



ModBase 09

Euro-Rack Analog Kick Drum Synthesizer Module

Operating Manual

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Introduction

Thanks for using the JoMoX ModBase 09! The ModBase 09 is a great sounding, dedicated kick drum module with a real analog sound production made for installation in 19 inch euroracks as offered by companies like Doepfer GmbH for instance.

Actually it is a single voice storeable analog synthesizer which is optimized to produce professional club compatible kick drum sounds. The ModBase 09 module is fully controllable by CV (control voltage) / Gate as well as via Midi. The module can also be triggered by a drumpad piezo or an external audio signal. All jacks are being made as 3.5mm mini jacks which is the standard in eurorack world. You can find suitable cables in the accessories of many eurorack modular system producing companies.

The usage is fairly simple and self-explaining at most points. Nevertheless, we recommend to study this manual intensively in order to explore the manifold musical possibilities of the ModBase 09 as quickly as possible.

Before we start just some important safety instructions:

- Please use the ModBase 09 only in dry rooms. Please never let fluids or humidity penetrate to the device!
- The module is only made for use in so-called eurorack modular systems. A 16 pin ribbon cable for the connection to the Doepfer system bus with +/-12V is added. The supply voltages may not exceed +/- 15Volts. Although there are protection diodes inside against wrong polarity we have to warn you about wrong installation as severe damage may happen to the device! On a damage caused by wrong installation or modification of supply pins the warranty is void.
- For cleansing of the ModBase 09, please use a slightly damp cloth, never solvents or agents!
- The ModBase 09 is a complex electronic device and should therefore be treated carefully!

If any damages or malfunctions occur, please immediatly turn off the rack, take the module out of the rack and contact your local music dealer or send an email to mail@jomox.de.

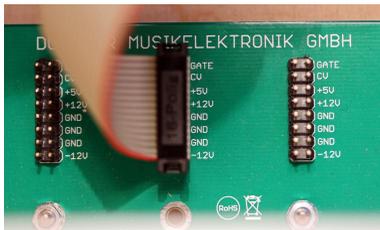
1. Installation

Please turn off the euro rack prior to the wiring! On the backside of the ModBase 09 module you can find these connections:

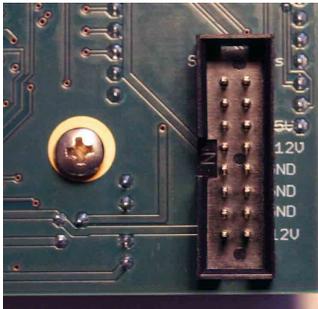


1.1. Installation in the eurorack

Please connect the supplied ribbon cable to the eurorack system bus rails as shown on the picture. The module needs +/-12 Volts at a supply current of maximum 140mA on +12V and about 80mA on -12 Volts. The optional 5 Volts and the CV/Gate on the A-100 Doepfer bus are both not wired inside the Jomox modules and not needed. Other 10 pin systems may be used as well if only the lower part of the 16 pin connector is connected. Please pay attention for the position of the voltages and the ground pins! There are protection diodes inside the modules but please take extra care to protect the rack and the module!

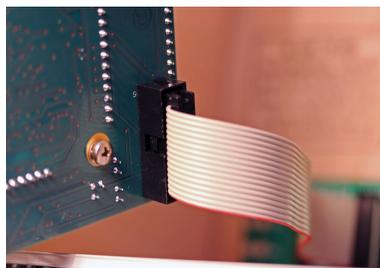


A-100 Doepfer bus. (The Doepfer GmbH enterprise and all of their shown products are registered trademarks. With friendly approval of Doepfer Musikelektronik GmbH)



