MANUAL

FLAME MÄANDER-M

ANALOG FILTERBANK SEQUENCER & FM / WAVETABLE SYNTHESIZER

for firmware version 2.02 and higher

Last modified: December 21, 2025

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SHORT DESCRIPTION

Thank you for purchasing the FLAME MÄANDER-M synthesizer!

The FLAME MÄANDER is an analog-digital synthesizer with an integrated live sequencer. The sequencer features a polyphonic note track for the oscillator and 14 monophonic trigger tracks for the filter channels, audio input, and white noise channel. Patterns can be up to 4 bars long. Sound generation is achieved through a 4-voice polyphonic wavetable/FM oscillator.

At its core is a comprehensively controllable analog filter bank with 12 channels. This is controlled by 12 VCAs (with 8 simulated filter types and 12 sequencer tracks). The following filter types are available: LP, 3x BP, HP, NOTCH, and the combinations: LP/HP, LP+BP. Each filter channel, the audio input, and the noise channel also have their own sequencer track with a VCA and separate AR envelopes. This allows you to create interesting rhythmic filter sequences or spectral morphing effects with this filter bank.

The oscillator, an analog white noise channel, and an external audio input are routed internally through the analog filter bank. The oscillator track has its own ADSR envelope with four directly accessible controls. This envelope can also affect the filter.

LFOs allow for additional modulation of the filter, wavetable, and oscillator. Two LFOs are available, each with rate and waveform controls. The LFO waveforms are smoothly crossfaded (thus enabling blended waveforms). The LFOs are MIDI-synchronizable, retriggerable (by oscillator notes), and can also be triggered once as a "one-shot."

Various MIDI controls are possible. The MÄANDER can also be used as a pure MIDI looper/sequencer/controller. A simple arpeggiator is also available. The new MÄANDER-M variant in Eurorack format features a direct audio output from the oscillator and a direct white noise stereo output.

Software updates, loading alternative wavetables, and saving and loading patches can be performed via USB to a computer using MIDI SysEx dump.

HARDWARE

- Robust 56HP Eurorack console enclosure with wooden side panels
- 15 analog sliders (analog channel volume attenuators)
- 25 potentiometers (for digital values)
- 3 stereo potentiometers (for audio input, main output, and phone outputs)
- 43 illuminated pushbuttons, 2 three-position toggle switches
- Audio input channel with mono/stereo switch
- Audio outputs: left, right
- Headphone output (stereo)
- Oscillator audio direct output (mono)
- White noise audio direct output (stereo)
- CV controller input (0 to +5V)
- 2x MIDI IN, 1x MIDI THRU from MIDI IN 2, 1x MIDI OUT
- 1x USB (MIDI, firmware updates)
- 1x external power supply +12V/18W

SHORT DESCRIPTION

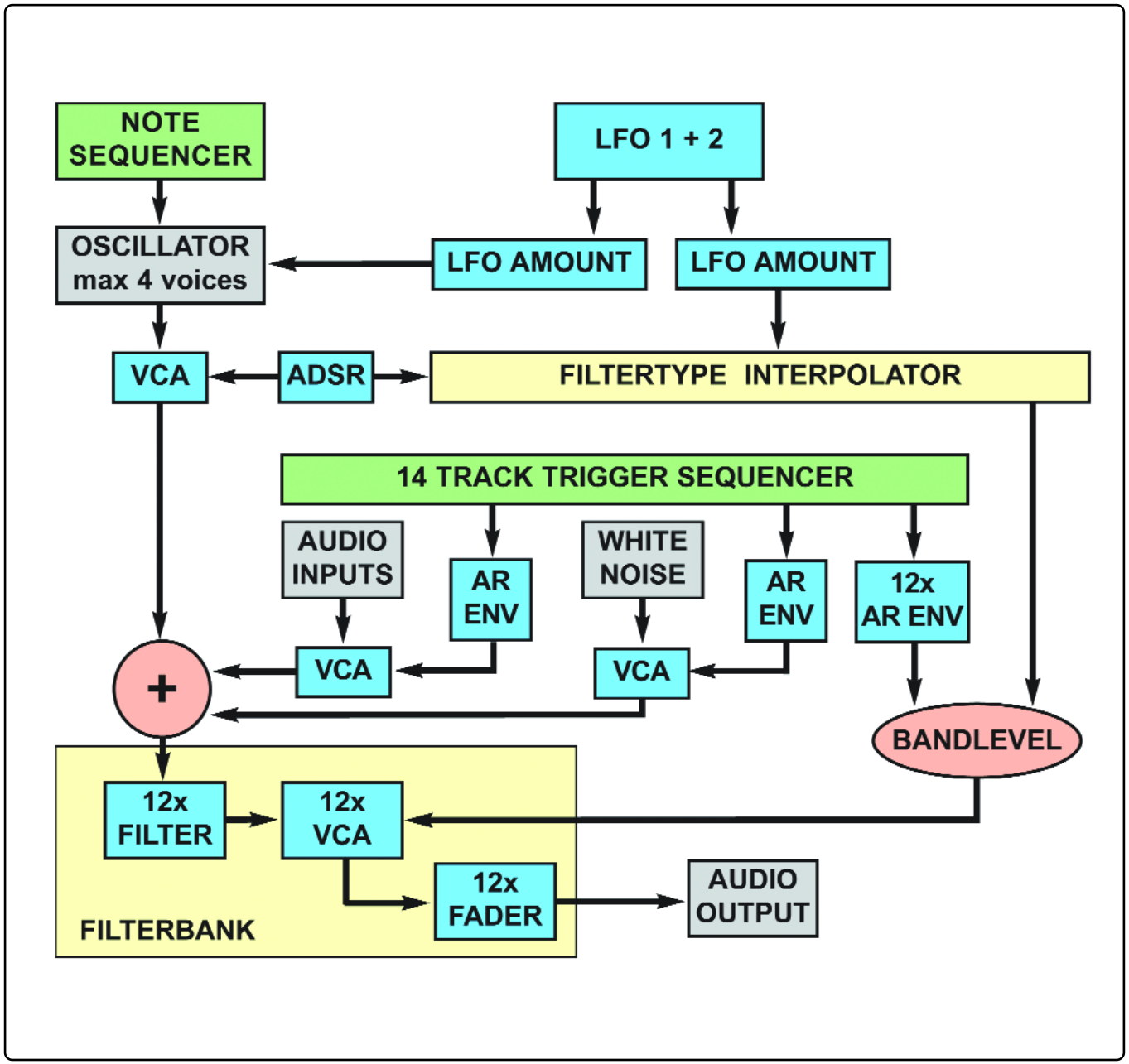
INTERNAL STRUCTURE

The filter bank consists of 12 analog filters and is digitally controllable via 12 VCAs, using 8 simulated filter types (Filter Type Simulator) and 12 filter channel sequencer tracks.

Each filter channel has its own sequencer track with its own envelope (AR types). The BANDLEVEL mix control adjusts the balance between filter sequencer modulation and oscillator modulation (Envelope Amount, Cutoff, LFO Amount).

Two LFOs, each with Rate and Waveform controls, are available for modulation. The AMOUNT controls route the LFOs to PITCH, COLOUR (Wavetable), CUTOFF (Filter Type Mid-Frequency), and Filter AMP EG.

Both LFOs are assigned to the AMOUNT controls: LFO 1 on the left and LFO 2 on the right. In the center position, both are mixed.



SHORT DESCRIPTION

SEQUENCER OVERVIEW

The MÄANDER features a 15-track looper sequencer with a maximum pattern length of 4 bars. One of the tracks, the oscillator track OSC, is polyphonic, allowing for the playing of rhythmic chords. This OSC track differs in some aspects from the other 14 monophonic trigger tracks.

Oscillator track
The oscillator track is 4-voice polyphonic. Notes and chords can be recorded. The OSC track features a polyphonic step sequencer, which can be programmed even during playback. Notes can also be played directly, unquantized or quantized to 16th notes, via the transposable, one-octave keyboard. Alternatively, note/chord loops can be created rhythmically via note repeat using the SHOT section. Notes/chords played via an external keyboard can also be recorded, either unquantized or quantized to 16th notes. This does not apply to SHOTS, which can only be triggered on the device itself.

Arpeggiator
The MÄANDER has an arpeggiator. You can switch live between the running arpeggiator and the playing OSC track.

Scaler
Sent notes can be quantized and played back using a scale with a root note. Sixteen predefined scales are available for this purpose. This setting can be saved separately for each patch.

14 monophonic trigger tracks:

- One for the stereo audio input
- One for the white noise source
- 12 for the filter channels.

These monophonic tracks can be triggered via MIDI note (like a drum module). On the MÄANDER itself, you can play the tracks directly using the track buttons (even with 16th-note quantization) or, with the SHOT section active, create rhythmic loops using note repeat. The controls VELOCITY (note volume), GATETIME (percentage note length), and RESOLUTION (beat pattern) are available for this purpose.

The REPEATS control makes the recorded loop play indefinitely (end note) or gradually fade out like an echo. This allows for endless jamming and live modification of loops.

Recorded tracks can be frozen with HOLD and muted with MUTE. Each track can have its own last step and AR envelope (shifting, morphing tracks). The ENVELOPE and RANDOM controls can be activated separately for each track.

The playback order of the four bars can be easily changed while playing. A 16th-note swing function for shuffle is also included.

The oscillator track and the 14 mono tracks each have separate MIDI channels (configurable in the MIDI menu).

DEVICE CONNECTIONS

POWER CONNECTION IN THE MÄANDER CASE

The MÄANDER comes in a Eurorack-compatible case with wooden side panels and a matching power supply. The case has a built-in power supply with +5V, +12V, and -12V outputs, capable of delivering a maximum of 500mA to each of the three voltages.

An included 12V/18W power adapter connects the case directly to the mains power supply. Power adapters with a voltage range of 9 to 18V and 18W output can be used.

The power jack is located on the lower rear panel of the case. The input is reverse polarity protected. The correct polarity is printed on the underside.

