



ELEKTROAKUSTISCHE MANUFAKTUR

DRM1 MKIV

USER MANUAL

Introduction

The analog drum synthesizer DRM1 MKIV is not just another instrument or piece of equipment. It is also a part of history - our history.

With its first version, we re-entered the market with a first product under the VERMONA brand. A return to a market from which we were forced to withdraw temporarily due to significant historical and political changes. This product was introduced many years ago but the DRM1 is still in production. Why that is? Simply because there are still musicians around who do not own one! That's why the DRM1 has continuously been refined and evolved into version MKIV today – the best drum synthesizer we have ever created.

Now it is up to you, dear user, customer, and musician, to come up with the best beats you have ever created!

Yours,

the VERMONA team

Elektroakustische Manufaktur Erlbach

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Important Safety Information

1. Please read these instructions!
2. Keep these instructions! Always include these instructions when passing the DRM1 MKIV on to someone else!
3. Heed all warnings and follow all instructions!
4. Do not use the DRM1 MKIV near water!
5. Only clean the DRM1 MKIV when it is not connected to the mains power supply! Clean only with a dry cloth!
6. Do not set up near any heat sources such as radiators, open fire places, stoves, or other devices (including amplifiers) that produce heat!
7. Do not defeat the safety purpose of the polarized or grounding-type plug! A polarized plug has three prongs, the third being the earth terminal. The wide prongs as well as the third one are provided for your safety. If the provided plug does not fit into your outlet, have an electrician replace the obsolete outlet!
8. Protect the power cord from being stomped on, squeezed, or pinched, particularly near the plugs, mains outlets, and the point where it protrudes from the device!
9. Use only accessories specified by VERMONA!
10. Use only with the trolley, stand, tripod, bracket, or table specified by the manufacturer, or sold with the device! When a trolley is used, be cautious when moving the cart/device combination around in order to avoid injury from tipping!
11. Unplug the DRM1 MKIV during thunderstorms or when unused for longer periods of time!
12. Refer all servicing to qualified service personnel! Servicing is required when the device has been damaged in any way, e. g. when the power supply lead or plug is damaged, liquid has been spilled, or objects have fallen into the device, when the device has been exposed to rain or moisture, does not operate the way it should, or has been dropped.
13. To completely disconnect the device from mains, disconnect the power cord from the outlet socket!

14. **WARNING:** To reduce the risk of fire or electric shock, do not expose the DRM1 MKIV to rain or moisture!
15. Do not expose the DRM1 MKIV to dripping, splashing, or spraying liquids and make sure that no objects filled with liquids – such as vases, coffee mugs, or beer glasses – are placed on the equipment!
16. The mains plug of the power cord is to be readily and instantly accessible!

Installation

- Make sure that the room in which you use the DRM1 MKIV is wired in accordance with the local electrical safety certificates and inspected by a qualified electrician.
- Do not install the DRM1 MKIV in hot, humid, or excessively dusty locations, exposed to direct sunlight, or in locations where it is exposed to extraneous vibration!
- Do not place burning objects (e.g. candles) on top of or near the DRM1 MKIV!
- If condensation has formed on or inside the DRM1 MKIV, e.g. because it was moved from a cold environment to a warm one, allow the device to acclimatize to room temperature before using it!
- Do not overload wall outlets and extension cables as this may cause fire and/or electric shock.

Setup

Content

To warrant top-notch quality, we have carefully inspected the DRM1 MKIV before packaging. Still, there is a tiny chance the unit might have got damaged in transit. Therefore, we ask you to have a close look at the DRM1 MKIV when unpacking. Do not hesitate to contact us, should there be anything unusual with the unit or its packaging.

You should find the following items in the box:

- the DRM1 MKIV
- a power cord
- this manual
- a big deal of fun and passion

Connection and getting started

The DRM1 MKIV is solely a sound module. To coax the best out of it, it needs to be connected to a sequencer, a computer, or a keyboard as well as to a mixing desk and/or an amplifier. After connecting the module to a mains outlet socket using the supplied lead, set up audio and MIDI connections as follows:

Setting up audio connections



CONNECT FIRST, AND THEN TURN ON! To protect your speakers, your audio-interface, and – last but not least – your eardrums, we urgently recommend you to set up all cable connections while the equipment is turned off. Do not underestimate peak levels and possible damage that might occur when plugging in or unplugging audio cables.

1. The jacks **OUTPUT LEFT** and **RIGHT** ④ on the rear panel of the module put out all audio signals in stereo. Connect these jacks to two line inputs of a mixing desk, a computer audio interface, or to an amplifier using two cables with 6.3 mm jacks (TS). Alternatively (or at the same time), you may connect headphones to the **PHONES** jack ⑥ on the front panel.



