.REX PANDED!

ENGLISH VERSION

DDD-SERIES
OPERATING MANUAL

DDD-11 SOUND EDITION

DDD-15 SOUND EDITION

wave ReX

Preface

Thank you very much for purchasing WaveDDD. We are convinced that it will bring you a lot of joy in the future and above all a lot of momentum in your productions with the Korg DDD. Let's revive the 80s. Turn on your DDD and let's fire up some drums!

Why you should read the manual

Manuals are usually unpopular, boring or even annoying. We have made every effort to make sure that you don't fall asleep after the first two pages.

Whether you read this manual is up to you, you can also put it aside. But you should know that this manual informs you about the correct usage of WaveDDD. In addition, you will find important safety instructions, which you have to pay attention to. They are highlighted in gray and therefore easily recognizable. You don't want to expose yourself and your environment to unnecessary danger, do you?

Your WaveReX Team

Note

We assume no responsibility for errors that may appear in this manual. The content of this manual is subject to change without notice. A current version of this manual can be found at:

www.waverex.de/downloads/

Great care has been taken in the preparation of this manual to eliminate errors and inconsistencies.

Manufacturer:

SynthastiX – Komponenten für elektronische Klangerzeuger

Inh.: Marco Pawlowski

Im Plaul 8

D-55270 Essenheim

Germany

The WaveReX Team

Development:	Marco Pawlowski
Software:	Dominik Vogel
Design:	Mario Neitzke

Special thanks to

Emily, Anne, Jake Newiss, Andy Crystal, Gerd Feldkirch, Johannes Schultz, Tobias Hopp, Dirk Stephan, Peter Grandl and all of our supporters

Manual - Revision

English Version:	1.0 – 13.10.2023

How to reach us

www.waverex.de
www.waverex.com

www.shop.waverex.de

www.instagram.com/waverexboard/

www.facebook.com/WaveReX/

www.youtube.com/channel/UCfJzIp27T1ikvZaYJJHWSPA

Table of content

Safety instructions

Read these safety instructions carefully. It is necessary for you to understand these instructions in order to handle WaveDDD safely.

Keep the safety instructions handy until the end of WaveDDD's life.

If you have any questions or are unsure how to use WaveDDD, please contact our support team immediately.

WaveDDD is a plug-in card for the card slot of the KORG DDD drum machine. It serves as a replacement for the PCM cards of KORG.

CAUTION!

Only insert WaveDDD into the designated card slot. Make sure that the card is oriented correctly.

WaveDDD was developed for use in private households as well as for use in recording studios.

CAUTION!

Use outside closed rooms can cause damage to WaveDDD and your device. Use WaveDDD only in closed rooms.

Due to its design, WaveDDD is particularly sensitive to inappropriate force effects.

CAUTION!

Do not try to bend, compress or twist WaveDDD. Never force WaveDDD into the card slot of your device. Do not drop WaveDDD or apply force to the card.

WaveDDD is an electronic product. It contains state-of-the-art electronic components and has been designed and built according to the current state of the art.

CAUTION!

Only use WaveDDD in rooms with room temperature and low humidity. Do not expose WaveDDD to liquids. This can damage or even destroy the electronic components.

The WaveDDD case protects the underlying components and serves as an insertion aid into the card slot.

CAUTION!

Never open the card. This can destroy the board and the electronic components. A defective housing can no longer guarantee proper insertion into the card slot. This can lead to malfunction or destruction of WaveDDD or even your device.

The contacts of WaveDDD are gold-plated to withstand the mechanical demands longer. Nevertheless, this is a contact-based technology.

CAUTION!

Even though WaveDDD is designed to last, try to remove WaveDDD from the card slot only when necessary.

WaveDDD works with non-hazardous voltages.

CAUTION!

However, you should avoid touching the gold contacts. The contacts can be permanently attacked by the skin grease. And don't even think about licking the contacts!

Metal objects on the contacts can cause short circuits.

CAUTION!

Never short-circuit the contacts! This will destroy WaveDDD and can cause you serious physical damage!

A defective WaveDDD can severely damage your device.

CAUTION!

Do not use WaveDDD if it has obvious damage. If you are not sure, contact support.

Web: www.waverex.de

Mail: support@waverex.de

Notes

EU-Konformitätserklärung

Hiermit erklären wir

Hersteller: SynthastiX – Komponenten für elektronische Klangerzeuger

Marco Pawlowski, B.Eng.

Im Plaul 8

D-55270 Essenheim

dass das nachstehend bezeichnete Produkt

Produkt: WaveDDD

Produkttyp: Speicherkarte mit passiven elektronischen Bauteilen zur Anwendung in der KORG DDD-1, DDD-5 und DRM-1 Drum Machine

Typennummer: SX 003

Seriennummer: 71001 bis 71999 (fortlaufend)

in seiner Konzeption und Bauart sowie in der von uns in Verkehr gebrachten Ausführung den grundlegenden Sicherheits- und Gesundheitsanforderungen der nachstehend aufgeführten EU-Richtlinien entspricht. Bei einer mit uns nicht abgestimmten Änderung des Produktes verliert diese Erklärung ihre Gültigkeit.

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Es wird die Übereinstimmung mit den folgenden Richtlinien erklärt:

- EU-Richtlinie EMV 2014/30/EU vom 26. Februar 2014
- EU-Richtlinie RoHS2 2011/65/EU vom 8. Juni 2011
- Richtlinie (EU) 2017/2102 vom 15. November 2017

Angewandte harmonisierte Normen insbesondere:

EN 55032:2016-02 Elektromagnetische Verträglichkeit von Multimediageräten und -einrichtungen - Anforderungen an die Störaussendung (CISPR 32:2015); Deutsche Fassung EN 55032:2015

Undenheim, 08.09.2023

Ort/Datum der Ausstellung

Marco Pawlowski, CEO

Intended use

WaveDDD was designed exclusively for and is compatible only with the drum machine DDD-1, DDD-5 and DRM-1 from KORG Japan. It is designed to be used as a ROM card replacement, in the card slot of the device.

Caution!

Never use WaveDDD in incompatible devices. You can destroy your device and WaveDDD!

WaveDDD is designed to play your own samples on the KORG DDD. For this purpose, the user can load his own samples onto the WaveDDD (memory card) using the WaveDDD software editor and then use them in the device.

The card is shipped without content, as it may be subject to copyright issues. The absence of memory contents does not represent a functional restriction or even a defect according to the intended use. This does not result in any claims for the customer.

By playing the samples through the device, they take on the sound characteristics of the device. This is not a material defect, but explicitly intended.

WaveDDD is distributed in two different designs, one as DDD-11, in the look of the DDD-1 and the other as DDD-15, in the look of the DDD-5 drum machine. Both cards are technically identical and work in all compatible devices. The customer chooses the design himself at the time of purchase.

Preparation

To connect WaveDDD to your computer, you need a USB-C cable. This is not included in the delivery.

You can also use a USB extension, but make sure that the total length does not exceed 5m. This is not included in the scope of delivery.

Up to Windows 7, you need a USB driver. You can download it from the download page www.waverex.de/downloads/.

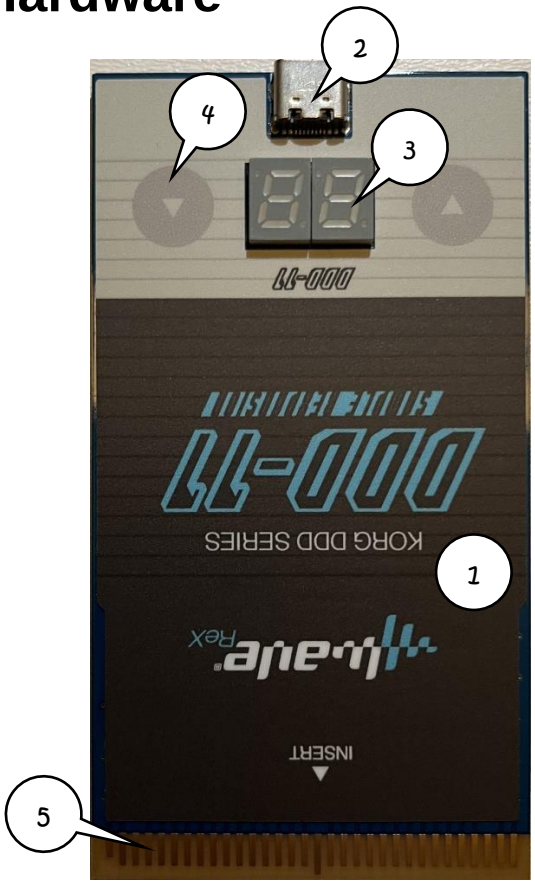
If you are using Windows 8 or higher, you do not need any additional drivers.