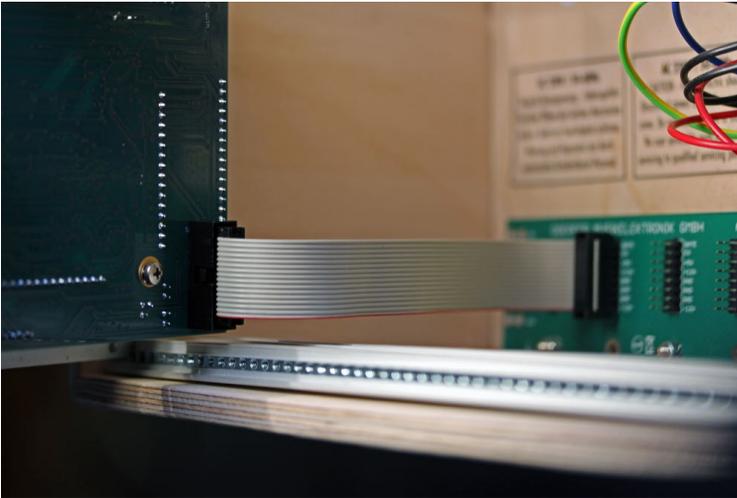
Jomox ModBase09/ModBrane11 euro rack supply connector. Please connect the power supply of the eurorack system bus *here*.

Attention: DO NOT connect, under any circumstances, the power supply cable to the Jomox Inter-D-module bus!!! The rack power supply and the module could get seriously damaged!

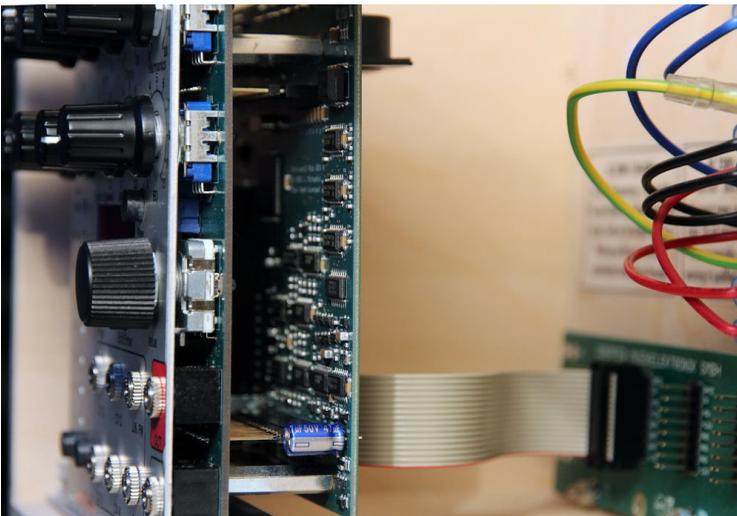


Connect the other end of the ribbon cable to the module as shown on the picture. The cables are fairly short which is good in electrical means to the relatively high power consumption of the module.

Don't flip the cable but connect it as shown on the picture.



Then please mount the module on the rack rails with the supplied metric M3 screws. In case you want to connect a midi cable, please do this beforehand of mounting.



1.1. Midi In

Here you can hook up another midi device to control the ModBase 09 by either a software sequencer, a controller box or any other hardware device like e.g. a JoMoX XBase09, XBASE999/888. Please use a cable that is as short as possible.

1.2. Midi Out

Sends out Midi data from the ModBase 09 to a Midi capable device, e.g. a soft- or hardware sequencer. The Midi Out jack also serves as a Midi Thru and forwards Midi data to an eventual neighbour module by Jomox. Please use a standard midi cable that is as short as possible.

1.3. Inter D-Module Bus

This is an internal Jomox bus which can be connected to future master or effects modules. The bus carries power supply rails, an analog stereo mix bus, an analog stereo effects send bus and a fast I²C link. By use of the digital link, the modules can be hooked up with each other and form a whole storeable main frame system.

Together with several drum or synth modules and controller modules a complete master-storeable drum or synth workstation could be brought about. Similar to Midi, all functions and parameters of each module can be remotely controlled within the rack by use of the digital link, only that it is about 10 times faster than Midi.

We are planning to bring out more modules with master, sequencer and effects functions which can link the sound producer modules to become a workstation. The individual CV/gate controls, Midi and trigger inputs stay available next to the bus control.

2. Front connections



2.1. CV1-CV4

The inputs CV1-CV4 are programmable CV control inputs. In a modular system, most functions and parameters like eg. VCO pitch or filter cutoff can be controlled by a CV (control voltage). In the ModBase 09, practically all internal sound parameters can be controlled (ie. modulated) by an assignable CV. The modulation amount can be controlled by software, either positively as negatively. More information you can find in chapter 5.5 CV control.