All of the DRM1 MKIV instrument channels sport individual outputs (OUT/INSERT) ④, allowing you to patch them into the inputs of a mixing console or of an audio interface. Find more details in chapter “Individual Outputs/Inserts” on page 21. Use the stereo output jacks for the first experiments with your new DRM1 MKIV.

2. Before turning on the unit by pressing its **POWER** button ⑬, complete all audio connections to avoid loudness peaks, thumps, and crackling noises in your audio system. These peaks can lead to distortion and might even damage converters when connected directly to an audio interface. For safety reasons, turn down the **MASTER** control ⑤ of the DRM1 MKIV as well as the input level controls of the units next in the signal chain while connecting and powering up the device. After powering up the DRM1 MKIV, the corresponding red **POWER LED** ⑦ on the front panel will light up.

Setting up MIDI Connections (DIN and USB)

1. Connect your trigger device that is to trigger the instrument sounds of your DRM1 MKIV to the DRM1 MKIV's **MIDI IN** socket ⑩. Trigger devices can be a suitably equipped groove box, a hardware sequencer, the MIDI output of a software sequencer (using computer audio or MIDI interface), or a suitably endowed keyboard controller.
2. **MIDI THRU** ⑪ forwards the MIDI data from the MIDI input of the DRM1 MKIV and allows daisy-chaining more MIDI devices in series.
3. The **MIDI OUT** ⑫ socket transmits MIDI data generated internally. These are MIDI note-on commands and velocity data that are derived from external trigger signals, received via the optional **TRIGGER IN** sockets. No other MIDI data are generated by the DRM1 MKIV itself.
4. Alternatively, you may also use the DRM1 MKIV's **USB PORT** ⑩. It receives and transmits the same MIDI data as the IN/OUT sockets. MIDI sockets and USB port may be used in parallel. Additionally, the USB port can be used for transferring firmware updates.

You may trigger the instruments of the DRM1 MKIV by external analog trigger signals. These are received via the optional **TRIGGER IN** sockets ⑥ at the back of the unit. Please find all related information on page 23.

Controls and connectors

Front Panel/User Interface

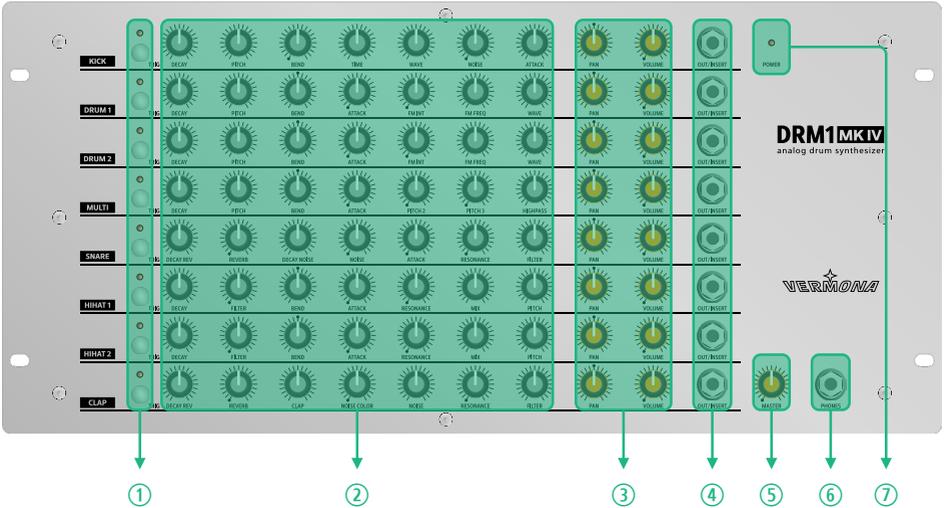


Figure 1: User Interface of the DRM1 MKIV

- ① **TRIG** button with LED – fires off sound individually per instrument channel
- ② Sound-shaping parameters (see “The Instrument Channels of the DRM1 MKIV” on page 11)
- ③ **PAN** and **VOLUME** - channel volume and panning (see “Sound Generation” on page 10)
- ④ **OUT/INSERT** - individual outputs/inserts (see “Individual Outputs/Inserts” on page 21)
- ⑤ **MASTER** - overall volume
- ⑥ **PHONES** - headphones output
- ⑦ **POWER LED** - lights up when the DRM1 MKIV is powered up.