To create your own cards and upload them to your WaveDDD you need the software editor from WaveReX. Download it from the download page www.waverex.de/downloads/. Make sure you always use the latest version so you don't miss any updates or bugfixes.

Even if you have already switched on your DDD full of anticipation, switch it off again first and be patient for a moment.

In the following we will introduce you to the functionality of WaveDDD and the software editor with a kind of quickstart. If you are familiar with the basic principles of the sound generation of your device, you can start right away. However, we recommend that you first read the chapters **Basics** and **Technical Data**. Here you will find a basic explanation of how the whole system works and what you should pay attention to.

The Hardware



① – WaveDDD card

② – USB-C-Connector

③ – bank display

④ – pads for bank switching

⑤ – contacts

The USB connector

The USB connector on your WaveDDD is used to transfer data from your computer to WaveDDD. It is a USB-C port.

To guarantee the longevity of your WaveReX, we have chosen a USB connector that is soldered at four points on the back of the board. This prevents the socket from breaking under normal conditions.

Caution!

Be careful when using WaveDDD with a mobile device. Make sure that the USB cable is no longer plugged in when you move away with your mobile device.

WaveDDD is powered from both your device and USB, whichever voltage is higher.

Attention!

The connector can still be a bit tight when new. Never insert your USB cable with force, you can destroy the connector!

The card

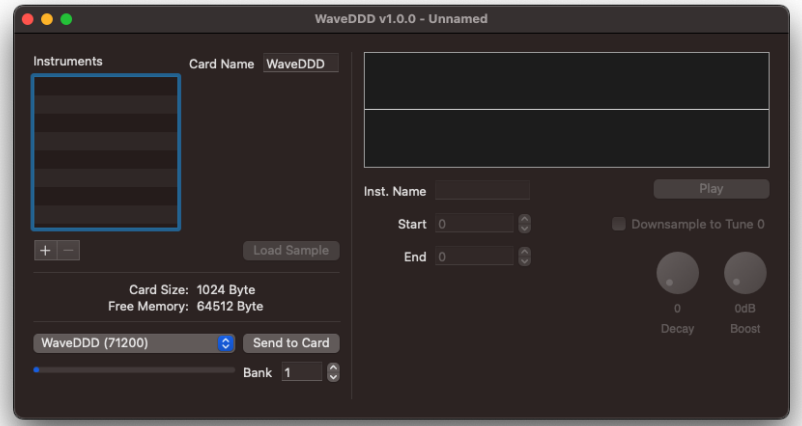
The card was manufactured in a sandwich process from conventional board material (GRP). The layers are both soldered and glued. The lid is also made of GRP and protects the internal electronic components. It is also firmly glued. Trying to open the card or the lid will definitely destroy your WaveDDD. Under normal circumstances there is no reason for this.

If you have problems with your card not being recognized, please refer to the **Troubleshooting** chapter.

The software editor

The main window

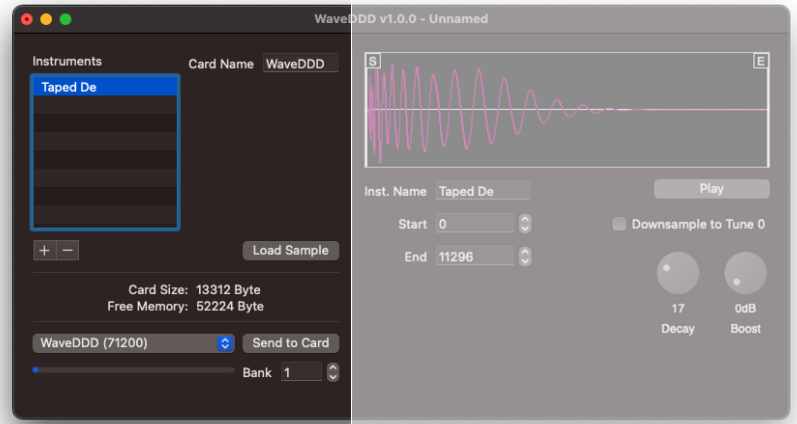
In the main window you can manage and edit your compilations. Here you can add instruments, edit them and load your compilation onto your WaveDDD. You can also preview your samples here and always have an overview of the used memory size.



The content of the main window represents the content of your virtual card. All **samples** listed in the instrument list are loaded onto the WaveDDD and are then available as samples in the DDD. The DDD can only handle 8 samples per card, so the sample list is limited to 8 samples. However, there are 99 banks available on your WaveDDD, which you can write to with different virtual cards. Which bank to write to can also be selected in the editor. Bank 1 is selected by default.

User interface

Card area



Here you will find the instrument list on the left side. All samples of your compilation are listed here.

To the right, you can change the name of the card using the **Card Name** input field. This is preset to "WaveDDD" by default. Your DDD can neither read nor display the name of the card. It is only stored in the card format. So, the naming of the card is only a feature, which can help you organize your cards.

Instrument list

All instruments listed here will then be available as Card Sound in your DDD.

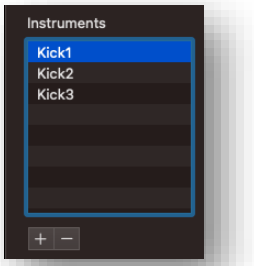
Use the Plus (+) button to add a new, empty instrument to your list. Make sure that your newly created instrument is highlighted and then press the **Load Sample** button to add a sample to this instrument. A selection window will open where you can choose a sample.

Another way to add a sample to your compilation is via drag & drop. Simply drag a sample onto the instrument list.

Select an instrument and press the minus (-) button to delete the instrument from the list.

You can also easily change the order of the instruments within the list via drag & drop.

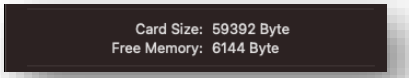
Please note that the list is limited to 8 instruments, as the DDD can only manage 8 card sounds.



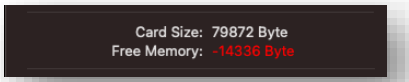
„Load Sample“ button
Adds a sample to your empty instrument. Alternatively, you can double-click on your instrument in the instrument list.

Card-Info
Here you can see information about the size of the compilation (Card Size) and the amount of free memory (Free Memory). Note that you must not exceed a size of 64kb per bank. 1024 bytes are basically occupied by the card format.

In the following example 59392 bytes of the card are occupied by samples. There are still 6144 bytes available for further sample material.

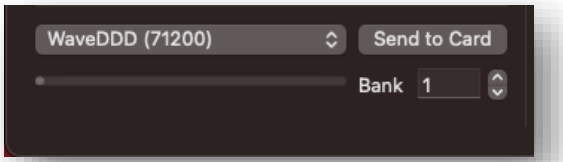


In the next example, the size of the existing sample material is already 79872 bytes. The maximum size has already been exceeded by 14336 bytes.



If this is the case, please reduce your compilation by one sample, shorten your samples a bit (e.g. with the end marker in the waveform display or via the input field) or exchange one or more of your samples for a shorter one.

Transfer
In the Transfer area you will find the Device selection field. All WaveDDDs that are connected to your computer are displayed here. Use the selection box to choose the WaveDDD that you want to write to.



You will also find the **Send to Card** button that allows you to send your compilation to your WaveDDD. The progress bar at the bottom informs you about the progress of the transfer.