These CV inputs can process 0-5Volts. Higher or negative voltages are blocked inside and will not cause damage, but they won't get processed anyway.

2.2. LIN.FM

Linear FM CV input. This connection serves to modulate the bass drum VCO and works on the pitch (FM = frequency modulation). The FM CV input is just analogue and can't be controlled by software. Therefore it works over the entire audio range and the frequency resolution is not limited by the sampling rate of the CPU. Since the input has no amount knob, one should put an attenuator (it may be passive, means a potentiometer) into the signal chain because otherwise modulation occurs at full intensity of the modulating signal (eg. LFO). This input processes also negative voltages.

2.3. Gate

The gate input of a typical modular environment is the input which is used to trigger the tone of the ModBase09. Opposing to the Trig input the Gate input can trigger the signal only without dynamics (on/off). The typical gate high signals used in modular world have normally 5-15 volts, which the gate input of the ModBase 09 can process without any problems – the threshold is at about 1 volts. The gate polarity can be inverted by software too. Furthermore, some modular systems use a special kind of triggering called S-trig (switch trigger) which the ModBase 09 can do as a software feature too. In this case the triggering is excited if the tip (hot wire) and ring (=ground) of the gate cable plug are shorted – be it electrical by a transistor or mechanical by a simple switch.

2.4. Trigger

The Trig input is used to trigger the ModBase 09 by a drumpad piezo pickup or an audio signal. Connect the Trig input to an audio source like a mixer output, cd-player or dynamic microphone. The input is dynamic and can process the velocity. In general, the Trig input is optimized for piezo pickups and useful for live drummers who want to use the ModBase 09 as a kick enhancement for instance.

How to change the threshold or dynamics is described in chapter 6.3 Trig Sens.

2.5. Out

Audio output signal of the ModBase 09. The output is unbalanced and has a maximum level of about +20 dBu, so it can be very loud and may overdrive high gain inputs. Therefore connect the audio output with an appropriate attenuator/mixer or amplifier.

3. General functions

3.1. Preset selection

< P00-P99 >

As long as none of the 8 menu LEDs is lit, the ModBase 09 is in preset mode. Now you can choose one of 100 preprogrammed presets by turning the value input wheel. The sounds get loaded automatically.

By hitting the play button the sounds can be manually triggered and heard.

3.2. Menu control



The ModBase 09 has an up/down menu with 8 rows and 3 pages which are shown by multi-colored LEDs.

Please use the arrow buttons to enter the menu and to select the desired menu item and the page button to switch between the three pages green (left printing), orange (right printing) and red (right printing).

Repeated pressing of the page button switches first from green to orange, then to red and then in opposite direction backwards.

Some pages do have 4 pages (eg. Met Nze) which is shown by blinking of the red LED.

If you press the page button whilst the menu is inactive you step automatically to LFO 1 menu (menu 1 orange). This was made because the LFO is an important function and shares the three lower potentiometers with the other sound parameters. In order not to be forced to press two buttons first you can enter the LFO 1 menu by just pressing the page button.

With all other menu functions the value gets edited by the value input wheel (alpha dial).

Summary of menus

Green	Orange	Red	Red blinks
Midi Ch	LFO 1	LFO 2	
Split Mode	Gate Time	Preset Init	
Trig Sens	Trig Dynamic	Compression	
Gate Mode	Metal Noise 1	Metal Noise 2	Bit Mask 2
Volume	CV 1 Dest	CV 1 Amt	
Bus Vol	CV 2 Dest	CV 2 Amt	
Bus Send	CV 3 Dest	CV 3 Amt	
Store	CV 4 Dest	CV 4 Amt	

3.3. Midi control

3.3.1. Note trigger

The ModBase 09 processes midi note commands. It can be triggered by any midi sequencer. If the ModBase 09 receives midi data on the selected channel, the leftmost decimal point in the display lights up. Please find the settings of the various midi functions in chapter 7 Midi Implementation.