Rear Panel

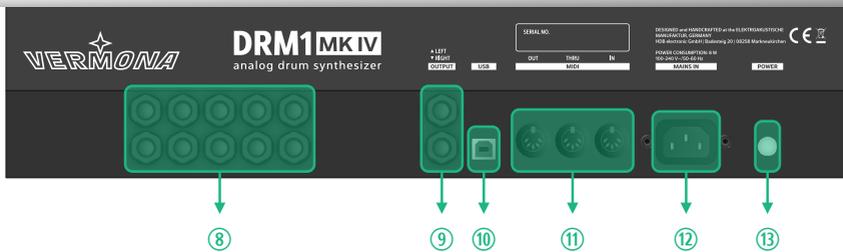


Figure 2: Rear Panel of the DRM1 MKIV

- ⑧ optional **TRIGGER** inputs for all eight instruments including open/closed hi-hat (please refer to “Trigger Inputs (optional)” on page 23)
- ⑨ Main outputs (**OUTPUT LEFT** and **OUTPUT RIGHT**). Please refer to page 6.
- ⑩ **USB** port (sends and receives MIDI data and receives firmware updates). Please refer to page 7 and “MIDI Functions” on page 19.
- ⑪ MIDI sockets (**MIDI THRU**, **MIDI OUT**, and **MIDI IN**). Please refer to page 7 and “MIDI Functions” on page 19.
- ⑫ Power connector
- ⑬ **POWER** switch. Please refer to page 6.

Sound Generation

Now that you have carefully unpacked and set up the DRM1 MKIV, let's have a closer look at it. Sorry for bothering you with mainly theoretical and safety blurb. This is a necessity to get the most out of this unit in a creative and musical way (and to avoid nasty accidents). Well then, let's find out what the DRM1 MKIV really is all about!

The DRM1 MKIV is a sound module, specialized in the creation of synthetic drum sounds that are produced by real analog circuitry. It allows the creation of eight independent drum and percussion sounds. Even though these sounds carry the component terminology of a traditional drum kit, these are nothing but approximations of the real thing. However, this is fully intentional. Synthetic or analog drums have their own individual character and aesthetics. These sounds have significantly influenced various musical genres, if not spawned them at all. Neither old-school Hip-Hop or Electro, nor House or Techno would have been possible without the aid of those famous analog drum machines, invented by our friends from Japan.

The DRM1 MKIV has a lot to offer. It covers many aspects of those classic units but still, there is a lot more to it. One thing can certainly be claimed: The DRM1 MKIV is all original-sounding and not a clone, trying to reproduce eight or nine classic sounds.

Let's have a look at the individual drum sounds, referred to as instrument channels in the course of this manual. While we are at it, we will also toy around with some possible applications.

All eight instrument channels of the DRM1 MKIV share the same three components:

- TRIG** This button manually triggers the sound of the respective instrument channel. Here, volume level is constant and corresponds to the level of maximum MIDI velocity. Note: Instrument channels *HI HAT 1* and *HI HAT 2* offer an additional choice of sounds (see “HI HAT 1/HI HAT 2” on page 16).
- PAN** This control adjusts the position of the individual instrument channels within the stereo panorama when using the main ⑨ and headphone outputs ⑦. Note that **PAN** has no effect on the individual outputs ⑤ of the instrument channels.
- VOLUME** This control adjusts the volume of the individual instrument channels for the main ⑨, headphone ⑦ and individual outputs ⑤.



For achieving the best signal-to-noise ratio possible, we highly recommend you to set the VOLUME knob ⑤ of the instrument channels as high as necessary (around approx. 1 – 2 o'clock) while setting the MASTER control ⑥ as low as possible.

The instrument channels of the DRM1 MKIV

The eight instrument channels are tailored to generate specific drum sounds. However, thanks to their flexibility, you are explicitly asked to experiment and be creative. As you will see, each instrument channel offers a plethora of different sounds.



Please note: Some parameters of a sound interact with each other. For example, the TIME control of the kick drum described below only produces an audible effect when the BEND knob is not turned fully counterclockwise. A similar response can be found with almost all instruments and should be kept in mind and used creatively when setting up sounds.

KICK



Figure 3: KICK instrument channel of the DRM1 MKIV

The first channel is specifically designed to produce bass drum sounds.

DECAY sets the duration of the sound until total decay. The first half of the control's travel allows for creating punchy kick drums for dance music. When moving away from the center setting of the control, single kicks will make decay times increase significantly. These sounds are often found in genres such as Hip-Hop or R'n'B. With **DECAY** set to maximum, long-decaying bass drums can be created which will make your trouser legs flap. Use these for Trap, D'n'B, and Dubstep – BOOOOOOOM.