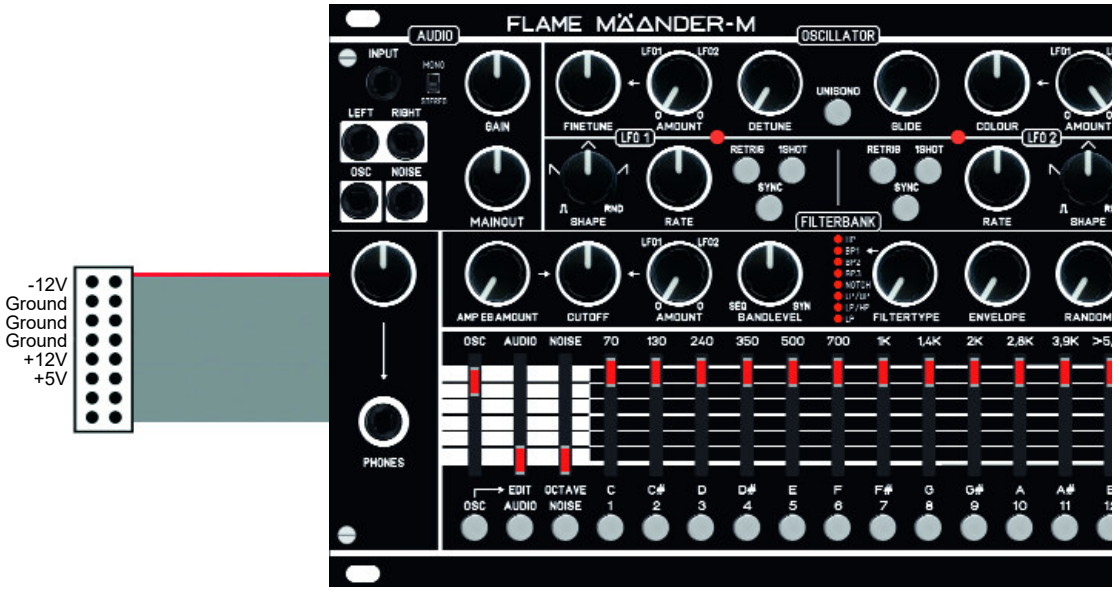
DOEPFER BUS CONNECTION IN A EURORACK CASE

The module is supplied with a 16-pin ribbon cable for the Doepfer bus. The color-coded wire (usually red) is for -12 volts.

It is essential to ensure correct polarity during connection. Incorrect polarity can damage the electronics.

Therefore, be careful: Check the connection several times before switching it on for the first time!

The module draws approximately 200mA across all three voltages: +12V, -12V, and +5V!



DEVICE CONNECTIONS

❶ Audio outputs left/right

Connect the LEFT and RIGHT output jacks to the inputs of your mixer or amplifier using two mini-jack cables (3.5mm mono jack). First, set the volume on the amplifier to a low level. Use the MAINOUT control to adjust the output levels of the MEANDER. Note that the output levels are modular level (+/-5V).

❷ Audio input stereo/mono

The audio input has a stereo mini-jack socket (3.5mm stereo jack). The small mono/stereo switch ❸ to the right of it should be set to MONO when using a mono audio source from the modular system (with a mono patch cable). The signal will then be present on both the left and right channels. Note that a stereo signal cannot be switched to mono. In this case, the signal would only be present on one channel.

The GAIN control ❹ adjusts the input signal (attenuation/gain). Distortion of the input signal is also possible and generates more harmonics for the filter bank. The input signal passes through a VCA, which is controlled by the sequencer's AUDIO track. This dynamically modulates the signal's volume and envelope rhythmically. The slider acts as a passive volume attenuator for this track.

❺ Headphones jack

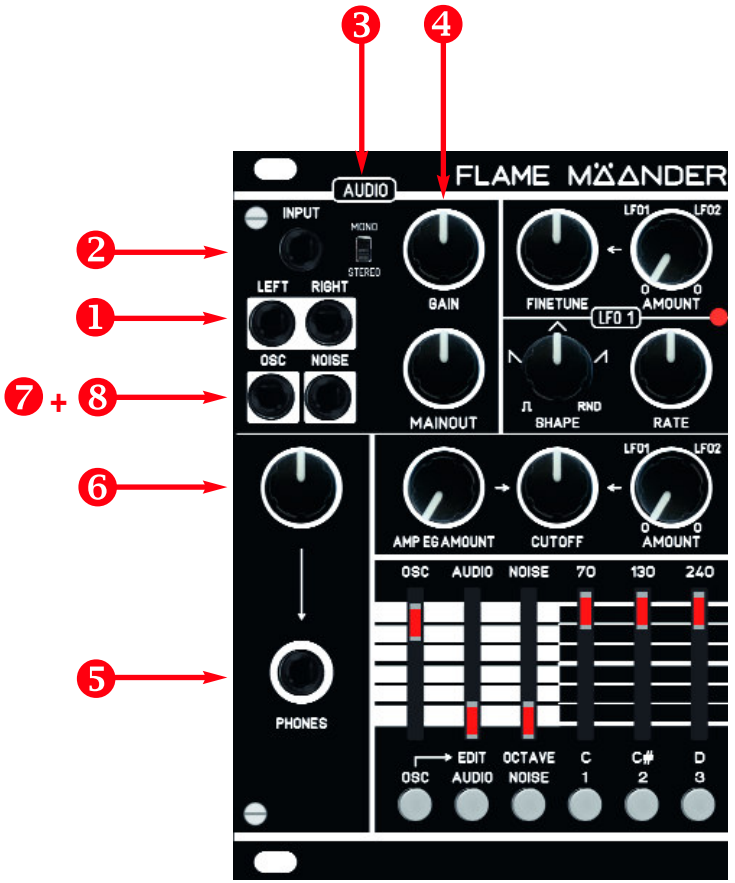
You can connect low-impedance headphones directly to the MÄANDER (PHONES jack). In this case, use the PHONES control ❻ for volume. A high volume is usually achieved in the middle position.

❼ Oscillator direct mono output

This mono audio output provides the sequenced audio signal from the oscillator at modular level (+/-5V). The signal does not pass through the filter channels.

❽ White noise direct stereo output

The sequenced white noise audio signal at modular level (+/-5V) is available at this stereo audio output. The signal does not pass through the filter channels.



DEVICE CONNECTIONS

❶ USB MIDI CONNECTION (class compliant) to a computer

The MÄANDER is a USB class-compliant controller and can therefore be connected to virtually any computer with a USB port. MIDI data is exchanged between the MÄANDER and the computer via USB.

❷ CONNECTION TO AN MIDI KEYBOARD (MÄANDER sound expander)

PLAY THE MEANDER AS A SOUND EXPANDER WITH AN EXTERNAL MIDI KEYBOARD:
Connect the keyboard's MIDI OUT to MIDI IN (1 or 2) on the MEANDER. Set the keyboard's MIDI OUT channel to the same value as the MEANDER's OSC note track.

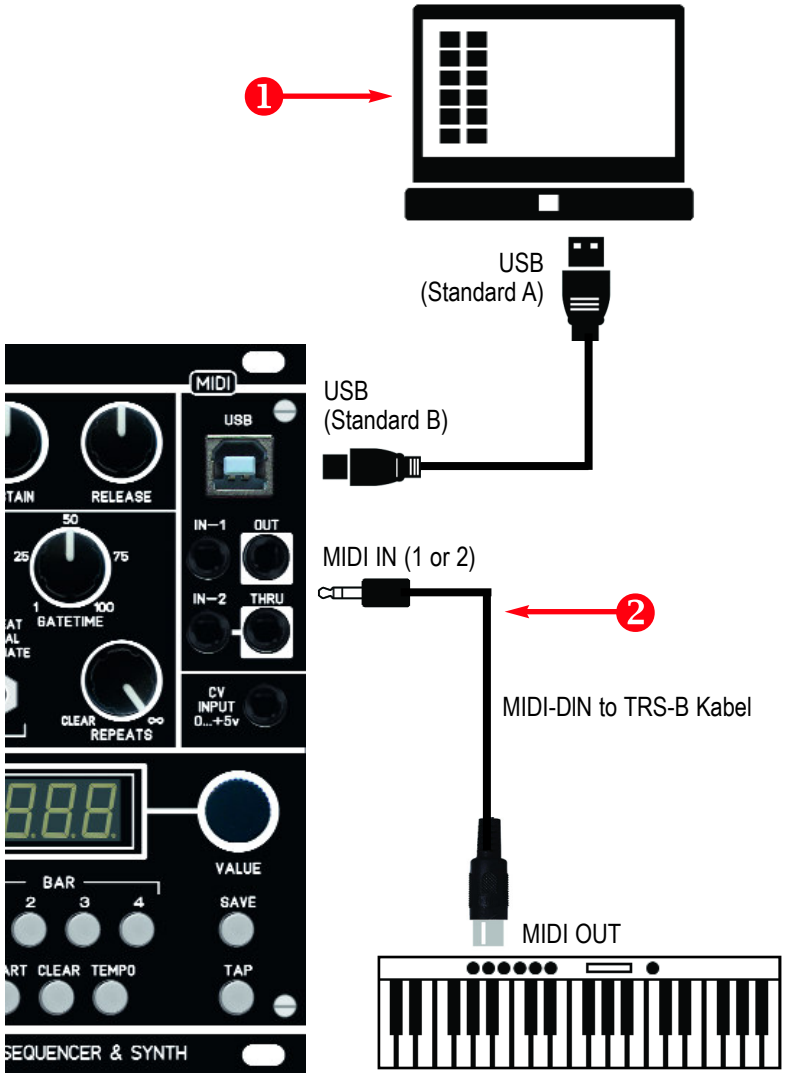
SET THE MIDI CHANNEL OF THE OSC note track as follows:
Press the MIDI button once (the button will light up). The display will now show “CHn”. Then press the OSC button once (to select the note track). The display will show the MIDI channel number. Now set the MIDI channel (1-16) using the EDIT knob. Turn the BANDLEVEL knob to the right position! Turn the RESOLUTION knob to the OFF position!

PLAY THE FILTER CHANNELS, INPUT + NOISE WITH AN EXTERNAL MIDI KEYBOARD:
You can also trigger the 14 tracks (INPUT, NOISE, FILTER 1-12) on a separate MIDI channel with adjustable notes. Each track has its own note number (like a drum module).

SET THE MIDI CHANNEL OF THE 14 Trigger Tracks as follows:
Press the MIDI button once (the button will light up). The display will now show “CHn”. Now press one of the track buttons (to select a track). The display will show the MIDI channel. Now turn the EDIT knob to change the MIDI channel.

SET THE NOTE NUMBER OF THE 14 Trigger Tracks as follows:
Press the MIDI button repeatedly until “not” appears on the display. Now press one of the 14 track buttons (to select a track). The display will show the note number of the track. Now set the note number using the EDIT knob. Repeat this for the other tracks in the same way. Turn the BANDLEVEL knob to position zero (fully counter-clockwise).

NOTE: The selected MIDI channel for each track is the same for both MIDI input and output. To receive MIDI notes, the tracks must be set to “RECEIVE”=ON in the MIDI menu (see the MIDI Settings chapter)!