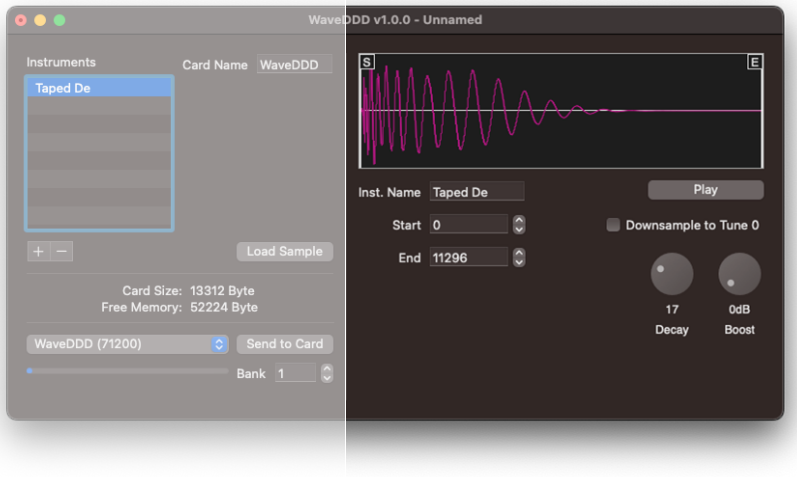
Bank selection

Your WaveDDD has 99 banks that you can select and write to directly in the software without having to set them on the card itself.

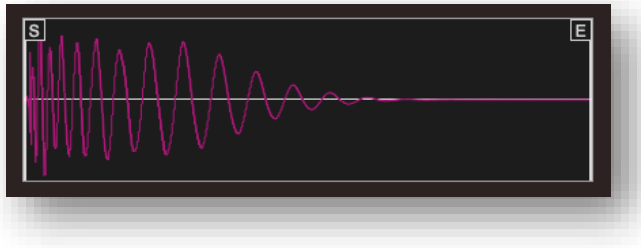
Select the bank you want to write to using the arrow keys on the bank's number field (below the "Send to Card" button) or enter the desired bank directly in the number field and press the Enter key on your keyboard.

Please note that while WaveDDD has 99 banks, your DDD can only read one bank at a time, the one currently set on the WaveDDD.

Instrument area



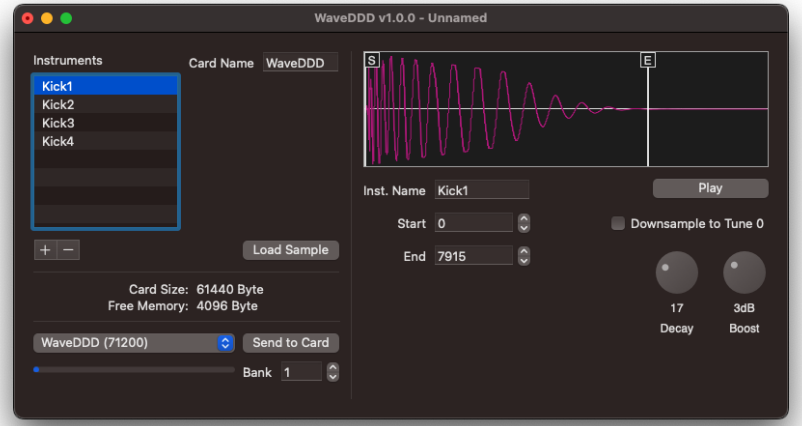
Waveform display



The waveform display shows you the sample selected in the instrument list and already processed by the editor.

You will also find a Start marker, which you can use to change the start of your sample, and an End marker, which you can use to shorten the end of the sample.

Truncating samples is always useful when there is a lot of silence in the sample, for example after the sample has faded out. This unnecessarily increases the memory requirements of your sample and can be safely removed.



Play button
Press Play to audition your instrument. Alternatively, you can press the space bar.

Inst. Name
Here you can assign a name to the sample selected in the instrument list. This name will be displayed in the DDD as Card Sound.

Please note that the card format of the DDD only allows a length of 8 characters.

The name of the loaded sample, shortened to 8 characters, is used as the default.

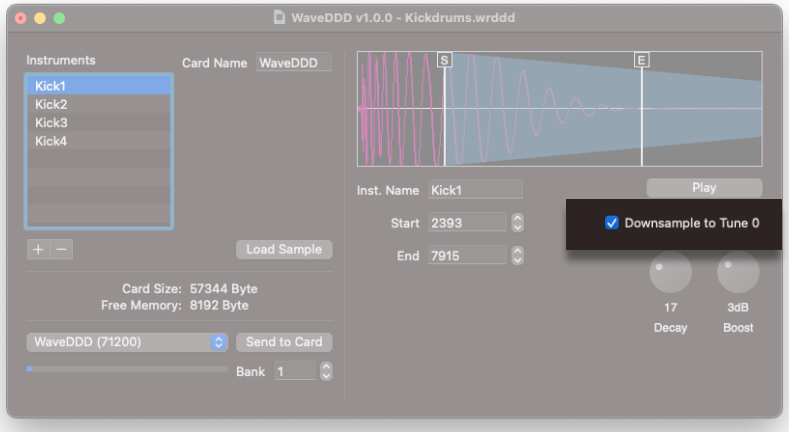
Sample Start and Sample End
The **Start** and **End** number fields can be used to specify both the sample start and end with sample precision.

Alternatively, you can use the Start and End markers of the waveform display.

Please note that only the part of the sample between the start and end points will be written to the card. Everything before or after it will be removed.

Downsample to Tune 0
If you are familiar with your DDD, you will know that all samples can be pitched via the **Tune** parameter. This is done in the device by resampling, i.e. changing the sample rate. You will also know that most of the pads have a default setting of Tune 64 (kick, snare, etc.). However, the cymbal pads in particular have a default of Tune 0, which means that the samples on the cards are at a different sample rate.

With WaveDDD, the samples for Tune 64 are stored on the card by default. If you do not want to change the tune of the pads with Tune 0 in the DDD, check the box "Downsample to Tune 0" for your sample, otherwise the pitch of your sample will not be correct in the device later.



Rotary control
You can operate each knob in several ways.

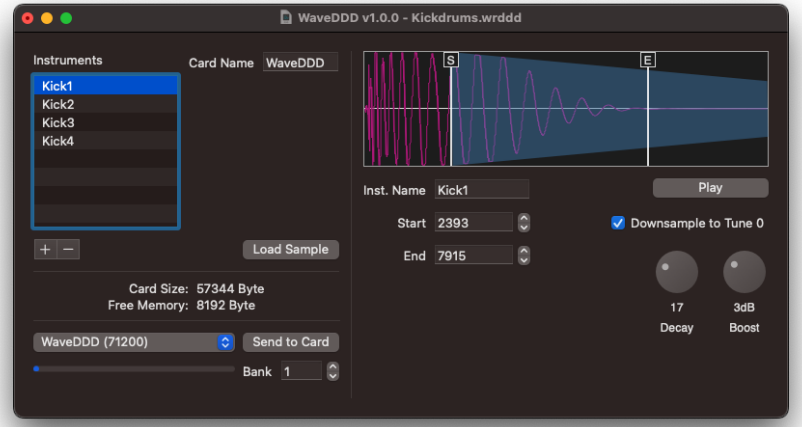
You can click on it with the **left mouse button** and move the mouse up or down. The knob moves in fine steps. To make larger steps, hold down the **CTRL key** (Windows) or the **ALT key** (Mac).

Alternatively, you can use the **mouse wheel**. Move your mouse pointer over the slider and turn the mouse wheel for small steps or press CTRL or ALT for large steps.

You can also simply click on the numerical value below the slider and enter the desired numerical value directly.