PITCH sets the fundamental frequency of a sound. Of course, the lower range of this knob is relevant when creating bass drums. Start at the 9 o' clock position and go from there. With **PITCH** set to a higher value, you may as well create tom and percussion sounds using the *KICK* instrument channel. **PITCH** interacts with the parameters **BEND** and **TIME**.

BEND adjusts the intensity of pitch modulation by the **TIME** envelope. Higher values will increase the amount of modulation but also increase the perceived pitch of the sound, especially with **DECAY** set to shorter values. View **PITCH**, **BEND**, and **TIME** as being interactive.

With pitch modulation being completely absent, bass drums may sound flat and not distinctive; therefore, we recommend at least a little dose of **BEND**. For creating dance-type kick drums, use higher **BEND** settings and lower **TIME** settings. For long booooming kick drums keep the control in the lower half.

TIME adjusts the release time of the pitch envelope. Generally speaking, short settings are useful for bass drums while longer values will make the sound lose character traits which are specific to a kick drum. A long decay setting might still be useful when it comes to creating percussion and effect sounds.

WAVE is a control that continuously sweeps the oscillator waveform from sine-wave to square-wave. Here, the tone shifts from soft to edgier. Within the first half of the control's travel, additional rawness and depth is imparted to the sound. At higher values, the sound will start to get overdriven and distorted, rendering an external overdrive or distortion pedal redundant if you want to create more massive-sounding bass drums.

NOISE adds a short noise impulse at a fixed level to the initial part of a sound. This imitates the noise of the beater hitting the acoustic bass drum skin. Always adjust **NOISE** in correlation with the full mix. What might appear a bit too much over the top when being played on its own might actually sound a fair bit too restrained within a full mix.

ATTACK shapes the attack phase of the sound: A short peak impulse is mixed into the attack phase of the sound. This will increase the bass drum's presence. Turning the **ATTACK** knob alters the shape of this peak impulse. Like **NOISE**, set **ATTACK** in correlation with the complete mix. What might appear to be too obtrusive when monitored in isolation might perhaps sound a tad too gentle within a full mix.

DRUM 1/DRUM 2



Figure 4: DRUM 1 instrument channel - DRUM 1 and DRUM 2 are identical

The two *DRUM* instrument channels are functionally identical. They are meant to create toms, percussion, and metallic-sounding noises but they can also produce bass drums which have a slightly different character than those created by *KICK*. Thanks to two available channels, you may either create two completely different sounds or create tuned pairs of sound such as low and hi toms or congas.

- DECAY** sets the release time or the time it takes for the sound to decay fully. Its range is a little wider compared to *KICK*, allowing you to create very short clicks.
- PITCH** sets the pitch/frequency per instrument channel. Drum 1 and 2 sport different frequency ranges, with Drum 2 covering a higher pitch range
- BEND** adjusts the amount of possible pitch modulation by the **DECAY** envelope. In its central position, no modulation occurs. Move away clockwise from the center position to modulate the pitch downwards. Turning the control counterclockwise from the center position will invert modulation, resulting in ascending pitch. This modulation interacts with the **DECAY** setting.
- ATTACK** adds a short fixed-level transient spike to the attack of a sound to make it extra punchy. Always adjust **ATTACK** in correlation with the complete mix.
- FM INT** defines the intensity of the frequency modulation (FM). With FM being active, the frequency of the *DRUM* instrument channel, set using **PITCH** control, is modulated by a sine-wave oscillator. Set the **FM INT** control fully counterclockwise to turn off FM.
- FM FREQ** sets the frequency of the modulation oscillator. At higher values, frequency modulation will enter audio range, producing a wide frequency spectrum. This allows creating atonal and metallic-sounding timbres. At lower values, FM will result in modulation comparable with a more typical LFO. The modulation is synced to the trigger signal, making the modulation curve start at its maximum all the time, generating a positive pitch-bending effect. Because of their different pitch ranges, modulating Drum 1 and Drum 2 can yield different tones.

WAVE

is a mix control that continuously sweeps the oscillator waveform from sine-wave to square-wave. Here, the sound changes from soft to edgier. At higher values, the sound will start to get increasingly overdriven and distorted. The interaction between **WAVE** and the **FM** parameters will produce a wide range of timbres for various types of percussion sounds.

MULTI



Figure 5: MULTI instrument channel of the DRM1 MKIV

MULTI contains three oscillators, each sporting a wide tuning range. This makes for an amazing variety and scope of tones, ranging from bass drums and toms, to cowbells and other metallic-sounding percussion, to far-out sound effects.