3.3.2. Parameter control via Midi controllers

All sound parameters can be remotely controlled by continuous midi controllers (CCs). The controller map can be found in the Midi Implementation at the end of this operating manual.

3.4. Triggering via CV/Gate

Please connect a typical modular gate/trigger CV sequencer (like eg. the Doepfer A-155) to the Gate jack. The ModBase 09 processes gate signals from 0..1 volts to 0..15 volts. To get retriggered, the signal must at least once drop below the trigger threshold, which is a little below 1 volts. If the module is triggered, the second decimal dot next to the second digit of the display flashes up. The gate input triggers always with maximum velocity and has no dynamics. It is strongly recommended to use the GATE input for triggering via a modular sequencer or any other gate-like signals like LFOs!!

3.5. Triggering via TRIG

The jack TRIG is an analog input which allows for triggering the ModBase 09 by a drumpad piezo or audio signal. The trigger input is dynamic and provides attack velocity. It works in parallel to the Midi and Gate trigger, i.e. it allows for playing notes on the keyboard, triggering by a sequencer via gate and triggering by a drum pad at the same time. Also one could play it via Trig in and change sound parameters via Midi CC at the same time. If the Trig input of the ModBase 09 receives a signal, the decimal point next to the second digit of the display flashes up.

4. Sound parameters (potentiometers)



In order to enter the edit mode, please press <Edit/Enter>. A dot right down in the display lights up indicating that you are in edit mode. Now turn one of the knobs and you will see a value in the display and hear the change of sound. If you don't want sound parameters to be changed by unwanted knob movements, press <Edit/Enter> again to leave the edit mode.

The ModBase 09 has a dedicated potentiometer knob for the 8 most important parameters. Some sound parameters are only being changed via the LED menu and the incremental wheel though. There is a double assignment for the three knobs in the lower row for the settings of the LFOs.

4.1. Tune < 000-252 >

This parameter controls the intensity of the attack tune envelope. On a synthesizer this would be the pitch envelope modulation amount (Attack=0, Decay fixed value) of the VCO. A high value makes the typical 909 kick-in-the-gut effect, and a low value makes softer, 808-styled kick drums and bass tones.

4.2. Pitch < 000-252 >

This parameter controls the basic pitch of the kick drum. Sub basses down to 10 Hz or relatively high tones are possible. Don't confuse this with the Tune parameter. With most kinds of instruments this parameter is called "tune", but because everybody knows the TR-909 and its specific tune, we called it pitch. The pitch is the base frequency which the VCO reaches when the tune envelope has decayed.

4.3. Decay < 000-252 >

Controls the decay time (length) of the kick drum.

4.4. Harmonics < 000-252 >

Control of harmonics of the VCO. The almost sinusoid wave form of the kick drum oscillator can be continuously shaped into a parabolic waveform. That results in a harder, timpani-like sound that differs clearly from a simple distortion.

4.5. Pulse < 000-252 >

Change of the pure pulse part of the attack (see also attack parameter). Pulse is a clicking pulse-shaped waveform at the begin of the kick drum which goes to the VCA. The sound of the pulse is strongly affected by the gate time (see also Gate Time) which determines the "energy" of the pulse and therefore the frequency spectrum of the first attack.

4.6. Noise

< 000-252 >

Change of the pure noise part of the attack (see also attack parameter). Noise makes a more clap-like (or wet) sound in the attack. Please note that either the gate width (duration of the noise part) and the EQ parameter also affect this sound. With high EQ values you will hardly or not hear the noise part of the kick drum, because the high frequencies of the noise are filtered by the EQ. On the ModBase 09, the sound of the noise signal is significantly affected by parameters 5.4 MetNze 1 + 2 because the noise can be assembled by metallic high pitch tones.

4.7. Attack

< 000-252 >

Important for the understanding of the bass drum attack section is the following: Pulse and noise are mixed together and the mix signal is controlled by attack intensity. If attack is cranked down, you won't notice any change on pulse or noise.

So you can program bass drums without any attack, or only pulse or only noise, or just with the mix of both.

4.8. EQ

< 000-252 >

Smooths the output of the kick drum sound production with a flat slope filter. With a value of <000>, the filter is opened at maximum, at <252> closed at maximum. The filter is optimized to achieve soft sounding 808ish sinusoid soft klicking kick drums (high EQ) vs heavy punchy hard drums (low EQ).