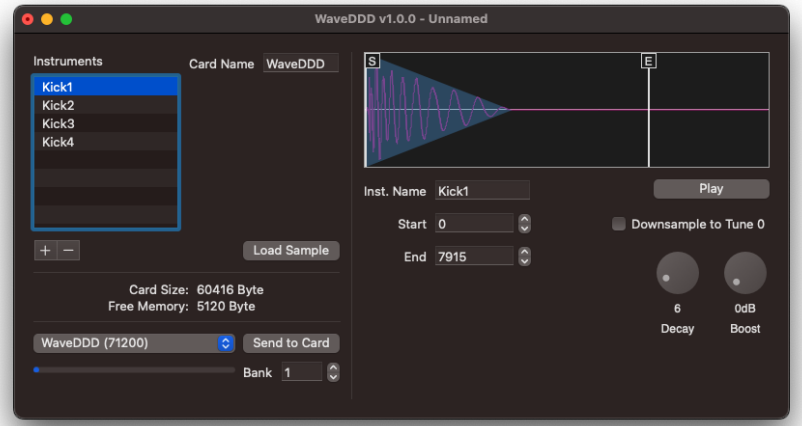
Decay
The only adjustable envelope parameter of the DDD is the decay. This can be set via the corresponding knob. The envelope is displayed in the waveform display as soon as you move the mouse over the knob.

The envelope is linear from the sample start point to the decay end point.



Small values represent a shorter envelope, large values a longer envelope. The envelope can be longer or shorter than the sample itself.

A shorter envelope ensures that the sample has already decayed before the end. A longer envelope only changes the decay of the sample. The sample itself will still only be played until the end of the sample.



Boost
Boost allows you to increase the volume of your sample by several dB. Your sample will be hard limited.

You're probably wondering what this is for... If you look at the original cards, you'll see that KORG did this with their samples as well. Because of the sample format of 8bit, there is not much dynamic range. Also, the signal-to-noise ratio is very low. Hard limiting gets a little more energy out of the samples. The peaks of the sample that are cut off by hard limiting are rounded off again by the DDD engine.

You can easily add +3dB to kicks and snares. With other samples simply according to taste. You'll see that it sounds better right away, or at least a bit punchier 😊.

First steps

The principle of WaveDDD

With the software editor for WaveDDD you can compile a virtual card, a so-called image, on your computer. This compilation can contain up to 8 instruments (samples). The image can then be transferred from the editor to your WaveDDD and used by the DDD.

Connect

Turn on your computer and wait for it to boot up.

Take your WaveDDD out of the box. The side with the label is the top side. On the bottom side are the warnings.

Do not put your WaveDDD into the DDD for the time being. First place it on a smooth, dry surface, e.g. a table.

Now take a USB-C data cable and connect it to your WaveDDD. You can then plug the other side of the cable into a free USB port on your computer. It doesn't matter if you use a USB2 or USB3 port. WaveDDD will be powered when the green LED is on.

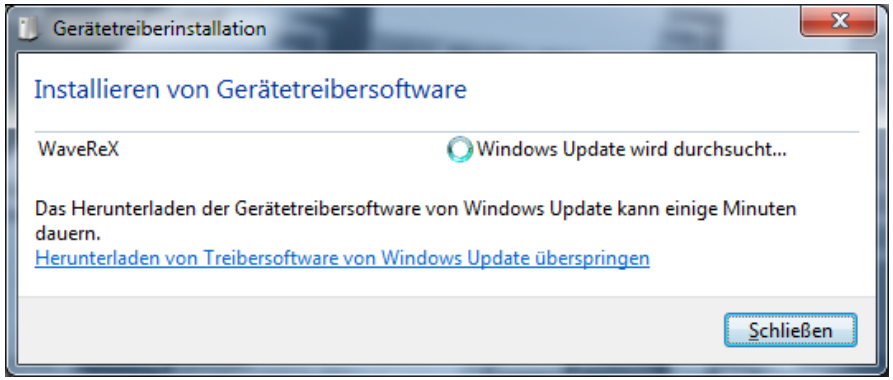
Your WaveDDD will start in bootloader mode. This is also indicated by the card's LED display. After 5 seconds or when WaveDDD detects a connection to the software editor, it will automatically switch to operating mode.

Starting with Windows 8, Windows should now install the drivers on its own. Check in the device manager if your device appears as **WaveReX bootloader**, then you have done everything right.

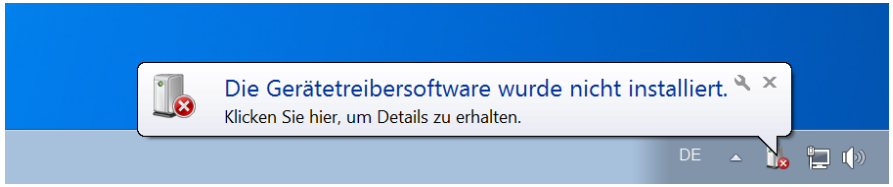
Installing the USB driver

If you are using Windows 7 or an older version, you have to install the drivers manually. If you already have a driver installed for another WaveReX product, you can skip this step. The driver is the same.

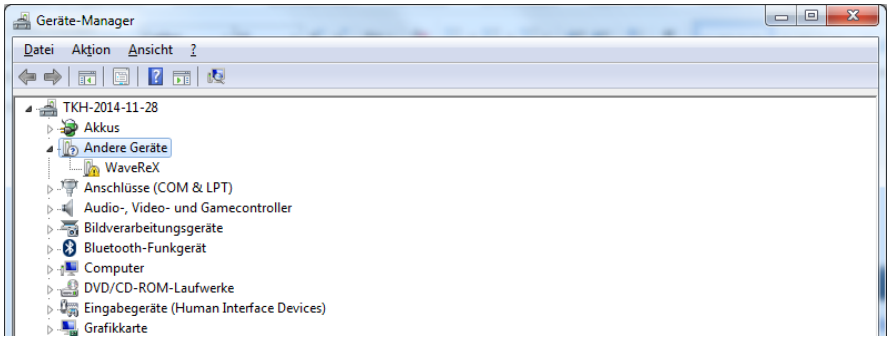
Connect your WaveDDD to the computer using a USB cable. If Windows 7 directly starts installing the driver software, you can simply close or ignore the window.



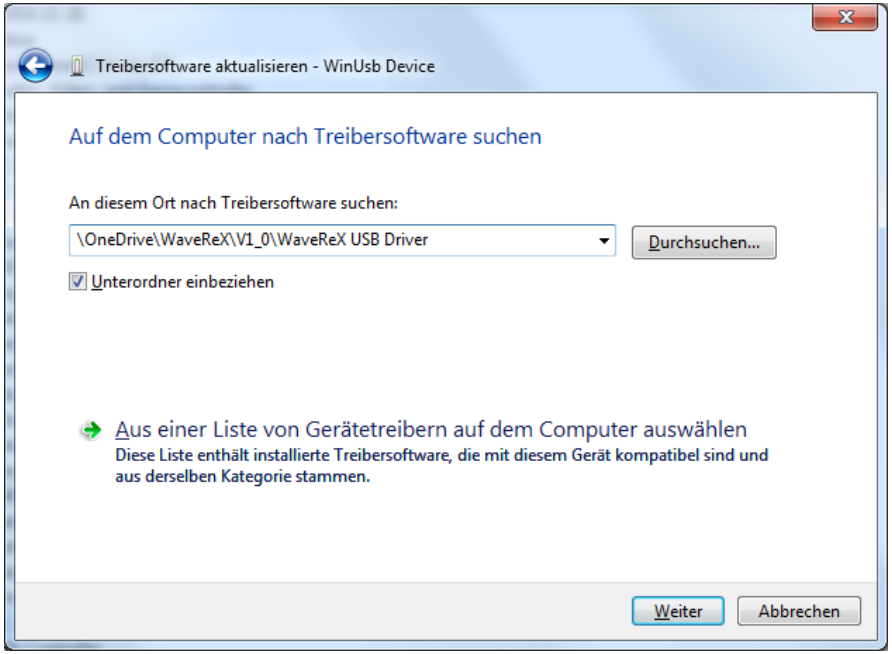
However, at least the following message should appear in the taskbar:



Go to the Device Manager. WaveReX should appear under **Other Devices**. Right-click on WaveReX and select **Update Driver Software...**