DEVICE CONNECTIONS

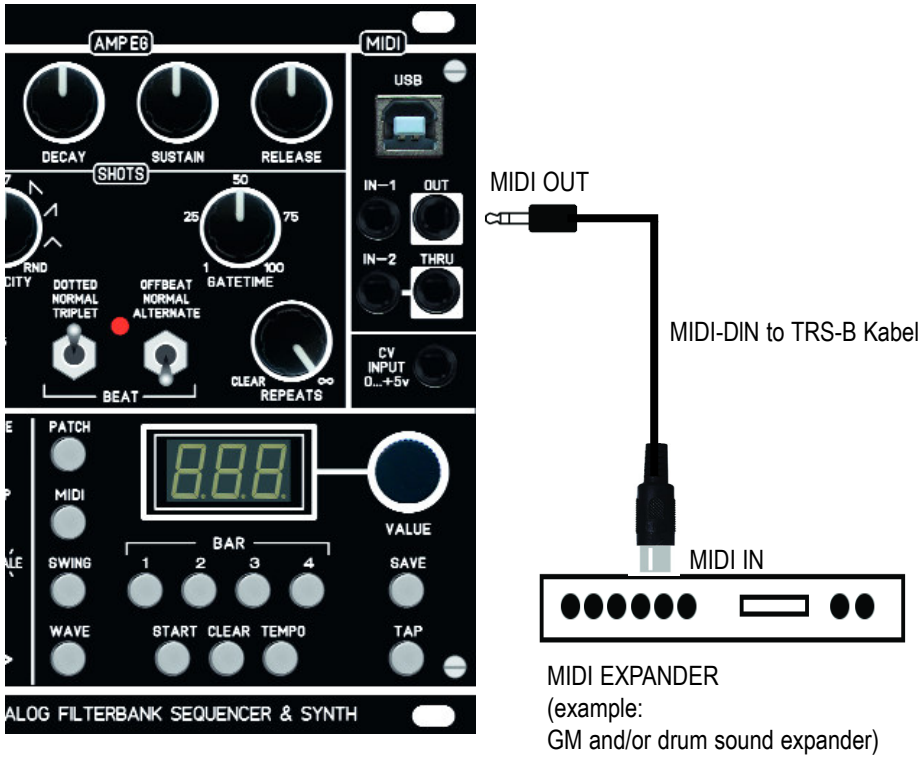
CONNECTION TO AN MIDI SOUND EXPANDER:

PLAY A SOUND EXPANDER WITH THE MEANDER SEQUENCER:
Connect the MIDI OUT of the MEANDER to the MIDI IN of a Sound Expander. Set the MIDI OUT channel of the Sound Expander to the same value as the OSC note track on the MÄANDER.

SET THE MIDI CHANNEL OF THE OSC note track as follows:
Press the MIDI button once (the button will light up). The display will now show “CHn”. Then press the OSC button once (to select the note track). The display will show the MIDI channel number. Now use the EDIT knob to set the MIDI channel (1–16). The set MIDI channel is both the receive and transmit channel.

PLAY DRUM INSTRUMENTS OF AN EXPANDER WITH THE TRIGGER TRACKS:
You can also send the notes from the trigger tracks to the Expander (for example, for drum sounds on MIDI channel 10 with a GM module). To do this, set the corresponding MIDI channel of the trigger tracks to 10. If necessary, change the note numbers of the trigger channels to trigger exactly the drum sounds of the expander that you want.

NOTICE: In the MIDI menu, the “Transmit” setting for the tracks must be set to “**on**” for notes to be sent from the MÄANDER.



ENABLE / DISABLE MIDI SEND DATA:

Press the MIDI button three times so that **trt** (TRANSMIT) appears on the display.

Sending the OSC track on/off:
Press the OSC button. The display will flash between "**on**" or "**oFF**" and the menu name. Turn the data knob to the right for "**on**" or to the left for "**oFF**".

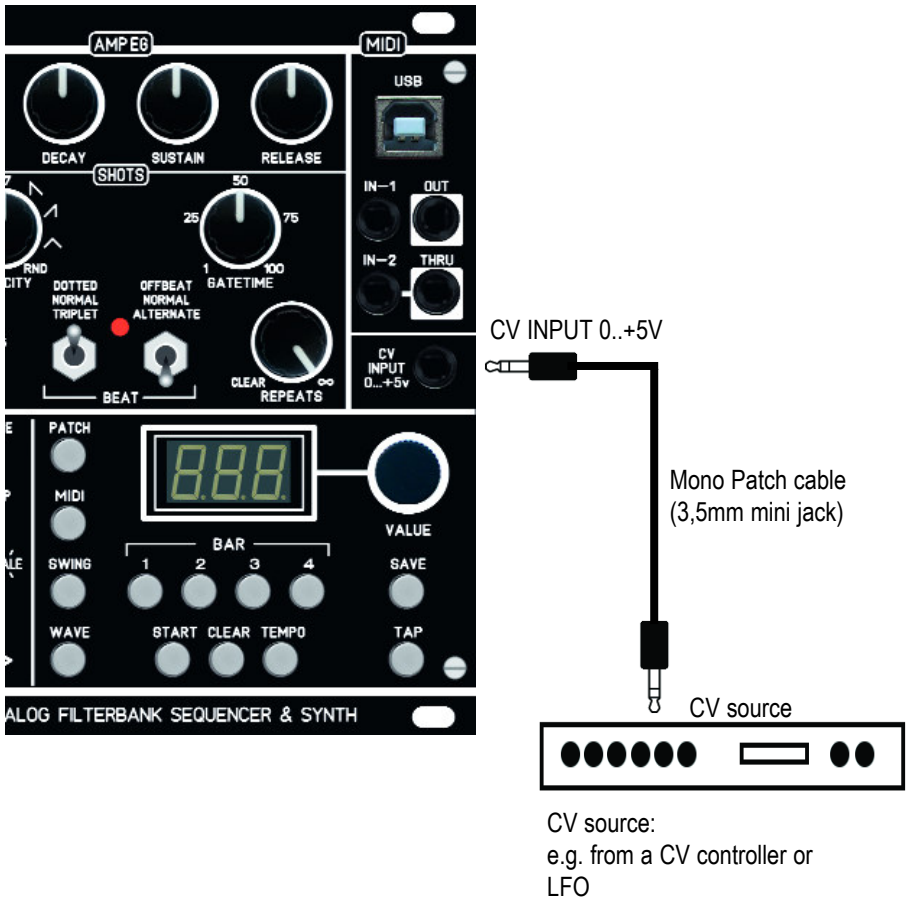
Sending the trigger channel tracks on/off:
Press one of the trigger track buttons. The display will flash between "**on**" or "**oFF**" and the menu name. Turn the data knob to the right for "**on**" or to the left for "**oFF**".

DEVICE CONNECTIONS

Controlling functions with the CV INPUT:

The CV input allows you to control a (digital) function externally via an analog voltage. For example, you can use it to automate CV controls that are not modulated by the two internal LFOs. This applies, for example, to the BANDLEVEL control, the AMPEG RELEASE control, and others.

The input operates within a voltage range of 0 to +5V. Configure the function to be controlled in the MIDI menu. Press and hold the MIDI button until "**Cin**" (Controller input) appears on the display. Select the corresponding number for the function using the Data knob. The assignment is saved globally when you exit the menu (i.e., it's the same for all patches).



LIST OF FUNCTIONS:

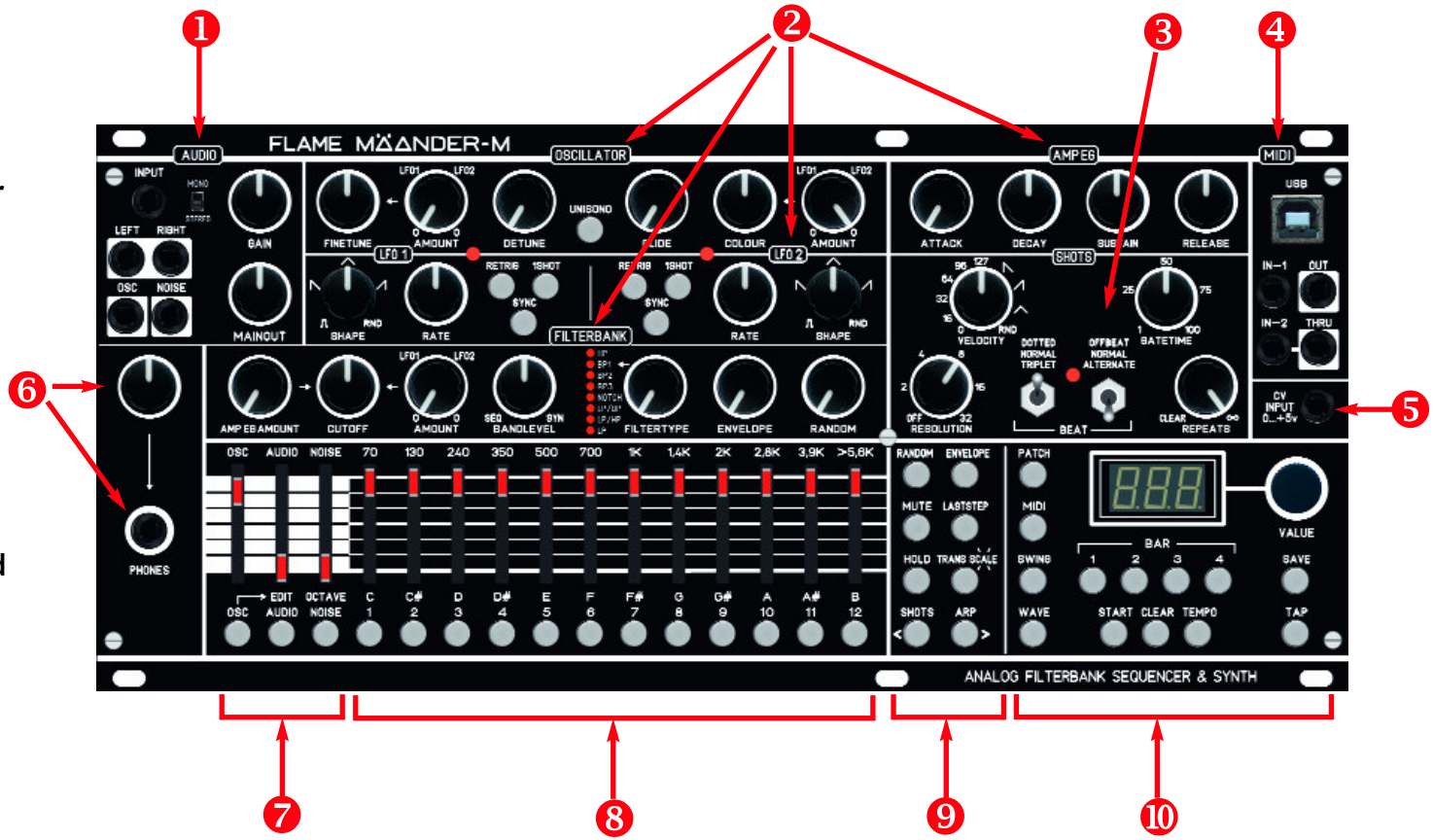
OSCILLATOR	
FINETUNE	32
PITCH AMOUNT	36
DETUNE	41
UNISONO	58
GLIDE	39
COLOR	40
COLOR AMOUNT	38
ADSR	
ATTACK	51
DECAY	52
SUSTAIN	45
RELEASE	42
SHOTS	
VELOCITY	50
GATETIME	43
RESOLUTION	54
REPEATS	44

FILTERBANK	
AMP EG AMOUNT	33
CUTOFF	1
CUTOFF AMOUNT	37
BANDLEVEL	46
FILTERTYPE	48
ENVELOPE	49
RANDOM	47
EXPRESSION PEDAL	35
LFO	
LFO1 RATE	56
LFO1 SHAPE	57
LFO1 SYNC	59
LFO1 RETRIG	60
LFO1 ONESHOT	61
LFO2 RATE	55
LFO2 SHAPE	53
LFO2 SYNC	62
LFO2 RETRIG	63
LFO2 ONESHOT	65

FRONT PANEL OVERVIEW

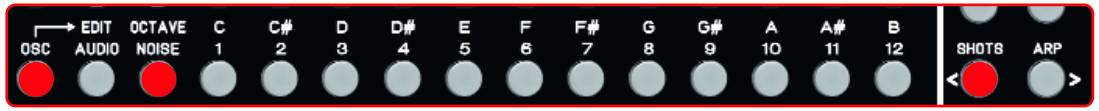
THE USER INTERFACE AT A GLANCE

1. **AUDIO inputs/outputs, GAIN & MAINOUT pots**
2. **OSCILLATOR, FILTERBANK, LFOs & ADSR**
3. **SHOTS: “Note Repeat” settings of the sequencer**
4. **MIDI: Inputs 1 & 2, Out, Thru (Typ: TRS-B), USB**
5. **CV-Control input 0..+5V**
6. **Headphones output, level pot**
7. **AUDIO Tracks: Slider & buttons**
8. **FILTERBANK Tracks: Slider & buttons / keyboard**
9. **MENUS 1:** Function keys for menus **> see p.12**
10. **MENUS 2:** Function buttons for menus, sequencer, Display & Data controls **> see p.14**



FRONT PANEL OVERVIEW

TRACK BUTTONS / ONE-OCTAVE-KEYBOARD



The track buttons below the sliders have a dual function in the SHOTS menu (SHOTS button illuminated). When the OSC button is activated (button illuminated red), the functions labeled in the top row apply (the OSC arrow points to them).