Note: changes of the noise parameter can only be heard with an opened filter (low EQ).

5. Sound parameters (menu orange/red)

Summary of menus

Green	Orange	Red	Red blinks
Midi Ch	LFO 1	LFO 2	
Split Mode	Gate Time	Preset Init	
Trig Sens	Trig Dynamic	Compression	
Gate Mode	Metal Noise 1	Metal Noise 2	Bit Mask 2
Volume	CV 1 Dest	CV 1 Amt	
Bus Vol	CV 2 Dest	CV 2 Amt	
Bus Send	CV 3 Dest	CV 3 Amt	
Store	CV 4 Dest	CV 4 Amt	

5.1. LFO

Use the up/down buttons and go to **LFO**.

Choose page 2 (LED lights up orange) by pressing the Page button so that the display shows LM1.

As long as you are in preset selection mode (no menu) you can just press the page button and you will enter the LFO 1 menu directly. This was made in order to quickly edit the LFO section whilst tweaking the knobs and to flip between both areas.

5.1.1. LFO 1 Wave < SuP / Sdo / Sin / Si- / tri / tr- / rCt / rC- >

Now turn potentiometer 5 (1_2 Coupl, **Wave**) to change the waveform of LFO 1. The value is shown in the display. LFO 1 always works firmly on the pitch of the kick drum.

With the LFO (Low Frequency Oscillator) you can produce periodic low frequency pitch modulations (vibrato).

The polarity is important because the LFO phase always restarts on a note trigger. That makes the LFO like an extra pitch envelope which gets triggered by the note.

This parameter controls the waveform:

- <SuP> Sawtooth up
- <Sdo> Sawtooth down
- <Sin> Sine wave rising
- <Si-> Sine wave falling
- <tri> Triangle with rising ramp
- <tr-> Triangle with falling ramp
- <rCt> Rectangular jump from minimum to maximum
- <rC-> Rectangular jump from maximum to to minimum
- <PL1> Pulse width 60% on / 40% off
- <PL2> Pulse width 70% on / 30% off
- <PL3> Pulse width 80% on / 20% off
- <PL4> Pulse width 88% on / 12% off
- <PL5> Pulse width 40% on / 60% off
- <PL6> Pulse width 30% on / 70% off
- <PL7> Pulse width 20% on / 80% off
- <PL8> Pulse width 12% on / 88% off

5.1.2. LFO 1 Speed < 000-252 >

Turn Potentiometer 6 (2_1 Coupl, **Speed**) to edit the speed of LFO 1. The value is shown in the display. LFO 1 always works on the pitch of the kick drum.

Speed controls the frequency of LFO modulation. Low value = slow, high value = fast. The phase of the LFO always restarts with a gate trigger.

5.1.3. LFO 1 Int(ensity) < 000-252 >

Turn Potentiometer 7 (Noise, **Int**) to edit the intensity of LFO 1. The value is shown in the display. LFO 1 always works on the pitch of the kick drum.

LFO 1 Intensity controls the amount of modulation. Zero turns the modulation off.

5.1.4. LFO 1 Destination <LM1/no1>

Whilst the menu LFO is selected, dial the value with the wheel to change the modulation target of LFO 1. Default-wise the LFO works on the pitch of the kick drum VCO, but you can also let it modulate metallic noise 1. The result are noise modulations in the rhythm of the LFO which can sound pretty interesting.

5.1.1. LFO 2

Go to LFO with the up/down buttons. Select page 3 (menu LED lights red) by pressing the page button so that the the display shows LM2. If you are still in preset mode (no menu), you can reach the LFO 2 menu by pressing the page button twice. The same values yield for LFO 2 as described for LFO 1. LFO 2 works on the pitch of the kick drum too.

5.2. Gate T(ime) (page orange) < 000-255>

If you are in one of the following menus, please dial in the value with the wheel (alpha dial). Gate time, i.e. the impulse length of the trigger pulse for the analog kick drum circuitry can be adjusted from 0.1ms to 15ms. This parameter is very influent for the sound of the attack and the decaying tone. The shorter the gate time is, the more high frequencies the spectrum of the attack contains, but the less energy is put into the envelope.