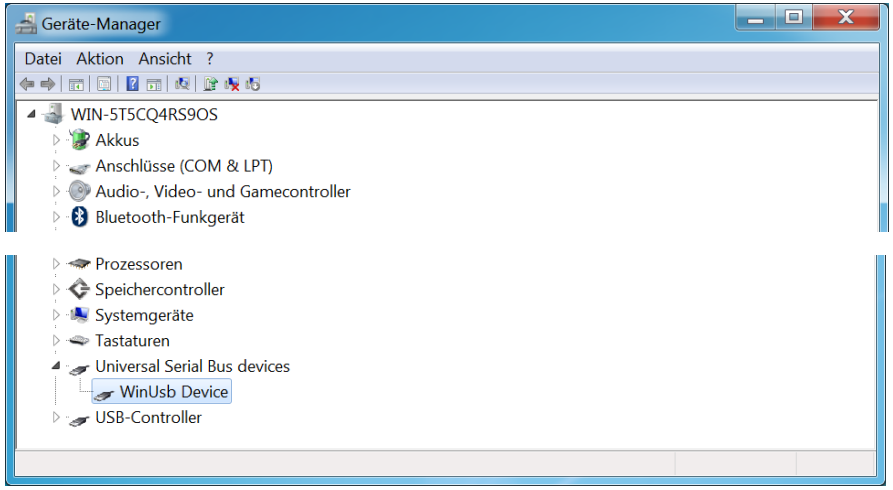


Select **Search for driver software on the computer**. Then specify the folder of the USB driver under **Search for driver software in this location**.



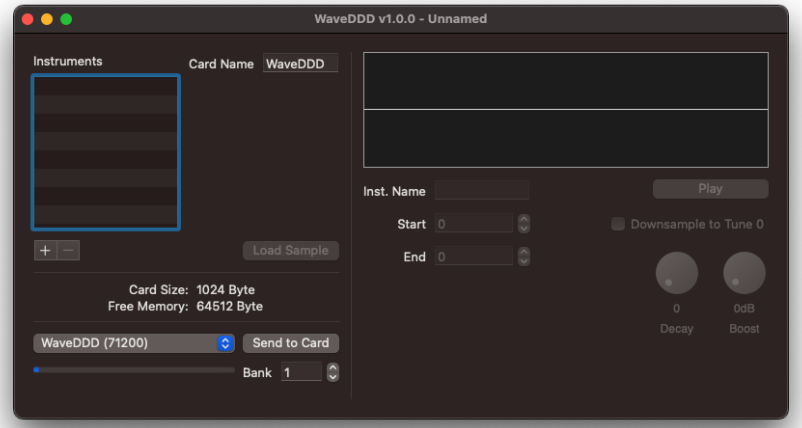
Confirm with the button **Next**. Windows will then install the driver for WaveDDD.

WaveDDD will be displayed in the Device Manager as **WinUsb Device** under **Universal Serial Bus devices** from now on.



Open the software editor

Make sure that your WaveDDD is already connected to your computer. Now open the software editor of WaveReX. You have also downloaded it from our site before. You should now see the main window:



You can see if your WaveDDD is connected to the software in the lower left corner of the device overview. The connected WaveDDD and its serial number are displayed here.

You can also connect multiple WaveDDDs. In this case you can use the drop-down field to select the device you want to use.

Loading a card

macOS

For loading a previously created card you have two options on the Mac. The first and easiest is to simply drag and drop the file with the extension **.wrddd** onto the editor window.

The second way is to open a file via the app's ribbon, which is located at the top of the macOS screen as usual for each app. The files have the extension .wrddd

Windows

Click the **Open Card** button. A dialog box opens. Here you can select a previously saved card. We have already provided you with several cards for this purpose. The files have the extension **.wrddd**.

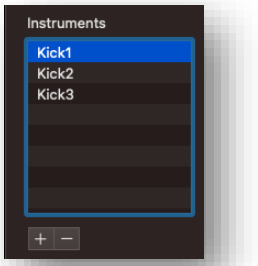
If your files are in a different folder, navigate to the desired folder via the window.

Double-click on the file or select it and click the **Open** button. The contents of the card will be loaded and displayed in the main window.

Edit a card

Delete an instrument

To delete an instrument from your compilation, first select the instrument to be deleted and press the minus (-) button below the instrument list.



When there is no instrument left in the list, the minus button is grayed out.

Add an instrument

First, make sure that there are less than 8 instruments in the instrument list. Exactly 8 instruments fit in the list and thus on the card. If the list is full, you cannot add any more instruments. You can see this by the grayed out plus button.

To add another instrument to the instrument list, press the plus (+) button below the list. A new, initially empty instrument will be created. Then assign a sample to this empty instrument by clicking on the "Load Sample" button and selecting an appropriate sample in the window that now opens.

Rename an instrument

First select the instrument you want to rename in the instrument list.

Now enter the new name for the instrument in the **Inst. Name** text field. To accept the name, press the Enter key.

Note that the DDD supports only eight characters for instrument names.

Rearranging the instrument list

The instruments are available in the DDD in the order in which they are in the instrument list. If you want to change the order, you can easily do this by drag & drop in the list.

Create a card

Click New Card in the in the menu bar of the application. If you have worked on a compilation before, remember to save it. But you should be warned before 😉.

The main window is now empty and you can start your work.

Change the cards name

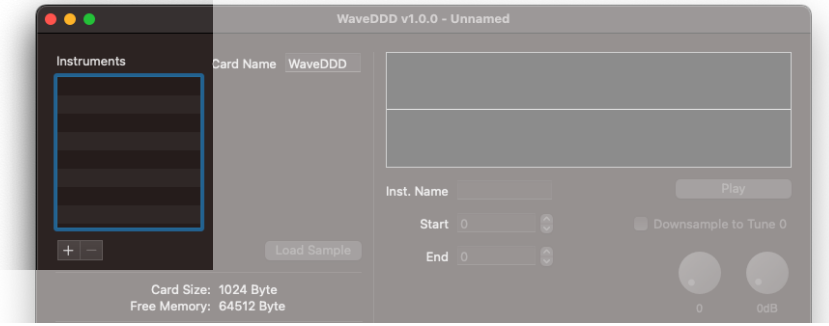
The card name is preset to WaveDDD by default. However, you can change it at any time.

The **Card Name** text field is located on the left side of the window in the card area.

The card name in this case is only for your organization, because the name is only stored in the format and not displayed by the DDD. Unfortunately, this is due to the format and we can't change that.

Create an instrument

In the main window, click on the Plus button below the instrument list.



An empty instrument is created and displayed in the instrument list. It initially has the name **Inst 1**.

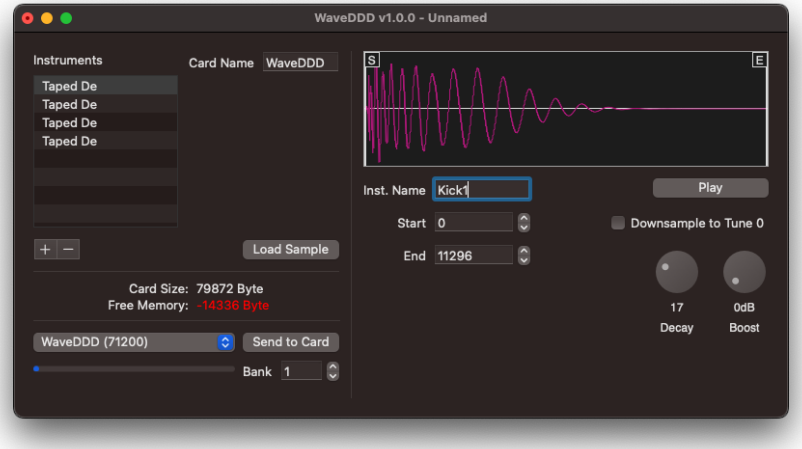
All controls and parameters are initially set to their default values. Now a sample can be added to the instrument.