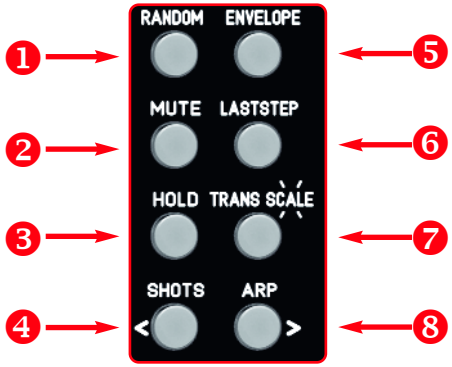
-> See the image above!

When the OSC button is deactivated (button not illuminated), the functions printed in the second row directly above the buttons apply.

When the OSC button is activated, the 12 filter band buttons 1-12 (notes C to B) function as a one-octave keyboard for playing (recording) notes for the oscillator track, as well as for setting notes in EDIT mode (step sequencer), which is accessed in OSC mode by pressing the EDIT button. You can also use the keyboard to transpose the loop (the TRANSPOSE button must be activated **> see MENUS 1 on the right side of this page)**.

When the OSC button is activated, the 12 filter band buttons 1-12 (notes C to B) function as a one-octave keyboard for playing (recording) notes for the oscillator track, as well as for setting notes in EDIT mode (step sequencer), which is accessed in OSC mode by pressing the EDIT button. When the OSC button is switched off, the AUDIO, NOISE and the 12 FILTER-BANK buttons are used to play these trigger tracks (note repeats), or to select the respective tracks in order to set parameters (such as MUTE, HOLD, RANDOM, LASTSTEP etc.).

THE MENUS 1



1. **RANDOM** Menu for random trigger track settings
2. **MUTE** Menu for muting selected tracks
3. **HOLD** Menu for locking tracks, or for holding in the EDIT menu
4. **SHOTS** Menu for accessing the SHOTS menu, or in EDIT mode for returning to the previous step position “<”
5. **ENVELOPE** Menu for the AR envelopes of selected tracks
6. **LASTSTEP** Menu for setting the last steps of selected tracks
7. **TRANSPOSE + SCALE** for transposing/scaled the OSC track
8. **ARP** Arpeggiator On/Off, or in EDIT mode for advancing to the next step position “>”

FRONT PANEL OVERVIEW

RANDOM

Press the RANDOM button to access the menu. Here, all selected trigger tracks can be enabled for random variations. Random is saved in the PATCH! See the FILTERBANK chapter for more information!

MUTE

Press the MUTE button to access the Mute Menu. Here you can mute all sequencer tracks. Use the OSC, INPUT, NOISE, and FILTERBAND buttons to mute the corresponding track. Mute settings are saved in the patch!

HOLD

Press the HOLD button to activate the Hold menu. Any channel now activated using the OSC, INPUT, NOISE, and FILTERBAND buttons is excluded from recording and deletion (HOLD active). Shots will still play back on these channels, but they will not be recorded. These tracks are also protected from deletion.

Therefore, if the REPEATS control is turned to CLEAR (fully counter-clockwise), these tracks will be retained. Use the HOLD function to protect tracks from deletion and to exclude them from repeats. Hold settings are saved in the PATCH!

NOTICE: When the OSC track HOLD is active, you cannot call up the step sequencer of the oscillator track (EDIT)!

LASTSTEP

The number of steps per bar can be set in 16th notes. To do this, go to the LASTSTEP menu. Press the LASTSTEP button and use the OSC, INPUT, NOISE, and 12 FILTERBAND buttons to select the sequencer tracks you want to adjust. You can then use the EDIT knob to select between one and 16 steps.

IMPORTANT ! The OSC track determines the switching point of loaded patches. Patches are always loaded at the next count 1. This means that if the OSC track has a last step of 12, then the bars will always switch at that count. This can cause trigger tracks to be cut off earlier. If a bar is running alone, all tracks run to the end and shift accordingly.

TRANSPOSE

Recorded OSC sequences can be transposed in real time. To do this, press the TRANS button; the LED will light up continuously. The encoder allows you to transpose in octave steps from -1 to +2 octaves. The note buttons allow you to transpose by up to 12 semitones. The value is saved in the PATCH file.

SCALE

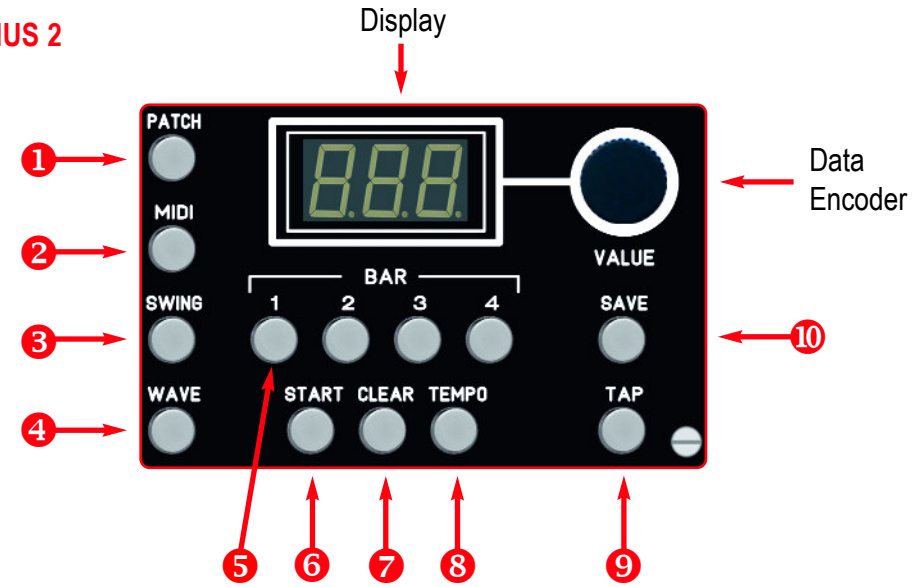
MIDI notes sent (to the oscillator or MIDI OUT) can be scaled. To do this, press the TRANS/SCALE button twice; the LED will blink. Now, use the EDIT knob to select a scale from a list and set the root note using the note keys (keys 1-12 or C-B). The selected scale will be saved when the patch is saved!

The following 16 scales are available:

1	OFF	chromatic
2	Ion	Ionian(Major)
3	AEo	Aeolian(Minor)
4	bL1	blues major
5	bL2	blues minor
6	Pnt	Pentatonic
7	dor	Dorian
8	LYd	Lydian
9	HLY	Mixolydian
10	LoC	Locrian
11	HA1	Minor Harmonic 1
12	HA2	Minor harmonic 2
13	HA3	Minor harmonic 3
14	JP1	Japan hirayoshi
15	JP2	Japan iwatoyoshi
16	JP3	Japan kumoiyoshi

FRONT PANEL OVERVIEW

THE MENUS 2



1. **PATCH:** Load patches
2. **MIDI:** Navigate through MIDI menus (MIDI channels, note numbers, etc.)
3. **SWING:** Shuffle setting
4. **WAVE:** Select a wavetable, digital sound or FM sound
5. **BAR:** Four BAR buttons for turning the sequencer on and off and setting its order
6. **START:** Start/Stop button for the sequencer
7. **CLEAR:** Clear button (only effective in conjunction with other buttons)
8. **TEMPO:** Set the tempo
9. **TAP:** Tap button for entering the tempo
10. **SAVE:** Save the current patch

SWING

Press the SWING button to shuffle the sequence. Use the Data knob to set a value up to a maximum of 15. This advances every second sixteenth note by a small percentage in milliseconds. The swing setting adjusts proportionally to changes in tempo.

At zero, the swing function is off. The SWING value is saved in the PATCH.

CLEAR (Deleting sequencer tracks)

To delete a track (in the SHOTS menu), hold down the CLEAR button and then press the button of the sequencer track you want to delete.

EXAMPLES:

- To delete the OSC track, press CLEAR and the OSC key.
- To delete filter track 12, press CLEAR and the 12 key.

NOTICE:

Note that the HOLD function of the track must be deactivated beforehand, otherwise the track will be protected!

PATCH INITIALIZATION

You can also delete the entire patch (patch initialization):

Press and hold the CLEAR button and then press the PATCH button. This will delete all sequences (all tracks) of the patch and reset the patch to its default values (patch initialization).

PATCH (storage for sounds and sequences)

PATCH LOAD AND SAVE

A patch is a memory location for your sound and sequencer data. Currently, there are 100 patches. All sequencer tracks and all control positions (except the sliders, MAIN, and PHONES) are saved in a patch. A patch can be saved or loaded even while the sequencer is running.

Each patch can be saved at a different tempo. Since the saved tempo is only loaded when the sequencer is stopped, you can always jam at the same tempo while the sequencer is running. Patches can also be selected via MIDI program change commands.

LOAD PATCH

Press the PATCH button once (the button will flash), turn the EDIT knob and select a PATCH (1-100), then press the PATCH button again to load that patch. The patch will be loaded with all saved knob positions.

NOTICE:

The next time the device is switched on, the last loaded or saved patch will be loaded.

SAVE PATCH

Press the SAVE button once (the button will flash), turn the EDIT knob and select a patch number (1-100) where you want to save the current patch. Then press the SAVE button again to save this patch.

ATTENTION! The patch data for the selected number will be overwritten. Therefore, you should back up these patches to your computer beforehand using a Ssex dump.

NOTICE:

The next time the device is switched on, the last loaded or saved patch will be loaded.