5.2.1. Preset Init (page red) <in?>

This menu serves to initialize a preset. If you turn the data wheel to the right, all sound parameters are changed to the default value. The display shows "ini" then.

Attention! If you didn't store the sound before, all settings are gone.

5.3. Compr(ression) (page red) < 000-255 >

The compression parameter changes the loudness envelope during the decay phase of the kick drum. So the decaying sound only can have a very low level if this parameter is set high. This is useful for instance to adapt the "belly" of the kick drum to the mix or the room acoustics. At very high levels the envelope of the kick drum is cut so strong that very short and clicky kick drums are possible.

5.4. Met Nze 1 (page orange) < off/noi-499 >

Metallic noise 1 is one of the both noise generators. The parameter changes the noise to a metallic noise which consists of periodic asynchronous bit patterns.

With <off> the noise generator is turned off, <noi> yields a static random noise (white noise).

On values above that <2-499> a complex signal formed from digital multitones and bit patterns is produced. Each value represents a unique sound pattern which is not smoothly changing across the range but jumps to various sounds one by one. They remind more of a kaleidoscope rather than a linear scale. But they give you interesting results for any adjustment, so please play the game of trial and error.

Metallic Noise 1 yields a more aperiodic signal which results in more noise-like sounds. Metallic Noise 2 is more periodic and has an adjustable bit mask.

Hint: The noise signal is only audible during the gate period of the attack and is strongly affected by the gate time and EQ filtering. By tweaking these parameters you can modulate the attack of the kick drum very fine and precisely.

5.4.1. MetNze 2 (page red) < off-499 >

Metallic noise 2 is another noise generator which offers a more periodic (tone-like) metallic noise algorithm. The basic character of noise 2 can be varied a lot by an adjustable bit mask (which yields only for noise 2).

Both noise generators get mixed by hardware. Therefore the noise level increases significantly if both noise generators are on. The signals interfere and produce new noise patterns then.

5.4.2. MetNze 2 bit mask (page red blinks) <M01-M16>

This parameter defines the bit mask for noise generator 2. Small values produce very high frequencies in combination with the metallic noise 2 parameter, high values produce longer periodic signals. To hear changes on this parameter please check that metallic noise generator 2 isn't turned off. With low values for bit mask some numbers of metallic noise may produce silence by phase cancellation or may sound the same with every consecutive number so that only the lower numbers are relevant.

5.5. CV 1-4

The CV inputs are able to modulate a wide variety of sound parameters. The inputs process voltages from 0..5 volts and can be assigned to a list of modulation targets. Furthermore, the modulation amount can be adjusted for every CV individually and can be negative too.

5.5.1. CV 1-4 Destination (page orange)

Choose the desired CV modulation destination by turning the value dial:

Display	Function	Realtime mod.
tun	Tune Envelope	no
Pit	Bass Drum Pitch	yes
dEC	Decay	no
HAr	Harmonics	yes
PuL	Pulse	no
noi	Noise	no
Att	Attack	no
Equ	EQ-Filter	yes
CoM	Compression	yes
1ME	Metallic Noise 1	no

2ME	Metallic Noise 2	no
1Lr	LFO 1 Rate	yes
1Li	LFO 1 Intensity	yes
2Lr	LFO 2 Rate	yes
2Li	LFO 2 Intensity	yes
ACC	Accent (CV1 only)	yes

5.6. CV 1-4 Amount (page red) <-128 - 127>

This parameter controls the modulation amount of CV1 and its selected target. Please note that this value may be negative too. In this case the CV gets subtracted from the parameter. For instance, if you have chosen bass drum pitch as destination it makes the tone the lower the higher the CV is. The here described adjustments yield for the four programmable inputs CV1-CV4 which are almost all the same. You can also route multiple CVs on one parameter which get added. However, it is not possible to modulate several parameters with one CV because this would be too much for the processing power of the CPU and eventually lead to artifacts. Because the CVs are sampled by the CPU the maximum frequency resolution is at about 500Hz.