DECAY determines the duration of the sound.

PITCH sets the fundamental pitch frequencies of all three oscillators.

BEND adjusts the modulation amount of the **DECAY** envelope, controlling pitch. When at center position, no modulation will be audible. From the center position, turn clockwise to modulate pitch downwards. Turning the control counterclockwise from the center position will invert modulation, resulting in ascending pitch.

ATTACK adds a short fixed-level transient spike to the initial attack phase of a sound to make it extra punchy. Always adjust **ATTACK** in correlation with the complete mix.

PITCH 2 sets the pitch/frequency of the second oscillator. Changing **PITCH** will always change the frequency of **PITCH 2**, too. **PITCH 2** can be independently adjusted to make it sound lower than the first oscillator. Turning **PITCH 2** fully counterclockwise will shut off the second oscillator completely.

PITCH 3 sets the pitch/frequency of the third oscillator. It works the same way as the **PITCH 2** control works with the second oscillator.

HIGHPASS adjusts the cutoff frequency of an additional high-pass filter. It allows attenuating bass frequencies of the sound if so required. The effect the filter has depends on the pitch of the sound. When **PITCH 2/3** are set beyond the 9 o' clock position, the effect of the high-pass filter will hardly be noticeable.

SNARE



Figure 6: SNARE instrument channel of the DRM1 MKIV

The purpose of the *SNARE* instrument channel should be obvious. However, due to its various parameters, the snare drum of the DRM1 MKIV is a lot more flexible than what you might have come to expect from other analog drum machines. The sound is made up of various component parts: noise, a transient spike, a resonant filter, and a pseudo reverb. This allows a wide scope of sounds to be created, ranging from short “clacks”, resembling old beat boxes, to compact snare sounds with noisy components and additional reverb.

- DECAY REV** determines the duration of the reverb effect. The effect of this parameter is only audible when **REVERB** is active.
- REVERB** adjusts the intensity of the reverb effect. When this control is set fully counterclockwise, reverb will not be active.
- DECAY NOISE** sets the release time or duration of the noisy component of the sound. The effect of this parameter will only be audible when **NOISE** is active.
- NOISE** adjusts the volume of the noise component of a sound. That way, the snare will gain more girth and, consequently, sound more authentic. When this control is set fully counterclockwise, **NOISE** will not be active.
- ATTACK** adds a short fixed-level transient spike to the initial attack of a sound to make it more punchy on the one hand, but it is also used to make the resonant part of the filter section self-oscillate. The audibility of the transient spike also depends on the intensity of the filter resonance (**RESONANCE**) setting. Always adjust **ATTACK** in correlation with the complete mix. What might appear to be too obtrusive when monitored in isolation might perhaps sound a tad too gentle within a full mix.
- RESONANCE** specifies the intensity of the filter resonance and, consequently, colors the tonal component of the snare sound. Only at higher values, the filter will start self-oscillation.
- FILTER** sets the cutoff frequency of the low-pass filter. Assuming the filter is self-oscillating, this control adjusts the pitch of the tonal sound component of the Snare channel.



Various types of percussion sounds are possible by just using the filter section of the snare drum but leaving out the **NOISE** component. When **FILTER** and **RESONANCE** controls are fully opened, the result will sound clave-like. By attenuating **RESONANCE**, this sound will morph into a snare that resembles a preset beat-box from 1978 or thereabouts. Decreasing **FILTER** frequency in combination with various **RESONANCE** settings will yield convincing renditions of tom-toms, congas, and bongos (see “**SNARE**” on page 15).

HI HAT 1/HI HAT 2



Figure 7: HI HAT 1 instrument channel of the DRM1 MKIV - HI HAT 1 and HI HAT 2 are identical

These two instrument channels are meant to create hi-hats but also cymbal sounds. Come up with a wide range of cymbals, percussion and sound effects, based on filtered noise and a metallic-sounding blend of oscillators.

- DECAY** sets the release time or the duration of a sound.
- FILTER** sets the cutoff frequency of the low-pass filter, coloring the overall sound of the channel.
- BEND** adjusts the amount of an optional modulation of the cutoff frequency by the **DECAY** envelope. In its central position, no modulation is present. Turning the control clockwise from its center position will modulate the cutoff frequency of the filter, lowering it. Moving away counterclockwise from the center position will invert the modulation, resulting in a rising cutoff frequency. This modulation interacts with the **DECAY** setting.
- ATTACK** adds a short fixed-level transient spike to the initial attack of a sound to enhance presence of the hi-hat and cymbal sounds. Always adjust **ATTACK** in correlation with the complete mix. The pitch of the transient spike can be adjusted in parallel with the oscillator mixture, using the **PITCH** control.
- RESONANCE** specifies the intensity of the filter resonance which, consequently, shapes the timbre of the hi-hat and cymbal sounds.