PATCH DUMP
(Backing up or loading patches via MIDI on the computer)

You can save and archive the patches in the MÄANDER on a computer. You can save the patches individually or all together in one file. If needed, you can later reload these files into the MÄANDER.

First, connect your computer to the MÄANDER via MIDI (USB MIDI or a MIDI interface). You will need any SysEx send/receive program on your computer (for example, MIDI-OX for PC or SysEx Librarian for Mac) to receive, save, and send the SysEx files.

SEND PATCH VIA MIDI

Here's how to access the menu: Hold down the MIDI button and press the PATCH button. Both buttons will then flash.

Use the EDIT knob to select **"ALL"** if you want to save all patches together (ALL PATCH DUMP). If you only want to send a specific patch, use the Data knob to select the patch number (SINGLE PATCH DUMP).

Set your SYSEX program on your computer to receive SysEx data. Then, start the dump on the MÄANDER by briefly pressing the Data knob. You may see the transfer status in your SYSEX program. Once the transfer is complete, the flashing LEDs on the MÄANDER will turn off.

Now save the received data as a SYSEX file in your SYSEX program (with a name such as "AllPatches01.syx" or "MyPatch05.syx").

The ALL PATCH DUMP preserves the order of all patches on the MÄANDER. If you dump only individual PATCHES, you can later save them to any other PATCH number in the MÄANDER.

PATCH (storage for sounds and sequences)

LOAD (RECEIVE) PATCH VIA MIDI DUMP FROM COMPUTER

Here's how to access the menu:
With the MIDI button pressed, press the PATCH button. Both buttons will then flash. First, use the Data knob to select the storage location:

ALL:
Receive an ALL PATCH file for all patches (the PATCH memory in the MÄANDER will be over-written with the patch numbers in the ALL file).

ONE PATCH NUMBER ONLY (00-99):
A received PATCH file will be saved to this selected PATCH number.

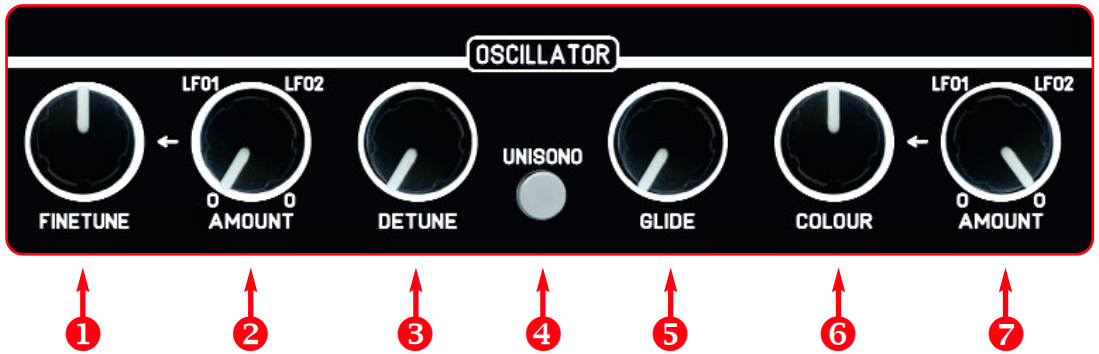
- The MÄANDER is now waiting for a SYSEX file.
- Start sending the file using your SYSEX program.
- The dot on the right of the display will blink while the MEANDER is receiving the file.
- After the MÄANDER receives the file, the patch(es) will be permanently saved to the corre sponding patch number(s).
- The menu will remain illuminated (flashing LEDs) even after the SYSEX program has finished sending, allowing you to set a different patch number and receive another file.
- Exit the menu (e.g., by pressing the WAVE button).
- Now load the newly transferred patch from memory to listen to it.

NOTICE:
If you mistakenly send an ALL DUMP file to a single PATCH number, it will be overwritten repe-atedly, so that in the end only the last patch from the ALL DUMP file remains there.

ATTENTION!
Transferring patches via USB-MIDI is significantly faster than via a traditional MIDI connection. It takes approximately 20 minutes to transfer all patches (ALL files)!

SOUND GENERATION

THE OSCILLATOR



1. **FINETUNE:** Fine-tuning of the oscillator (+/- one semitone, center = 0)
2. **AMOUNT:** LFO Amount on Oscillator TUNE (Detuning across the entire pitch range)
3. **DETUNE:** Fine-tuning of the 4 identical voices in UNISONO mode
4. **UNISONO:** Switch between polyphonic and monophonic (UNISONO) playing
5. **GLIDE:** Portamento between notes played at different pitches
6. **COLOUR:** Smooth sweep through the 64 waveforms of the wavetable
7. **AMOUNT:** LFO Amount on COLOUR for automatic wavetable modulation

FINETUNE:

The FINETUNE control allows you to fine-tune the overall pitch of the oscillator relative to other instruments. In the center position, the oscillator is calibrated to a fundamental pitch of 440Hz. You can lower or raise the pitch by a semitone (50 cents) in either direction. This setting is saved with the patch.

LOAD WAVETABLE or DIGITAL SOUND:

The MÄANDER features a 4-voice polyphonic wavetable oscillator (the wavetables are compatible with FLAME 4VOX eurorack modules) and three digital sound algorithms: Pulse with PWM, Sawtooth, and FM synthesis. The sounds are located on three banks, A-C:

Bank A00-A38: 39 wavetables
Bank B00-B38: 39 wavetables
Bank C00-C02: 3 digital sound algorithms: PWM Pulse, Sawtooth, FM synthesis

Here's how to choose a sound (WAVETABLE or SOUND ALGORITHM):

If the WAVE menu wasn't already selected (WAVE button not illuminated), press the WAVE button once (the button will now illuminate). The display will show the last selected sound and bank (e.g., A01). You can switch between banks by pressing the WAVE button again. The sound within a bank can be modified using the EDIT knob. The number within the bank remains the same when you cycle through the three banks.

The oscillator's note range spans from note number 24 to 103 (6.5 octaves).

SOUND GENERATION

COLOUR:
The COLOUR control changes the sound of the sound selected with WAVE:

WAVETABLE
Once a wavetable is selected, the COLOUR function allows you to smoothly cycle through its 64 waveforms. Due to the varying harmonic characteristics of the waveforms, a wide range of sound variations is possible. The wavetables themselves have very different waveforms. Some can be used, for example, to create filter effects.

DIGITAL SOUNDS
If the digital sound C00=PWM SQARE is selected, COLOUR controls the pulse width (PWM). If the FM synthesis C02 is selected, COLOUR controls the brightness of the FM sound. COLOUR has no effect on the digital sound C01=Sawtooth!

The AMOUNT control to the right of COLOUR allows the LFOs to modulate it. The LFO always modulates around the midpoint of the COLOUR control's position. For smooth modulation, set the LFO to its center position (up-down wave) and set COLOUR to its center position. Experiment with other settings, such as RATE and AMOUNT intensity, to create interesting spectral sound profiles.

UNISONO:
The oscillator in the MÄANDER is polyphonic up to four voices, but can also be played monophonically with a single voice, or monophonically with four voices of the same pitch (UNISONO mode). With just one key pressed on the keyboard, up to four unison voices sound simultaneously. You can detune these voices from slightly to significantly against each other using the DETUNE control. Activate the UNISONO button (the button will light up). Turn the DETUNE control to its left fully counterclockwise. Now the keyboard is in monophonic mode, and the oscillator sounds with only one voice. This produces a very clear tone.

When you turn the DETUNE control up, the keyboard remains monophonic, but four voices of the same pitch sound simultaneously, slightly detuned against each other. The further you turn the DETUNE control up, the greater the detuning becomes. This allows you to create beats and fat, chorus-like, analog-sounding tones.

NOTICE: The keyboard can only be played monophonically in this mode.

DETUNE:
DETUNE generates additional voices of the same frequency, which are then detuned against each other. With DETUNE = 0 (control fully counterclockwise), the function is deactivated. When the control is turned up, an additional voice is added to each played note in polyphonic mode (UNISONO = off). This creates a chorus effect with varying beat speeds. In monophonic mode (UNISONO = on), three additional voices are added to the played note. This allows for the creation of rich, analog-sounding tones.

GLIDE:
With GLIDE, you control the speed of portamento between two consecutively played notes of different pitches (smooth gliding between pitches). In the zero position of the control, the function is deactivated. The control's value is saved with the patch.

NOTICE: All oscillator settings are saved in the patch.

AUDIO TRACK NOISE (WHITE NOISE)

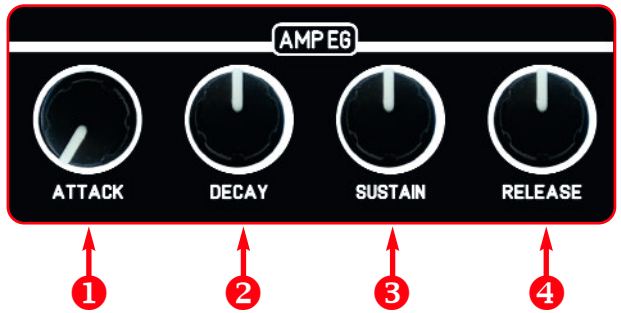
As an additional sound source, there is an analog noise generator producing white noise. The noise has its own VCA-controlled sequencer track with AR envelopes, which, along with the other audio sources (oscillator and audio input), is mixed in mono and sent to the filter bank. To hear the noise, a trigger sequence must first be created on the NOISE track. This can be played directly, or you can use SHOTs for rhythmic phrases. The ENVELOPE and RANDOM controls can also be applied to the NOISE channel.

> See also the chapters SHOTS / SEQUENCER / FILTER BANK!

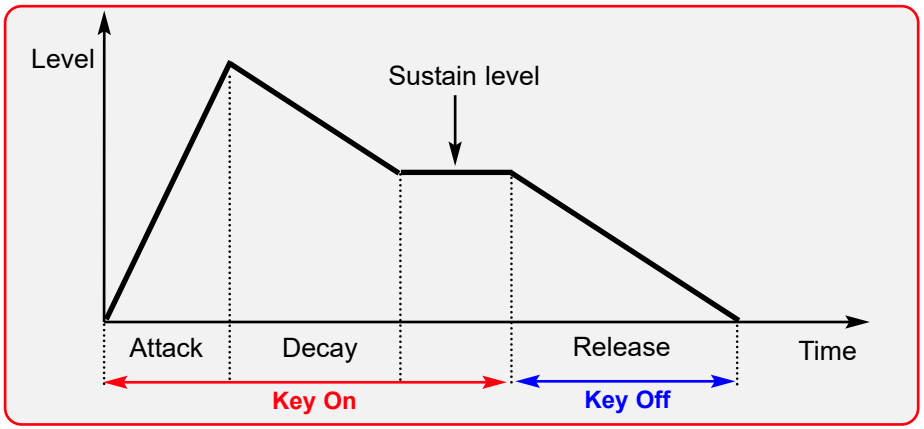
NOTICE:
The slider can be used to attenuate the noise level. Since this slider is an analog attenuator, its position is not saved in the patch! The complete audio signal of the noise track is available at the NOISE direct output, without routing through the filter channels. The signal is in stereo.