Hint:

Some CV targets of the kickdrum can't be modulated in realtime! This is because the hardware spots the value only in the very moment of triggering and can't change it after that because the sound just decays in the circuitry. With those parameters it makes only sense to change the value right before or during the trigger, as does for instance the A-155 of Doepfer. If the tone already sounds (and decays), the CV cannot change anything on *this* parameter.

This yields for:

Tune (Pitch Envelope), Decay, Pulse, Noise, Attack, Metal Noise 1 and 2

6. Master parameters (menu green)

6.1. Midi Ch(annel) < 001 - 016 >

Midi channel on which the ModBase 09 receives and transmits Midi data.
Received are: note on/off, note number, program change, controllers.
Transmitted are: note on/off, note number, program change.

6.2. Split Mode < SM1 / SM2 >

<SM1> The kick drum is only played on standard note C1 (GM standard kick drum) with the internal pitch (4.2 Pitch).

<SM2> Note range C1-C2. The note within the octave is added to the pitch of the kick drum.

<SM3> Note range C2-C3. The note within the octave is added to the pitch of the kick drum.

<SM4> Note range C3-C4. The note within the octave is added to the pitch of the kick drum.

<SM5> Note range C1-C6. The kickdrum is played across the entire keyboard, and the note gets added to the pitch of the kickdrum. Please note that due to the used analog circuitry it is not possible to play the bass drum VCO in exact semitone intervals. You should better see it as a tool to obtain different kick tunings on a direct access.

6.3. Trig Sens < t01- t99 >

Adjusts the trigger threshold. It is the incoming level from which on the kickdrum gets triggered via TRIG in. If this menu is selected, the LED column works as a VU meter which shows the incoming trigger of the connected pick up (eg. drumpad piezo). A weak lit red LED point roughly shows the trigger threshold from which on the sound gets triggered. If you dial the value with the wheel, the weak red LED point goes up or down.

6.3.1. Trig Dynamics

< d01- d63 >

Controls the trigger dynamics. From the trigger threshold on the incoming velocity is multiplied with the dynamics and adapted to the adjusted volume. A low value kills the dynamics and keeps the sound on the same loudness, a high value enables maximum velocity.

6.4. Gate Mode

<PoS/neg/Str>

The gate input can process signals from 0..15 volts, yet it triggers at about 1 volts. In position "PoS" = positive (default), the signal must rise from 0 to at least 1.5 volts in order to properly trigger the ModBase 09. After that, the gate signal has to fall again under the threshold down to 0 volts to be able to trigger again. Far most of the available sequencers deliver such gate signals – and it works regardless if the high level of the switching voltage is 5 volts, 8 volts or 15 volts.

In position "neg" = negative, the gate is inverted. That means, it triggers when a transit from high to low occurs and can only retrigger if the gate signal has safely risen above 1 volts again.

Some older sequencers only offer a so-called s-trigger (switch-trigger) – this is useful with position "Str" = switch-trigger. Now the hot wire of the gate cable has to be shorted with ground in order to trigger the unit. It can be a mechanical switch, but in most cases it will be a transistor with open collector which works as a switch. With the usage of a mechanical switch you have to consider that the input is not debounced – you'd have to add a capacitor (roughly 47nF, just a guess) and solder it across the pins of the switch to reduce contact bouncing and multiple triggers.

6.5. Volume

< 000-255 >

Adjusts the main volume of the ModBase 09. The maximum velocity of incoming midi notes get only processed to this level. For the best sounding results, you should keep it at <255>.

6.6. Bus Vol

< 000-255 >

Controls the bus volume of the ModBase09 on the Inter-D-Module Bus. This is intended for future applications which make use of the bus and can process a globally storeable mix of several Jomox modules.

6.7. Bus Send

< 000-255 >

Controls the effects send level of the ModBase 09 on the Inter-D-Module Bus. This is intended for future applications which make use of the bus and that have access to the effects send bus. We can think of a Jomox effects module (e.g. a filter with reverb) that picks up the various effects send signals from the bus and that creates an effects program for the master mix bus, to which every sound module and every preset can set an individual effects intensity.