MIX controls the balance between the noisy component part and the detuned multiple oscillator section. Turned fully counterclockwise, only the noise component will be audible; turned fully clockwise, only the multiple oscillator section will be audible, allowing more “authentic” cymbal sounds, thanks to its metallic-sounding character.

PITCH defines the pitch/frequency of the oscillator mix as well as of the **ATTACK** transient spike at the same time.



HI HAT 1 and *HI HAT 2* can be triggered in two ways, using the **TRIG** button ① - either as cymbal/open hi-hat or as closed hi-hat. The closed hi-hat has a fixed short decay time, independent of the **DECAY** control setting. After turning on the DRM1 MKIV, the default setting of the **TRIG** button ① is triggering the cymbal/open hi-hat, with the duration of the sound being governed by the **DECAY** control. To toggle between the trigger-modes, keep **TRIG** ① depressed for approx. one second. The corresponding LED will light up briefly to confirm the mode of operation.

When using MIDI, both sounds of these instrument channels – i. e. cymbal/open hi-hat and closed hi-hat – can be played by two different MIDI notes which also lets you alternate between open and closed hi-hat (see “MIDI Functions” on page 19).

CLAP



Figure 8: CLAP instrument channel of the DRM1 MKIV

CLAP serves a clearly defined task – it simulates the clapping of several hands (but not necessarily applause). Like *SNARE*, it also sports some sort of an electronic pseudo-reverb which, in this case, is an integral part of the sound since it makes the claps sound a lot more authentic and natural. The *CLAP* instrument channel also features a resonating filter component.

DECAY REV sets the duration of the reverb effect. The effect of this parameter will only be audible with **REVERB** being active.

- REVERB** adjusts the intensity of the reverb effect. When this control is set fully counterclockwise, reverb will be disabled.
- CLAP** sets the rate as well as the number of individual claps (transient spikes) in a row. At fully counterclockwise position, just one single spike / clap will be audible.
- NOISE COLOR** controls the color of the noise signal (**NOISE** parameter) by continuously cross-fading between pink and white noise. The effect is subtle and will only be audible if the **NOISE** knob is turned up.
- NOISE** adjusts the amount of noise that is blended with the claps. Without adding a bit of **NOISE**, the claps will sound quite artificial.
- RESONANCE** determines the intensity of the filter resonance and, consequently, colors the tonal component of the clap sound in interaction with the **FILTER** setting.
- FILTER** sets the cutoff frequency of the low-pass filter. In interaction with **RESONANCE**, this control adjusts the timbre of the sound. At increased levels of the Resonance setting, the effect of **NOISE COLOR** will grow less noticeable.

MIDI Functions

The DRM1 MKIV receives MIDI notes, including the corresponding velocity data, via the MIDI-In and USB ports. This way, its sounds can be played dynamically. Trigger impulses, received at the optional trigger inputs, will be converted into MIDI note data plus velocity values and transmitted via MIDI-Out and USB ports. Any other MIDI data, such as controller data, will not be processed by the DRM1 MKIV.

Assigning MIDI channel and note number to individual instruments

1. Press and hold the **TRIG** button ① of the instrument channels *CLAP* and *DRUM 1* simultaneously. The DRM1 MKIV is now in Learn mode. To confirm your choice, *Drum 1* will generate a single trigger signal (*Drum 1* sounds and its TRIG LED lights up).
2. Now, press any **TRIG** button ① to select the desired instrument (no audible or visual response this time).
3. Send a MIDI note to the DRM1 MKIV (e. g. from your attached MIDI keyboard). This note number as well as the active MIDI channel will now be assigned and stored.
4. Repeat steps 2 and 3 to assign further instrument channels. By using this procedure, you can assign different MIDI channels to the instruments of your DRM1 MKIV.
5. Press and hold the **TRIG** button ① of the instrument channel *CLAP*. This will exit Learn mode (again, no audible or visual response this time).

Assigning MIDI channel and note numbers to all instruments at once (automatic assignment)

1. Press and hold the **TRIG** button ① of the instrument channels *CLAP* and *DRUM 1* simultaneously. The DRM1 MKIV is now in Learn mode. To confirm your choice, *Drum 1* will generate a single trigger signal (*Drum 1* sounds and its TRIG LED lights up)
2. Now, send a sequence of eight MIDI notes to the DRM 1 MKIV, e.g. by pressing keys on an attached MIDI keyboard.