AMPEG (ADSR Volume envelope generator)

The oscillator features an ADSR envelope with four controls for Attack, Decay, Sustain, and Release. This envelope primarily affects the volume of the played notes, but can also be used as a filter envelope for the filter cutoff. To do this, turn up the AMP EG AMOUNT control on the filter. The ADSR envelope values are saved with the patch.

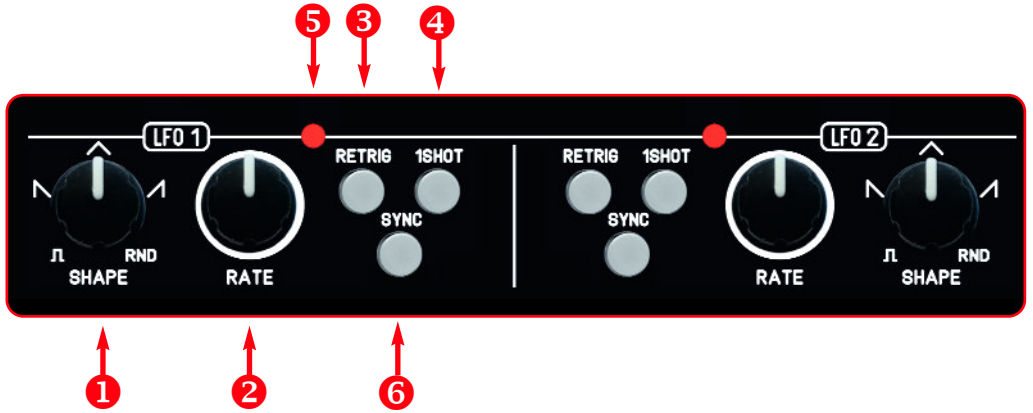


1. **ATTACK** Settling phase when key is pressed
2. **DECAY** Cooldown phase down to the sustain level as long as the key remains pressed.
3. **SUSTAIN** Hold level as long as button is pressed
4. **RELEASE** The sustain level decays to zero after releasing the key



GENERAL

Two LFOs are available for modulating parameters. Both LFOs are identically structured (partially mirrored), but can be adjusted independently. The LFO settings are saved with the patch.



1. **SHAPE** Waveforms with crossfade between down, up, down, and up
2. **RATE** Speed from very slow to fast (lower audio range)
3. **RETRIGGER** LFO runs in a loop and is reset with each new note
4. **ONESHOT** LFO waveform starts with each new note and plays only once
5. **LED** Flashing LED for RATE indication
6. **SYNC** LFO is synchronized to MIDI clock

SHAPE

Select the LFO waveform here. The three waveforms up, updown, and down can be cross-faded. Additionally, there is a pulse wave and a random waveform.

LFO 1 + 2

RATE

Use the RATE knob to set the speed of the LFO. Observe the blinking LED for confirmation. When SYNC is off (SYNC button LED off), the LFO runs freely. The speed can be smoothly adjusted across a wide range, from very slow to the audible range.

When the LFO is set to MIDI SYNC, the divider value is displayed on the screen (for approximately 1 second) when the RATE knob is turned. This makes it easier to set the different dividers for duples, triplets, and dotted notes. A dot next to the value indicates "dotted notes," and a small **"t"** indicates "triplets."

SYNC

The SYNC button synchronizes the RATE to the MIDI clock. In this case, the knob offers fixed time intervals in steps, starting at 96 ticks (1 bar, the slowest rate) and ending at the fastest (2 ticks, a 32nd-note triplet).

List of time intervals when SYNC is selected on the RATE knob, from left to right:

1 96 - one bar	**4** 24 - 4th note	**16** 6 - 16th note
2. 72 - dotted half note	**8.** 18 - dotted 8th note	**16t** 4 - 16th triplet
1t 64 - one triplet	**4t** 16 - 4th triplet	**32** 3 - 32th note
2 48 - half note	**8** 12 - 8th note	**32t** 2 - 32th triplet
4. 36 - dotted 4th note	**16.** 9 - dotted 16th note	
2t 32 - 2th triplet	**8t** 8 - 8th triplet	

RETRIGGER

If the LFO is set to RETRIGGER (button lights up), then the LFO runs freely at the set speed (RATE), but is reset with each new played note.

ONESHOT

If the LFO is set to ONESHOT (button lights up), then the LFO will only be started when a new note is played and will then only run once at the set speed (RATE).

LFO AMOUNT

The MÄANDER features two independent, identical LFOs for modulation. You route the LFOs to predefined parameters using the AMOUNT controls.

COLOUR

Sweeping through the wavetable (changing timbres). Use the AMOUNT control to the right of the COLOUR control.

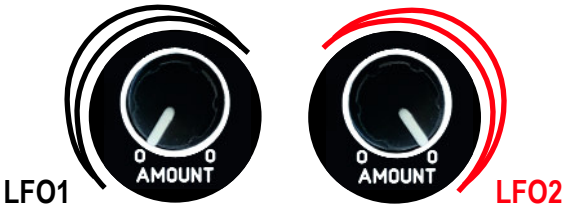
PITCH (FINETUNE)

Oscillator detuning (pitch changes). Use the AMOUNT control to the right of the FINETUNE control.

CUTOFF

The filter cutoff of the 8 filter types in BANDLEVEL mode SYNTH. Use the AMOUNT control to the right of the CUTOFF control.

With just one AMOUNT control, you can route both LFOs to the parameter. This allows you to route both LFOs to the parameter simultaneously. In the left third of the AMOUNT control, you only control LFO 1. In the middle third (upper range) of the AMOUNT control, both LFOs are blended. In the right third of the AMOUNT control, you only control LFO 2. In the two end positions, the LFOs have no effect. In the center position, both LFOs affect the parameter equally.



LFO 1 = Maximum
LFO 2 = off

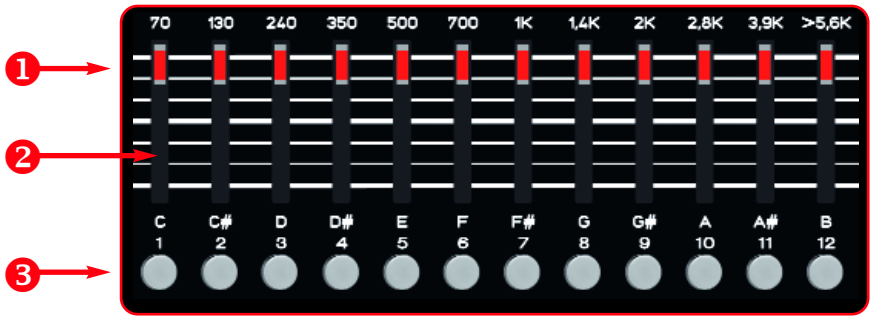
LFO 1 = off
LFO 2 = Maximum

FILTERBANK

SETUP

The MÄANDER-M features an analog filter bank consisting of 12 filter bands. Channels 1 and 2 are 12 dB bandpass resonant filters, channels 3 through 11 are 24 dB bandpass resonant filters with fixed frequencies and mid-range resonance, and channel 12 is a 24 dB high-pass filter that allows all frequencies above approximately 5 kHz to pass through.

The center frequencies of the channels are: 70Hz, 130Hz, 240Hz, 350Hz, 500Hz, 700Hz, 1KHz, 1,4KHz, 2KHz, 2,8KHz, 3,9KHz and >5,6KHz



1. **BAND LEDs (in the Slider)** LED indicator for the volume of the filter band
2. **BAND SLIDER** Volume attenuator of the filter band
3. **BAND TASTER** Sequence input key for the respective filter band

Each filter band has a slider for the output volume. This allows you to attenuate or completely remove these frequencies from the overall sound. Up to this point, the filter bank resembles a graphic equalizer. However, the filters in the MEANDER have further characteristics that clearly distinguish them from an equalizer. Firstly, they are resonant filters that particularly boost the area around the respective center frequencies. Secondly, the individual frequency bands do not overlap. Therefore, the timbre is noticeably affected because it adds resonances at important points in the sound spectrum.

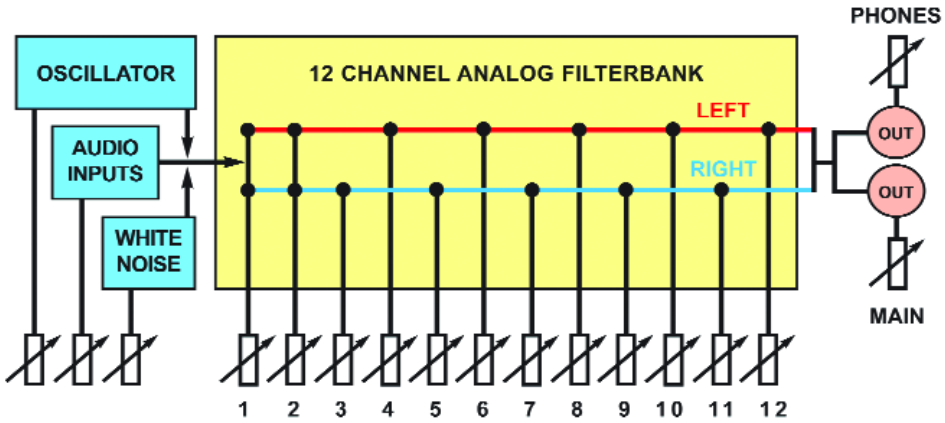
NOTICE: The sliders are purely analog attenuators at the output of the filter bands and are not stored in the PATCH.

AUDIO WIRING

The internal oscillator is routed in mono to the filter channels and additionally (bypassing the filter bank) to a mono direct output, OSC. The internal white noise is also routed in mono to the filter channels but is also available in stereo at the direct NOISE output (signal bypassing the filter bank). The audio input is stereo and is routed in stereo to the odd-even filter channels. The signal can be switched to mono at the input if a mono patch cable is used. The GAIN control allows you to adjust the signal (from line level to modular level).

The audio output signal of the filter bank is available at the LEFT and RIGHT outputs at maximum modular level. The MAINOUT control adjusts the output volume. The two BASS filter channels, 1 and 2, are routed to the left and right channels, respectively (i.e., in the center). The other channels are routed alternately to the left and right channels (odd-even). This creates a balanced stereo sound image with the bass frequencies centered and the other higher frequencies evenly distributed. You can animate the stereo image, for example, by modulating (sequences) the individual channels.

There is a separate volume control for the main output and the headphones.



FILTERBANK

THE FILTER BANK CONTROL

1. **AMP EG AMOUNT** OSC envelope routing (AMP EG) to filter cutoff
2. **CUTOFF** control for the center frequency (cutoff) of the 8 filter types
3. **LFO AMOUNT** routing of the LFOs to filter cutoff
4. **BANDLEVEL** mix control between filter sequences and filter simulation
5. **FILTERTYPE** selection and display of filter types for SYNTH mode
6. **ENVELOPE** length of the filter channel envelopes of the filter sequences
7. **RANDOM** randomization of the filter envelopes and velocity of the sequences

BANDLEVEL (Mix of filter modulations)

In the MÄANDER, there are two fundamentally different ways to modulate the filter bank: triggering via the sequencer (one track for each filter band), and classic control via the oscillator (AMP EG), the LFOs, or manually using the CUTOFF control with the aid of filter type simulation.