Adding a sample

To load a sample into the instrument, first make sure that the instrument is highlighted in the instrument list and then press the **Load Sample** button. A window of your operating system will open where you can navigate to your sample. Select the sample and click **Open**.

The sample is now loaded into the instrument and all basic settings, such as the sample length for the end offset or decay, are automatically applied.

The name of the instrument is taken from the first 8 letters (without spaces and special characters) of the file name. However, you can change the name at any time using the **Inst. Name** input field in the instrument area.



Contrary to the card name, instrument names are displayed in the device. So, it is worth to name them.

Add an instrument via drag and drop

Alternatively, you can drag and drop 8 samples at a time into the instrument list. All 8 instruments will be created automatically and the samples will be imported into the respective instrument.

File formats

The KORG DDD uses native mono samples with a sample rate of 25272Hz and a bit depth of 8Bit.

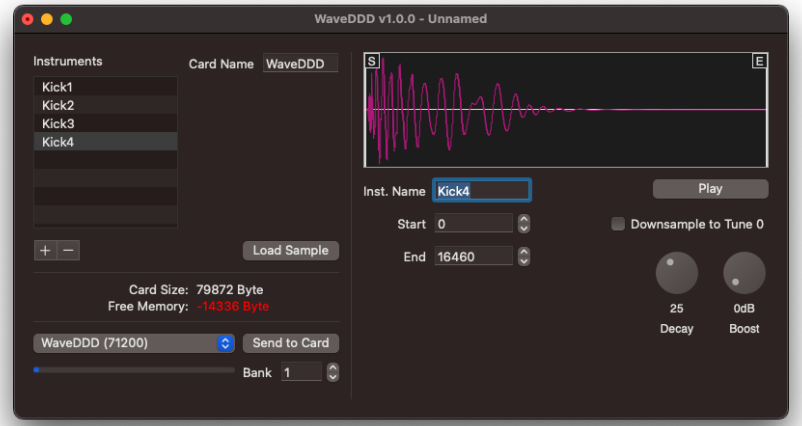
It is not necessary for you to convert your samples before import. The software editor will do this for you. We have built in an excellent resampler that converts your samples into the required format with high quality. So, you don't have to worry about the quality of your samples.

It doesn't matter if your samples are stereo, have a higher/lower sample rate or bit depth.

Please note! Currently only **Wav** and **Aiff** files can be loaded. Other formats will follow soon...

Instrument settings

If you have imported some samples and named them according to your wishes, the whole thing could now look like this, for example:



You could now, as seen in our example, be confronted with the problem that your samples do not fit on the card because they are simply too long. Unfortunately, there is only 64kb of memory available for each bank, more can't be addressed by the DDD.

If your samples are really too long, try to replace them with shorter samples. However, many samples are simply badly cut. As in our case. You can clearly see that almost half of the sample is silence. This part can be safely removed (unless you insist on it, because that's the way it has to be 😉). You have two options for this:

If you know exactly where you want the sample to end, enter the value in the End field and accept the value by pressing Enter on your keyboard. The End marker in the waveform display now jumps to the value you set and visually shows you the "new" end of the sample.

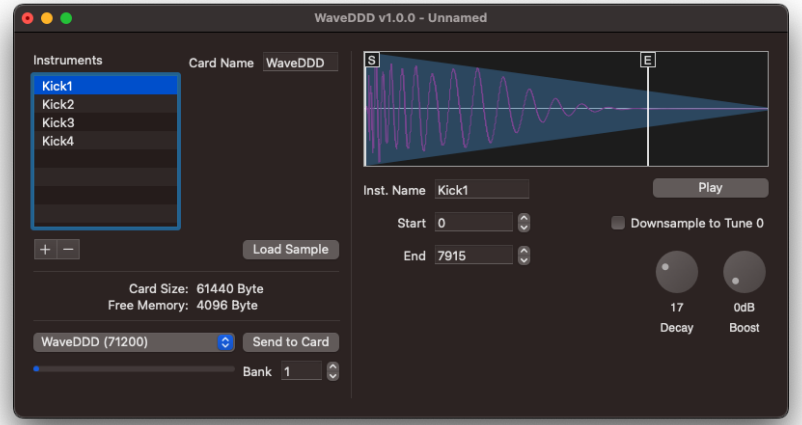
If a rough setting of the end is enough for you, just grab the end marker with the mouse at the small field E and drag the marker to the desired position.

In this case, too, the end value is displayed in the End text box. You can do the same with the start of the sample if there is too much silence before the sample.

Note that you are actually shortening the sample. The part before the start and after the end will not be written to the card at all. Make sure you don't cut too much at the end, because you'll hear it later if there's a jump or abrupt break in the sample. However, you can also remedy this with the Decay.

Feel free to play the sample using the play button to preview your result.

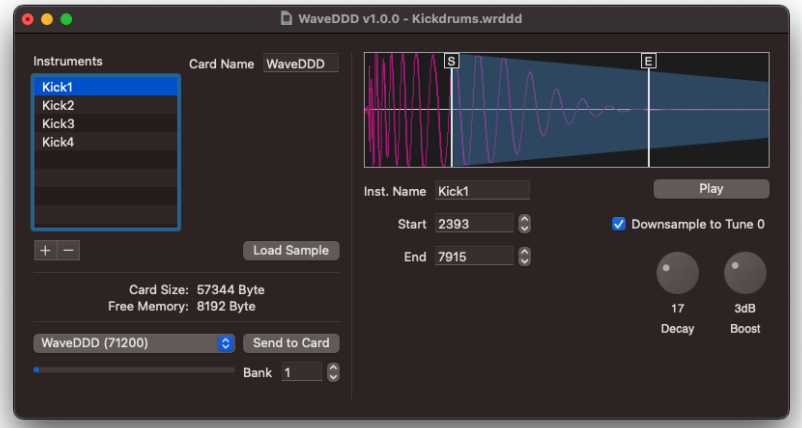
Move the mouse over the Decay knob. The envelope is now displayed in blue in the waveform display.



You can see from our example that the length of the envelope for the Import has already been optimized to the length of the sample. You can now change the length via the knob, if you want to. After all, we only want to slightly patronize you.

You can follow the result live in the waveform display at any time. This always shows you the sample in the already processed state.

The course of the envelope is linear from the start of the sample to the end of the decay, which can be far (and that means really, really far) behind the actual end of the sample. The following example shows this clearly:

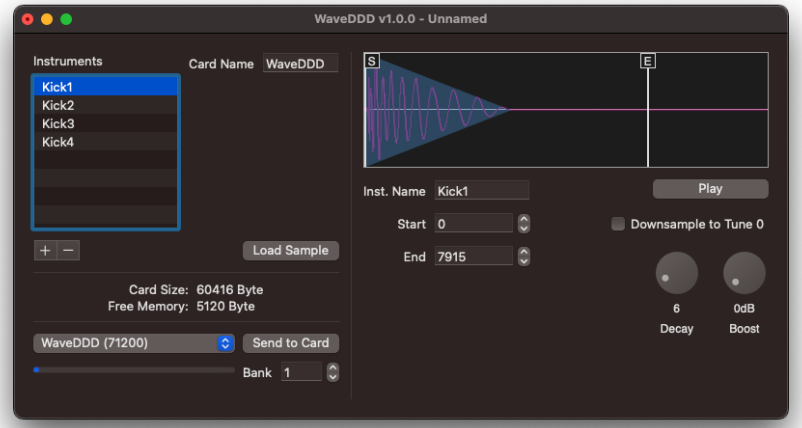


The Decay knob is limited to a value of 255, which roughly corresponds to a length of 255 * 684 = 174420 samples at Tune = 64 and 255 * 1024 = 261120 samples at Tune = 0.