6.8. Store

If you want to save a well sounding preset, go on Store. In case you are not in a menu yet (preset mode) you can also press the up arrow button to automatically reach the Store menu. The green LED must blink and the display shows the currently selected preset.

Now you can dial the memory location with the data wheel to store the new preset into. Pressing the Edit/Enter button finally executes the storing and overwrites the existing preset. If you don't move the data wheel, the current preset gets overridden.

This too implements an automatic copy function as the ModBase 09 produces an identical copy of the preset if you store a non-edited preset to another location via Store and dial location.

7. ModBase 09 Midi implementation

7.1. SysEx Dump

The memory contents of ModBase 09 (that is the presets) can be transferred to a Midi sequencer by SysEx dump. The current single preset including the number can be transmitted or received or the whole memory contents.

7.1.1. Single preset dump

Please select the **Store** menu (Menu LED 8 green blinks) on the ModBase 09. Now press record at the connected midi device (we strongly recommend the newest Jomox SysEx Dumper tool). Then press the **Play** button on the ModBase 09. The current active preset is sent as a midi dump.

7.1.2. All presets dump

Please select the **Bus Send** menu (Menu LED 7 green) at the ModBase 09.

Now press record at the connected midi device (we strongly recommend the newest Jomox SysEx Dumper tool). Then press the **Play** button on the ModBase 09. The whole memory contents is sent via SysEx dump. The display reads "bSY" during the dumping and "Fin" if the dump has been finished.

7.1.3. Receive SysEx dump

Please select the **Midi Ch** menu (Menu LED 1 green) at the ModBase 09 and do not change anything.

Now start the connected Midi sequencer (we strongly recommend the newest Jomox SysEx Dumper tool because of the required flash memory cycle times). The SysEx data are sent to the ModBase 09 which receives them as presets, displays the preset number and stores the data into the according preset.

7.2. Sound Parameter CC

Most of the controllers use one step of the CC resolution for two internal steps. But this is way sufficient enough for these parameters.

Parameter	Controller No	Range	Internal Resolution
Tune	100	0..127	256
Pitch	101	0..127	256
Decay	102	0..127	256
Harmonics	103	0..127	256
Pulse	104	0..127	256
Noise	105	0..127	256
Attack	106	0..127	256
EQ	107	0..127	256
Compression	113	0..127	256
Gate Time	114	0..127	256
Metal Noise I	115	0..127	499
Metal Noise II	116	0..127	499
MetalNze II Mask	120	0..15	16
Volume	117	0..127	256
LFO 1 Wave	119	0..15	Sup/Sdo/Sin/Si-/tri/tri-/rCt/ rC-/PL1-PL8
LFO 1 Intensity	121	0..127	128
LFO 1 Speed	122	0..127	128
LFO 2 Wave	123	0..15	Sup/Sdo/Sin/Si-/tri/tri-/rCt/ rC-/PL1-PL8
LFO 2 Intensity	124	0..127	128
LFO 2 Speed	125	0..127	128

7.3. Note Commands

	Split Mode 1	Split Mode 2	Split Mode 3	Split Mode 4	Split Mode 5
Note (Midi Number)	C1(36)	C1(36)- C2(48)	C2(48)- C3(60)	C3(60)- C4(72)	C1(36)- C6(96)

7.4. System exclusive data

Since the sound control via Midi is entirely made with CC controllers, SysEx data are only used for sending and receiving presets.

One line of system exclusive commands looks like the following:

\$F0(SysEx Begin), \$31(JoMoX Manufact. code), \$7F(Command Sys Ex Dump), \$5b(Product Code), \$XX(Preset No.),XX(Data0),XX(Data1),..., \$F7(End of SysEx)

32 bytes [bit7...bit0] (0..255) of data per preset are transferred. They are split into two 7-bit midi bytes: MSB [bit7] in Data0 and LSB [bit6...bit0] in Data1. The MSB (most significant bit) is coded in Data0 = 1 or = 0, depending if bit 7 of the actual byte was set or cleared.

The numbers and digits of Sys Ex sequences are shown, as always, in hexadecimal numbers.

And finally...

Service, tips and tricks:

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We wish you lots of fun on creative usage of our products!

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