With the BANDLEVEL control, you can mix between filter simulation, LFO and AMPEG modulation, and the filter sequence: When the BANDLEVEL control is more to the left, the filter bands are controlled via an internal 12-track sequencer (each filter band with a separate sequencer channel).
> See also Example 3 below!

FILTERTYPE

When the BANDLEVEL control is turned further to the right, different filter types are generated using the filter bands. Eight different algorithms simulate classic filter types such as low-pass, band-pass, high-pass, and others. This is possible because each filter band has its own VCA (voltage-controlled amplifier) that controls the volume of that band separately.

For example, by slowly increasing and then decreasing the volume of the channels, starting with the lowest frequency band, you get a classic low-pass filter.

The following filter types are simulated:

HP	Highpass
BP1	Bandpass narrow
BP2	Bandpass medium
BP3	Bandpass wide
NOTCH	Notch filter
LP/BP	Lowpass/Bandpass combination
LP/HP	Lowpass/Highpass combination
LP	Lowpass

> See also examples 1 and 2 below!

FILTERBANK

EXAMPLES OF FILTER MODULATIONS

> EXAMPLE 1: Manually adjusting the low-pass cutoff

- Load a patch with a note sequence (e.g., Preset Patch 1):
- Start the sequencer
- Turn the BANDLEVEL knob to its end position (SYNTH setting).
- Set FILTERTYPE to LP (Lowpass).
- Turn both AMOUNT knobs of the filter (AMP EG AMOUNT and AMOUNT) to zero.

Now you can smoothly sweep through the individual filter bands with the CUTOFF knob, just like with a lowpass filter. You'll see this indicated by the illuminated LEDs of the filter channels. The FilterType algorithm automatically adjusts the volume of each filter band, creating the effect of a lowpass filter. The other filter types work in the same way.
Try them out and listen to the different effects.

> EXAMPLE 2: Low-pass cutoff modulated by LFO and AMP EG

- Load a patch with a note sequence (e.g., Preset Patch 1):
- Start the sequencer
- Turn the BANDLEVEL knob to its end position (SYNTH setting).
- Set FILTERTYPE to LP (Lowpass).
- Turn CUTOFF to zero.
- Turn the AMP EG AMOUNT knob to zero for modulation by the note envelope.
- Turn the LFO AMOUNT knob to zero for modulation by the LFO.
- Also change the waveform and rate of the modulating LFO.

Now the notes and the LFOs are modulating the cutoff frequency. You can see this by the illuminated LEDs of the filter channels. The FilterType algorithm automatically adjusts the volume of the individual filter bands, creating the effect of a modulated lowpass filter. The other filter types work in the same way. Try them out and listen to the different effects.

> EXAMPLE 3: Modulation of individual filter channels by a sequence

Load a patch with a filter sequence (e.g., Preset Patch 1):

- Start the sequencer
- Turn the BANDLEVEL knob fully counterclockwise

Now you will only hear the filter sequence of the filter bands (the LEDs of the filter bands will blink in time with the sequence). The volume of the VCAs of the individual filter bands is controlled by the velocity of the notes. The set envelope of the filter channels makes them fade in and out smoothly or sharply. Turn the ENVELOPE knob of the filter. This allows you to create, for example, smooth and rhythmic filter sweeps or percussive beats.

NOTICE: For a more detailed description, see the chapter "SHOTS"!

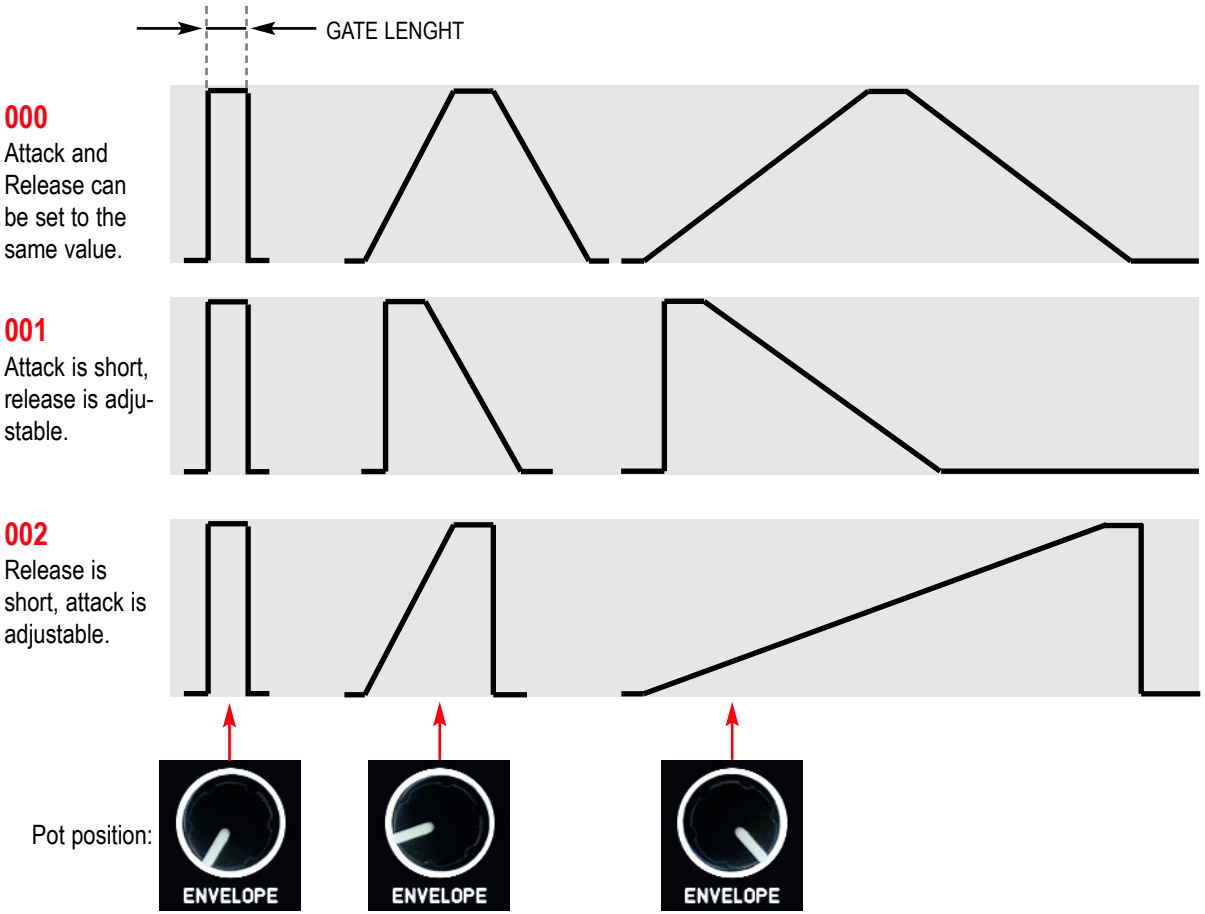
FILTERBANK

ENVELOPE

Each of the 14 trigger tracks has its own AR envelope setting. Together with the ENVELOPE knob and the ENVELOPE menu button, you can individually adjust the envelopes of the 14 trigger tracks.

Press the ENVELOPE button to access the Envelope Menu (the ENVELOPE button will light up). Use the channel buttons (INPUT, NOISE, 12 FILTER BANDS) to turn the individual channels on and off. The LEDs on the channel buttons indicate which channel is on or off. For all activated channels, you can adjust the envelope length using the ENVELOPE knob. You can also step through the tracks individually while the sequencer is running and set the envelope to a desired value.

Use the encoder to select between the following three different types:



All settings are retained when a track is muted. This allows you to adjust each channel individually. All active channels continue to be affected by the ENVELOPE control, even after exiting the menu. This lets you set some bands to a fixed value while later modifying the sequence live with other bands.

The envelope settings are saved with the patch.

RANDOM

The envelope and velocity of the 14 trigger tracks can be varied with random changes. Together with the RANDOM control and the RANDOM button, you can create these variations when playing back trigger sequences.

Pressing the RANDOM button takes you to the Random menu (the button will light up).

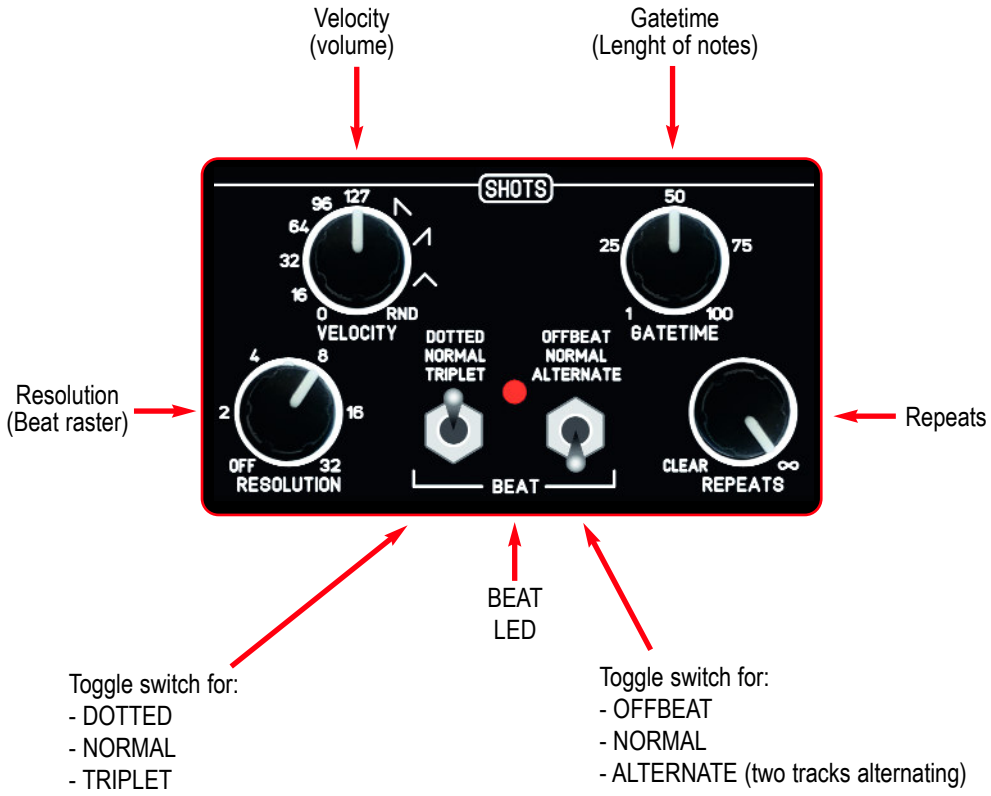
Using the INPUT, NOISE, and FILTERBAND buttons, you can determine whether the individual tracks are affected by the RANDOM control or not. All tracks whose buttons are lit are enabled (random active). The more the RANDOM control is turned up, the greater the random variation in volume and envelope length of the individual triggers. The random algorithm is set relatively subtly and is more effective with faster trigger sequences.