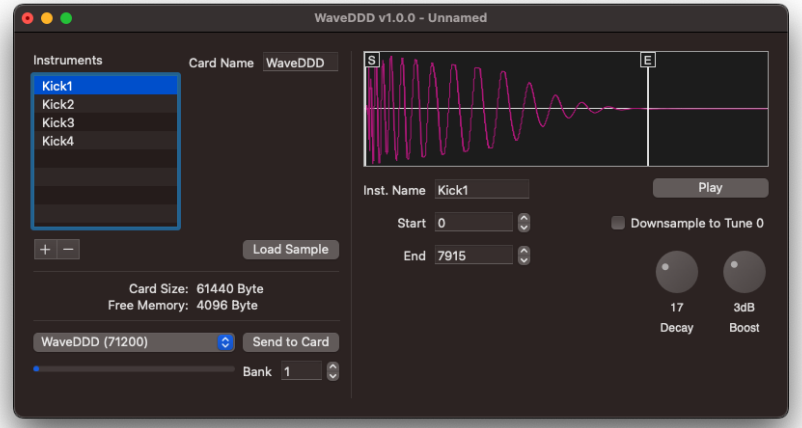
This can be good for example if you want the envelope to have little or no influence on your sample. In this case move the end of the envelope as far as possible to Off. This minimizes the influence of the envelope.

Especially in this case you should be very careful not to cut your sample too short, because the envelope does not force your sample to zero towards the end.

The situation is different if you set the envelope shorter than the end of the sample. The envelope then forces your sample to zero before the actual end of the sample is reached. You can do this, but it's a waste of space, because you can put the end of the sample at the end of the envelope.



Next, we recommend boosting your sample a bit. Let's say, especially for kicks and snares, by a good 3dB. You can see directly in the waveform display what happens.



The volume is increased and the sample is run through a hard limiter. This results in these nice clipped peaks.

You'll love it! Unless you're an air pump and don't really like the 80s after all... 😉.

Seriously. KORG did it that way too. If you want authentic DDD sound, use it. As mentioned before, the engine of the DDD rounds out those hard corners again. So, you don't have to fear mega distortion.

Last but not least, there is this ominous hook **Downsample to Tune 0**. Pitching the samples via the Tune parameter is done in the DDD via resampling. This means that the pitch of the samples is changed by changing the sample rate. Tune 0 corresponds to a sample rate of 25272Hz, Tune 64 to a sample rate of 37908Hz and Tune 127 to a sample rate of 50544Hz. All values in between you can calculate yourself 😉 That is not important here.

As briefly mentioned in the introduction, all samples of the DDD are optimized for the Tune 64. This means in plain language that they are stored with a sample rate of 37908Hz on the card or in the memory of the device. This is the case for almost all samples, except the Cymbals. The common DDD-lover knows this of course. These are optimized for Tune 0, in plain language, with a sample rate of 25272Hz on the card or the memory of the DDD.

Now of course these stupid pads of the DDD are preset to Tune 0 for the cymbals. If you now use a sample, which was optimized for a tune of 64, on these pads, the pitch is not correct. Now you can set the tune on the device to 64 every time, or you do it like KORG and play your cymbals with a sample rate of 25272Hz by checking the box. Well, with KORG that had more to do with the sample length... but that meant you could only ever pitch the cymbals up. Too bad, pitching down can also be quite funny...

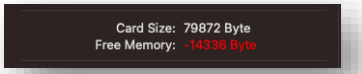
Now it's important to know that a 25272Hz sample that you pitch up generates less aliases than a sample that you pitch down. When you pitch up,

you push the spectrum and thus the aliases out of the displayable frequency range. If you like it weird, do it the other way around. This brings this funny tinnitus ringing in the sample 😊

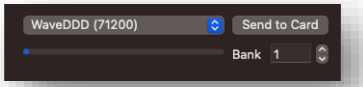
Transferring a card

When you have completed all the settings to your satisfaction, you can transfer the card to your WaveDDD. Make sure that you have selected the correct bank to which you want to transfer your compilation.

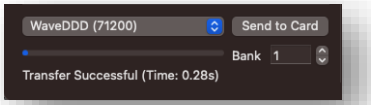
Check if your compilation fits on your WaveDDD. Basically, it's very simple: if the available space (Free Memory) under Card Info is red, your compilation is too big for the card and you have to save some space.



Click Send to Card in the lower right corner of the card area to start the transfer.



The transfer should be so fast that you will hardly notice it. Therefore, pay attention to whether the transfer was successful. You can find the status of the transfer under the progress bar. It should say **Transfer Successful**.



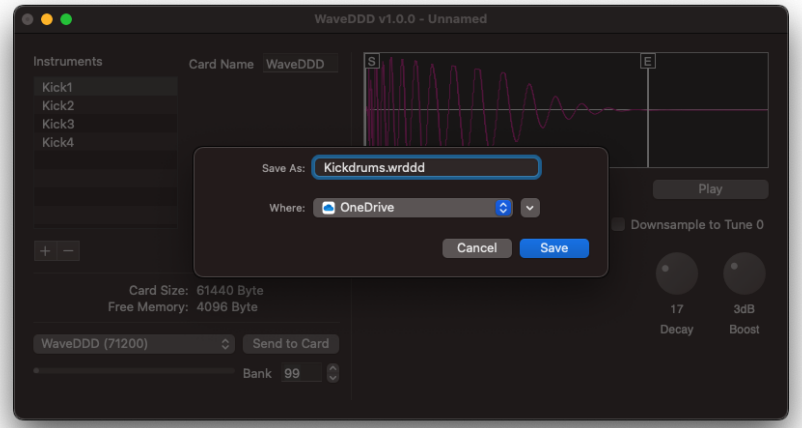
If the transfer was not successful, the status **Transfer Failed** is displayed. In this case, check if your WaveDDD is connected to the computer and is displayed under Device as described above.

Further help can be found in the Troubleshooting chapter. If this does not help, please contact support at support@waverex.de.

Saving a card

You can save your compilation at any time. To do so, click on **Save Card** in the File menu.

A dialog box will open. Navigate over the window to your preferred location. Enter the name of your compilation and click **OK** to save it.



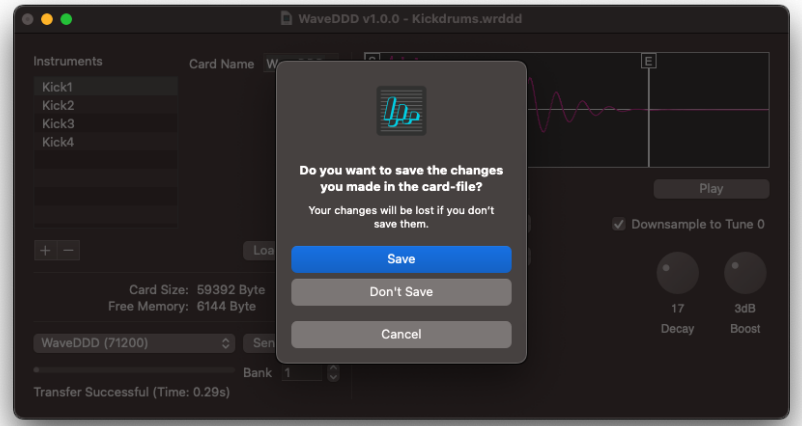
You can recognize that your compilation is unsaved by the fact that "Unnamed" is displayed in the title bar of the window.

As soon as you have saved it, the file name will be displayed here.

Please make sure that the file name you choose has nothing to do with the card name in the **Card Name** text box.

If your compilation has changed, this is indicated by a * after the file name on Windows and by a dot in the close button on macOS. You should now save again to not lose your changes.

And don't worry if you didn't save and accidentally close the editor window. A window should inform you about it.



Bang, off into the DDD…

If the transfer was successful, close the software editor. Now unplug the USB connector from your WaveDDD and make sure your DDD is off. If you have transferred a card to a different bank than the one set on the card, it would be a good idea to change the bank on the card before disconnecting the cable. The DDD reads the selected bank at startup.

Attention!

Never plug your WaveDDD into your DDD while it is live, especially when the DDD is turned on. This can cause severe damage to your DDD.

Insert your WaveDDD with the label facing up into a ROM slot of your DDD. You will feel a slight resistance.

ROM slots are both on the DDD-5, all four on the DRM-1 and the four under the flap on the DDD-1.