The first MIDI note received will set the note number and MIDI channel of the *KICK* instrument channel. Its TRIG LED will briefly light up and the sound is triggered to confirm

the assignment. The DRM1 MKIV now automatically advances to the next instrument channel *DRUM 1*. After that, *DRUM 2*, *MULTI*, *SNARE*, *HI HAT 1*, *HI HAT 2* and finally *CLAP* will be assigned. When the assignment procedure has been completed, the DRM1 MKIV will automatically return to normal play mode.

Alternatively, the assignment can be aborted at any time by pressing and holding down the **TRIG** button ① of the *CLAP*. Instruments already assigned will stay stored in memory. Both methods allow assigning multiple instrument channels to the same MIDI note number. The respective note will trigger both instruments simultaneously.



PLEASE NOTE: Since *HI HAT 1* and *2* can be double-triggered to generate an open as well as a closed hi-hat, they also require two different MIDI note numbers.



Since both *HI HAT* instrument channels can generate two sounds (open and closed hi-hat), two different note numbers are assigned automatically to either *HI HAT* instrument channels. The note number transmitted to the *HI HAT* instrument assigns the *open* hi-hat/cymbal sound. The closed hi-hat is automatically assigned to the note number two semitones (equals two MIDI notes) below the open hi-hat. These note numbers should not be used for other instrument channels.

Reset

By pressing and holding down the **TRIG** buttons ① *KICK*, *DRUM 1* and *CLAP* simultaneously, the DRM1 MKIV will restore its factory default settings. These settings contain the MIDI note assignments listed below, according to the GM standard. Furthermore, the (optional) trigger inputs will be enabled and the trigger mode set to “GATE” (please refer to page 23).

Factory Default Settings

Instrument Channel	MIDI-Notenumber, Name (MIDI Channel 10)	GM Drum
<i>KICK</i>	36 (C1)	Bass Drum 1
<i>DRUM 1</i>	45 (A1)	Low Tom
<i>DRUM 2</i>	50 (D2)	High Tom
<i>MULTI</i>	56 (G#2)	Cowbell
<i>SNARE</i>	38 (D1)	Accoustic Snare
<i>HIHAT 1</i> closed	44 (G#1)	Open Hi Hat
<i>HIHAT 1</i> open/CYMBAL	46 (A#1) – wird mit CI-HH 1 zugewiesen (s.o.)	Pedal Hi Hat
<i>HIHAT 2</i> closed	49 (C#2)	Ride Cymbal
<i>HIHAT 2</i> open/CYMBAL	51 (D#2) – wird mit CI-HH 2 zugewiesen (s.o.)	Crash Cymbal
<i>CLAP</i>	39 (D#1)	Hand Clap

Individual Outputs/Inserts

Each instrument channel sports a dedicated individual output/insert which can be used in various ways. Crucial to the function of the outputs is the cable being used or rather – to be more precise – the pin-assignment of the connector that is plugged into the output jack.

Using them as individual outputs

The **OUT/INSERT** jack ④ can be used as an individual out in two ways:

1. By using a standard TS cable, the signal will automatically be cut from the main outputs:

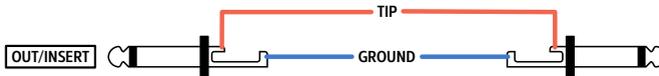


Figure 9: A simple TS (mono)- cable

2. By using a special cable with a TRS connector on one end and a TS connector on the other, the signal can be tapped individually but it will as well remain present at the main output:



Figure 10: Tip and ring of the TRS connector will need to be connected here.

Using them as an insert

The **OUT/INSERT** jack ④ can also be used to insert external effects processors, such as filters or delays, into that channel. To do so, use a so-called insert cable:

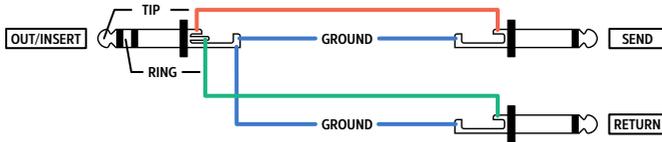


Figure 11: Insert cable

- Connect the TRS connector to the **OUT/INSERT** ④ of the respective instrument channel
- Connect the send connector to the input of the effects processor.
- Connect the return connector (often color-coded in red) to the output of the effects processor

Trigger Inputs (optional)

The DRM1 MKIV is available with optional trigger inputs. If your DRM1 MKIV sports the trigger-in option, please carry on reading.

