	X	1-16, off	Memorized
Mode	Default	X	Mode 3	
	Messages	X	X	
Note Number:		X	36 - 46 ($C_1 – A\#_1$)	*2
Velocity	Note On	X	9nH, v=1-127	
	Note Off	X	9nH, v=0 or 8nH	
After Touch	Key's	X	X	
	Channel's	X	X	
Pitch Bend		X	X	
Control Change	66	X	o	Output mode 0-7
	67	X	o	Output level key C_1
	68	X	o	Output level key D_1
	69	X	o	Output level key $D\#_1$
	70	X	o	Output level key F_1
	71	X	o	Output level key $F\#_1$
	72	X	o	Output level key G_1
	73	X	o	Output level key $G\#_1$
	74	X	o	Output level key $A\#_1$
Program Change:		X	X	
	True #	X	X	
System Exclusive		X	o	Open loop sample dump
System Common:	Song pos	X	X	
	Song sel	X	X	
	Tune	X	X	
System Real Time:	Clock	X	X	
	Commands	X	X	
Aux Messages:	All Sound OFF	X	(120) o	
Notes		*1 MSSIAH Cartridge does not transmit MIDI. *2 Key map		

Mode 1: OMNI ON, POLY	Mode 2: OMNI ON, MONO	o : Yes
Mode 3: OMNI OFF,POLY	Mode 4: OMNI OFF, MONO	X : No

MIDI Controller List

No.	Function	Limit	Remarks
66	Output mode (resets on exit)	0–7	0 = SID1 | SID1 | SID1 1 = SID1 | SID1 | SID2 2 = SID1 | SID2 | SID1 3 = SID1 | SID2 | SID2 4 = SID2 | SID1 | SID1 5 = SID2 | SID1 | SID2 6 = SID2 | SID2 | SID1 7 = SID2 | SID2 | SID2
67	Output level key C_1 (resets on exit)	0-12	0 = Fixed level 0 (full volume) 1 = Fixed level -1 2 = Fixed level -2 3 = Fixed level -3 4 = Fixed level -4 5 = Fixed level -5 6 = Fixed level -6 7 = Fixed level -7 8 = Fixed level -8 9 = Fixed level -9 10 = Fixed level -10 11 = Fixed level -11 12 = Velocity
68	Output level key D_1	0-12	-
69	Output level key $D\#_1$	0-12	-
70	Output level key F_1	0-12	-
71	Output level key $F\#_1$	0-12	-
72	Output level key G_1	0-12	-
73	Output level key $G\#_1$	0-12	-
74	Output level key $A\#_1$	0-12	-