Push your WaveDDD straight into the slot as far as it will go. The card is inserted correctly when the black part of the label is at the level of the lower chassis.

Now switch on your DDD.

When the card is properly seated in the slot, the 7-segment display on the card will light up, indicating that WaveDDD is receiving power from the DDD. Make sure that you have selected the bank you want to use on the card. Please refer to the next chapter "Switching a bank".

On the DDD now switch to the INST SETTING menu and then to the ASSIGN menu item. Briefly press the pad to which you want to assign a sample of the card. Afterwards you can navigate to the card sounds of your card with the + or - buttons of the DDD **if the card content is valid**.

Switching a bank

Your WaveDDD comes with 99 banks. Each bank corresponds to one card. So you can think of the 99 banks as 99 individual cards.

As mentioned before, you can write to each bank from the editor without having to change the bank on the card itself by selecting the bank to write to in the field below the **Send to card** button before sending your compilation to the card.

The selected bank on the card is shown to you via the 7-segment display on the card.

On both sides of the display are fields marked with an arrow on the label. Beneath them are touch-sensitive pads. To switch a bank up or down, simply touch the label at the corresponding position. Which field is assigned to the up- and downshift depends on the orientation of the display. You can rotate the display with a special function (please see chapter “Rotating the 7-segment display”). The buttons for up- and downshifting will be swapped as well.

Please make sure that the DDD does not register when you change the bank during operation. The DRM-1 is an exception here. If you change the bank, it is necessary to read it in again. You can do this in different ways. Either you switch off your DDD and switch it on again after you have changed the bank (but we agree that this would be too complicated) or you make the DDD re-read the cards with a little trick.

Please note the part "Only junk is played" in the Troubleshooting chapter.

Rotating the 7-segment display

You will have noticed that the card slots are located in the front of the DDD-1 and the DRM-1 and in the back of the DDD-5. Thus, the display is in different orientations, depending on the device used.

Now we have left you the choice in advance whether you want to have a card in the design of the DDD-1 or DDD-5. But this doesn't change the fact that the cards are technically identical and you can use a DDD-15 in the DDD-1 or a DDD-11 in the DDD-5. If this is the case, you will feel the need to rotate the display so that you don't have to twist your neck all the time.

Just press both pads (up and down) for 5 seconds. The display will be rotated 180 degrees and the function of the pads will also be swapped.

Technical data

Compatibility:	KORG DDD-1, DDD-5, DRM-1
Card capacity:	99 banks á 8 samples
Memory capacity:	64kB per bank
Samples length:	no one calculates that way anymore!
USB port:	USB-C
Native sample format of the DDD:	25272Hz, 8Bit unsigned, Mono

Pattern and Songs

WaveDDD is a waveform-only card. You can't store setups, patterns, songs and stuff on it. Use the usual memory cards from KORG for this.

Troubleshooting

My samples sound weird

Yes, cool, isn't it? Welcome to the world of KORG DDD. You will surely notice funny alias effects in your samples. We can assure you; this is neither due to WaveDDD nor to the editor. Only the sample processing in the DDD is responsible for this.

The default sample rate of the DDD is, contrary to all other information on the internet, 25272Hz at Tune 0. For most pads of the DDD, however, a Tune of 64 is set by default. This corresponds to a sample rate of 37908Hz. The DDD pitches the samples via resampling. This can (and will) create aliasing effects. But this is exactly what we love and appreciate about the DDD and what makes it an excellent machine, not only for lo-fi genres.

Rule #1: Don't believe anything that WaveReX hasn't reverse engineered for you.

Can I improve the quality of the samples?

No. The DDD sounds the way it sounds. That's what this is all about, isn't it? The format is also as it is and the editor already optimizes your samples for the DDD.

But you have the possibility to optimize your sample to Tune 0 or Tune 64 in the editor. This may result in less aliasing.

Also, don't try to artificially boost the highs of your samples (unless you want to). This will only increase the aliasing. Think of Nyquist! With a sample rate of 25272Hz there is nothing above 12636Hz anyway! You won't be able to do that either 😉.

And believe us, what you see in the spectrum above 12636Hz are exclusively aliases. And yessss, these are not even so few 😜

Why so little fits on the card

Because memory was incredibly expensive back then. We are here in the year 1986! You have to keep in mind that every memory card was much more expensive in former times than your WaveDDD today and there were 46 cards from KORG.

The size of the card and therefore of a bank on WaveDDD is limited by the DDD and its format itself to 64kB. We can't change that, because the DDD can't read more without intervention. However, we have given your WaveDDD 99 banks as a consolation. That corresponds to 99 cards.

Only junk is played

This can have several reasons. First of all, we assume that you have not loaded junk onto the card.

First of all, you should make sure that you have written to the bank that you want to play on your DDD and that you have selected it on the card itself.

Note that with the DDD you cannot change the bank on-the-fly. When the DDD is switched on, it reads the parameters of the inserted card (or bank) into the device. This includes the sample names as well as sample start and sample end. If you now simply change the bank on the card, the DDD still has the parameters of the previous bank in memory and plays the samples of the current bank incorrectly or displays the names incorrectly. One possibility is to restart the device. However, there is a simpler way, but it differs for each model.

With the DDD-1, switch to ROM-CARD check mode and run it once. All cards will be re-read and the current bank will be played correctly.

With the DDD-5 it is actually even easier. After changing the bank on the card, simply change the menu in the DDD by, for example, briefly switching once via the key/column 5 to SYSTEM FUNCTION and then back again to column 4 INST SETTING, via the f-6 to the ASSIGN and then

pressing the pad to which you want to assign a sample. At this moment the card will be re-read.

The only one that reads in a bank change on-the-fly is the DRM-1.

Help, Brownout!

The hamburger would say that the power supplies of the DDDs are a bit lüt. If you want to use several WaveDDDs in one DDD, you should consider the following:

The DDD-5 can easily supply two cards with power. Stable!

The DDD-1 manages to supply three cards, with the fourth card the current consumption for the power supply is very high and the voltage of the device can collapse. However, if you additionally power one of the cards via USB, the voltage remains stable.

The DRM-1 has the weakest power supply. Already from the 2nd card the supply voltage can collapse. In this case, simply supply one of the cards with power via USB.

Make sure that you remove the USB cable from the card before you switch off the device. There is a risk of a so-called brownout. Low currents flow via the memory chip's outputs and thus supply the device with a voltage backwards, which is not sufficient to keep the device running stably, though.

Increased noise level with WaveDDD plugged in

Since the DDDs are almost 40 years old, the signal-to-noise ratio is of course not as good as with today's devices. Basically, the noise level on the outputs is somewhat higher here than with modern devices.

Due to the current consumption of the card, this noise level can increase at full load. Full load in this case means: all slots of the device are operated with a WaveDDD.

DDD-1 without Load: -70,93 dB and with full load: -64,57 dB

DDD-5 without Load: -80,36 dB and with full load: -70,70 dB

DRM-1 without Load: -76,01 dB and with full load: -67,74 dB

My card is not recognized in the DDD

First make sure that there is readable content on your WaveDDD and that it is in the correct bank! Without content, the card is of course unreadable for your device.

Don't let it drive you crazy! All WaveDDDs have been tested and left the factory fully functional. Maybe you didn't pay attention to something.

If you still have problems, please contact support.

The software editor does not show my WaveDDD

Please make sure that your WaveDDD is installed correctly. Please refer to the section **Installing the USB driver**.

If this is not the cause of the error, make sure that your USB cable is not defective. Just replace it with another one.

In fact, USB cables come in two types: charging-only cables (where the data lines are missing) and data cables. Make sure that you really use a **data cable**.

If that does not help, please contact support.

I have found a bug

Please report it to the support. We will immediately arrange for a bug fix.

Also don't hesitate to send us suggestions for improvement. We have made WaveDDD for YOU.

How to contact the support?

Please email to support@waverex.de

Support requests to info@waverex.de cannot be considered! Please. We mean it!

Can I call you?

If you have the phone number for sure 😉

And in general: If you ask nicely, you will get an answer.