The ten trigger inputs allow triggering the instrument channels of your DRM1 MKIV from a (usually analog) trigger sequencer. The DRM accepts trigger signals between approx. 0.5V and 11V with a minimum duration of 10 ms. The instrument channels *HI HAT 1* and *HI HAT 2* both sport two trigger inputs – for open and closed hi-hat.

MIDI as well as analog triggers can be used simultaneously.

The analog trigger inputs can process dynamic triggers. That means, the incoming trigger levels control the level of the sounds generated by the DRM1 MKIV. At the same time, the trigger signals will be converted into MIDI note commands and velocity data, and transmitted via the MIDI Out ⑪ socket and USB port ⑩.



At the MIDI OUT ⑪ and USB PORT ⑩ only trigger signals converted into MIDI data will be transmitted. The DRM1 MKIV itself will not generate any other MIDI data.

Trigger Modes

The **TRIGGER-IN** sockets ⑥ at the back of the DRM1 MKIV can be disconnected from sound generation. An incoming trigger signal will no longer trigger a sound but is still converted into a MIDI note plus velocity data and transmitted via MIDI Out ⑪ and USB port ⑩.

Press and hold the **TRIG** ① buttons of the instruments *CLAP* and *DRUM 2* simultaneously to toggle between on and off. The DRM1 MKIV will confirm the change of the setting by triggering *DRUM 2* (*Drum 2* will sound and its TRIG LED light up). The DRM1 MKIV will automatically return to normal play mode.

When in trigger mode, the DRM1 MKIV provides various options to define the correlation between trigger level and instrument level:

1. Press and hold the **TRIG** ① buttons of the instruments *CLAP* and *MULTI* simultaneously to activate trigger mode. The DRM1 MKIV will confirm the change of the setting by triggering *MULTI* (*Multi* will sound and its TRIG LED light up).

2. Press one of the **TRIG** ① buttons *KICK*, *DRUM 1*, *DRUM 2*, or *MULTI* to select the desired trigger option. The selection will be confirmed by triggering the respective instrument (instrument will sound and its TRIG LED light up).
- **KICK – Gate:** The trigger inputs make no use of dynamic response. Each incoming trigger signal exceeding approx. 2.8V will produce a steady output level. The MIDI velocity value transmitted will be constantly set to 127.
- **DRUM 1 – Gate + Accent:** Incoming trigger signals between approx. 0.5V and 5V will produce a steady output level (no dynamic response). Triggers \geq 5V will produce a constant accent of 11V. The MIDI velocity value transmitted will constantly be set to 63 (no accent) resp. 127 (with accent).
- **DRUM 1 – Gate + Dynamic:** Incoming trigger signals between approx. 0.5V and 5V will generate a steady level (no dynamic response). Triggers between approx. 5V and 11V will generate a dynamic increase in level. Depending on the trigger level, the minimum MIDI velocity value transmitted will be at least 56, the maximum being 127.
- **MULTI – Full Dynamics:** Incoming trigger signals between approx. 0.5V and 11V will control volume dynamically. The MIDI velocity value transmitted will be between 6 and 127, depending on the trigger level.

When the assignment procedure is done, the DRM1 MKIV will return to normal play mode automatically.

Technical Specifications

Summing Out (MASTER)	
Implementation	2 x 6.3mm Jack (mono / unbalanced)
max. Output Level	+ 18dBu
Out/Insert per Instrument Channel (OUT/INSERT)	
Implementation	1 x 6.3mm Jack (stereo / unbalanced)
max. Output Level (Tip)	+ 18dBu
max. Input Sensitivity (Ring)	+ 18dBu
Headphone Out	
Implementation	1 x 6.3mm Jack (stereo)
Impedance	32Ω to 600Ω
MIDI	
Implementation	3 x DIN Socket (IN / OUT / THRU) USB Port (IN / OUT)
Power Supply	
Mains Voltage	100VAC to 240VAC, 50/60Hz
Power Consumption	8W
Dimensions and Weight	
Dimensions Desktop	483mm x 225mm x 125mm 19" x 8.9" x 5" (L x D x H)
Dimensions Rack Unit	19" x 5 HE x 90 mm (Mounting Depth)
Weight (incl. Trigger Option)	3.5kg / 7.7lbs
optional Trigger Ins	
Implementation	10 x 6.3mm Jack (mono / unbalanced)
Input Voltage Range	2V to 11V
min. Gate Duration	10ms
Modes of Operation	Gate, Gate+Accent, Gate+Dynamik, dynamic
optional Accessories	
	Wooden Sidepanels (Mahogany)



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