The RANDOM settings for the trigger tracks are saved with the patch.

SHOTS (beat rhythm repeat generator)

DESCRIPTION

The SHOTS section is a generator for creating rhythmic patterns (Note Repeat Generator). With it, you can record short rhythmic phrases or phrases up to four bars long. It generates trigger notes that are activated by the OSC, INPUT, NOISE, and the 12 FILTERBAND buttons. As long as one (or more) of these buttons is pressed, the triggers are recorded on that track (or tracks) according to the SHOTS section's knob and switch settings.



VELOCITY (Volume)

The volume of each trigger note is adjusted using the VELOCITY control. A constant volume can be set from 0 to 127, and additionally, descending and ascending curves, triangle waves, and random functions are available. The descending function, for example, generates triggers with this volume profile: 127, 64, 32, 16.

RESOLUTION AND BEAT

The basic beat is set using the RESOLUTION control and the two BEAT toggle switches.

The RESOLUTION control selects the following increments:

2 - a half note
4 - a quarter note
8 - an eighth note
16 - a sixteenth note
32 - a thirty-second note
OFF - Shots are off (notes are played directly in real time without note repeat)

The left toggle switch determines whether the beat is dotted, normal, or triplet. Another toggle switch to its right places the triggers either offbeat, on beat (NORMAL), or, if two track buttons are pressed simultaneously, alternately offbeat and normal beat (ALTERNATE). This allows you to record two tracks simultaneously out of sync.

GATETIME (Lenght of notes)

The gate length (duration of the note) can be adjusted with the GATETIME control. The gate time of the 14 trigger tracks is calculated as a percentage so that it adjusts with changes in tempo. The gate time of the oscillator track OSC is quantized to a tick. Therefore, notes played during recording may sound shorter than in the playback loop, as the shortest gate time for oscillator notes is one MIDI tick.

SHOTS (beat rhythm repeat generator)

PRAXIS RECORD SHOTS (LOOPER FUNCTION)

Here's an example:

Press START to start the sequencer.

First, turn the BANDLEVEL knob fully clockwise, as we'll play a few notes to get some sound. Use the BAR buttons to select how many bars the sequence should have. In our case, press and hold BAR 1 and then press BAR 2; both buttons will now light up.

Connect a MIDI keyboard to one of the MIDI inputs and play a few notes. You should now hear a two-bar sequence. (If the OSC LED doesn't blink in time with the notes, the MIDI channel is incorrectly set: see also the MIDI chapter.)

Now press the SHOTS button. Make sure the OSC button isn't lit; if it is, turn it off by pressing it. Now turn the BANDLEVEL knob to MIX (center position). Now set the Velocity knob to 127, the Resolution knob to 8, both BEAT switches to their center positions, the GATETIME to 20, and the REPEATS knob to infinity (fully clockwise). Experiment with the 12 bandpass filters and listen to the results. All the Shot Generator controls can be adjusted in real time. If you don't like the sequence, you can delete it (fully counterclockwise) or let it fade out using the REPEATS knob.

You can use the BANDLEVEL knob to crossfade between the cutoff modulation and the filter trigger sequence.

The oscillator track can also be played via shots. If the SHOTS button isn't lit, press it, then press the OSC button until it lights up. Now you can use the note buttons to play individual notes in time with the selected shot.

IMPORTANT!
The OSC track is not affected by the REPEATS control. The OSC track can only be deleted by holding down the CLEAR button and pressing OSC.

REPEATS (Velocity decrease in the loop)

You can make the loop of the trigger tracks fade out like an echo unit. With each iteration, the velocity of the notes is reduced slightly until the loop eventually fades out. You adjust the degree of velocity reduction (volume) with the REPEATS control. When the control is fully clockwise (infinity), the function is inactive, and the loop plays continuously. If the control is in the middle position, for example, the volume decreases progressively over several iterations. The further counterclockwise the control is, the faster the loop fades out. In the zero position, the current position in the sequence is deleted (only when the sequencer is running). However, if the sequencer is stopped, all steps of the trigger tracks are completely deleted.

Note that the REPEAT function does not work on tracks that are set to HOLD. HOLD protects the track from being deleted!

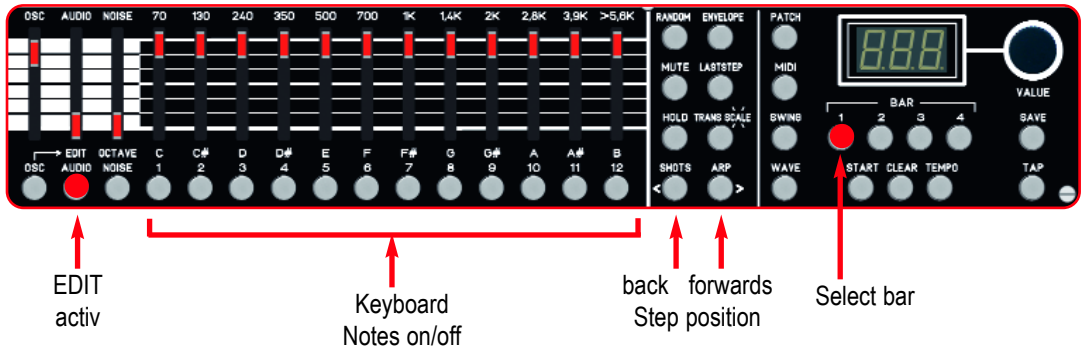
So, for example, you can "freeze" part of the sequence using HOLD and use other tracks for live jamming. As the volume of these tracks decreases in the loop, you can play other rhythms over them and create new variations. You can adjust the REPEATS control at any time. Turn it fully clockwise to retain the current rhythmic pattern.

If you have loaded a patch where the unheld tracks have faded out, you can restore the original sequence by reloading the patch (press the PATCH button again).

The velocity decrease always occurs at the start of the next loop in the sequence, not within the steps. At the beginning of the next loop, the velocity of all steps is reduced by the amount determined by the REPEATS control.

Experiment with different control settings.

EDIT OSCILLATOR - TRACK



Sequences on the OSCILLATOR track can be played in either via MIDI or the note keys, or programmed in EDIT mode while the sequencer is running. It is not possible to edit a sequence that has already been manually recorded. In the EDIT menu, a new (empty) sequence is programmed. However, a previously programmed sequence can be further edited.

PREFERENCES AND NOTES

The step sequencer is 4 bars long and has up to 32 steps per bar. You set this grid using the RESOLUTION control in the SHOT section. Before opening EDIT, set the RESOLUTION control to the desired quantization (number of steps), e.g., 16 for 16 steps and the ability to insert 16th notes. To change the grid, exit EDIT, set the new grid, and then re-enable EDIT.

NOTICE: Before proceeding, disable any HOLD setting on the OSC track, as otherwise the track will be protected from recording/deleting and Edit Mode cannot be accessed. Accessing Edit Mode will delete any previously manually recorded sequence. To avoid losing this sequence, save it to a patch beforehand.

CALLING UP EDIT MODE

Go to the SHOTS menu (press the SHOTS button; it will light up). Select the OSC track by pressing the OSC button (this and the OCTAVE button will light up). Then press the EDIT button. The EDIT button will now light up, and the OSC and OCTAVE buttons will be off.

The display will now show **"1.01."** The "1" before the decimal point indicates the current measure, while the number after the decimal point indicates the current step. In the case of 16th notes, this would be from 01 to 16. The quarter notes of the measure are marked with a dot at the end for easier orientation.

CHANGE STEP POSITION / CHANGE TIME STATE POSITION

You can navigate through the sequence using the two arrow keys (< back, > forward) or by turning the encoder. The BAR buttons allow you to switch between measures.

SET NOTES (CHORD)

To set a note, simply press one of the 12 note keys. Up to 4 notes can be set simultaneously per step position. These will then form a chord.

SET / CHANGE NOTE OCTAVE

By holding down the note key, you can select the octave (-1 to +4) using the encoder.

DELETE NOTES

Notes set in a step can be deleted by pressing the corresponding note key again. To delete the entire sequence, press and hold the CLEAR key while simultaneously pressing the OSC key.

VELOCITY

The velocity of the programmed steps corresponds to the position of the VELOCITY control at the time of placement.

NOTE LENGTH

If a step is to last longer than one beat, press HOLD. The step will then play until a pause is set in a later step using the MUTE button. For example, to hold the first step until step 4, place a note (e.g., C) and press HOLD in step 1, then press MUTE in step 4. HOLD affects all notes of the step equally.

EXIT EDIT MODE

To exit Edit Mode, either press the EDIT button again to return to OSC SHOTS, or switch to any menu, such as WAVE, by pressing this button.

SAVE SEQUENCE

To save the sequence in the patch, simply save the patch by pressing the SAVE button (the button will flash) and then SAVE again. If you want to save the patch with the new sequence in a different patch, press SAVE (button flashes), then select the desired patch number with the data knob and press SAVE again to save (the button LED goes out again).

ARPEGGIATOR

The arpeggiator is an additional playing aid for rhythmically playing chords or consecutive notes with different playback patterns.

Accessing the ARP Menu (Starting the Arpeggiator)

To activate the arpeggiator, press the ARP button. If an OSC sequence is playing, it will be muted. The arpeggio will then begin. If the internal clock or MIDI clock is running, the arpeggiator will already respond to incoming MIDI notes. For example, press a chord on a connected MIDI keyboard. The notes of the chord will then be played sequentially at the set beat of the SHOTS section as long as the chord is held down. The arpeggiator receives the notes on the MIDI channel of the OSC track.

MODE (Playback Pattern)

To edit the arpeggiator, first press the SHOTS button and then the OSC button. The current arpeggiator mode (playback pattern) will then be displayed.

You can select between the following playback patterns using the Data knob:

"UP" ascending
"dO" descending
"UdE" ascending/descending without repeating the lowest and highest notes
"Udl" ascending/descending, repeating the lowest and highest notes
"OrG" original order of the set notes
"rnd" random order of the notes

Alternatively to the MIDI input, you can also use the note keys on the Meaner to play. The velocity currently set with the VELOCITY knob will be used. If you play the arpeggiator via MIDI INPUT, the velocity of the received notes will be used.

You can set the arpeggiator's beat using the RESOLUTION knob and the left BEAT switch (e.g., to play triplets). The duration of the played note can be set with the GATETIME knob.

HOLD (hold the chord, or enter notes one after the other)

The HOLD button activates the arpeggiator's Hold mode.

To hold notes, proceed as follows: Press and hold the first note. While the first note is held, you can press and release any additional notes. You can press any notes, provided the first one is held down.

If you want to play a note in a different octave range, press the Octave button. The currently selected octave range will now be displayed. You can now change the octave using the Data wheel. Select additional notes for the arpeggio in different octaves.

After releasing the first note, the arpeggio will repeat until another note is pressed.

When the arpeggiator is playing in HOLD mode, you can switch between the OSC track and the arpeggio (using the ARP button). The arpeggio will only be deleted when the HOLD button is deactivated in ARP mode.

NOTICE: The notes of the arpeggio are not saved in the patch!

MIDI

OVERVIEW

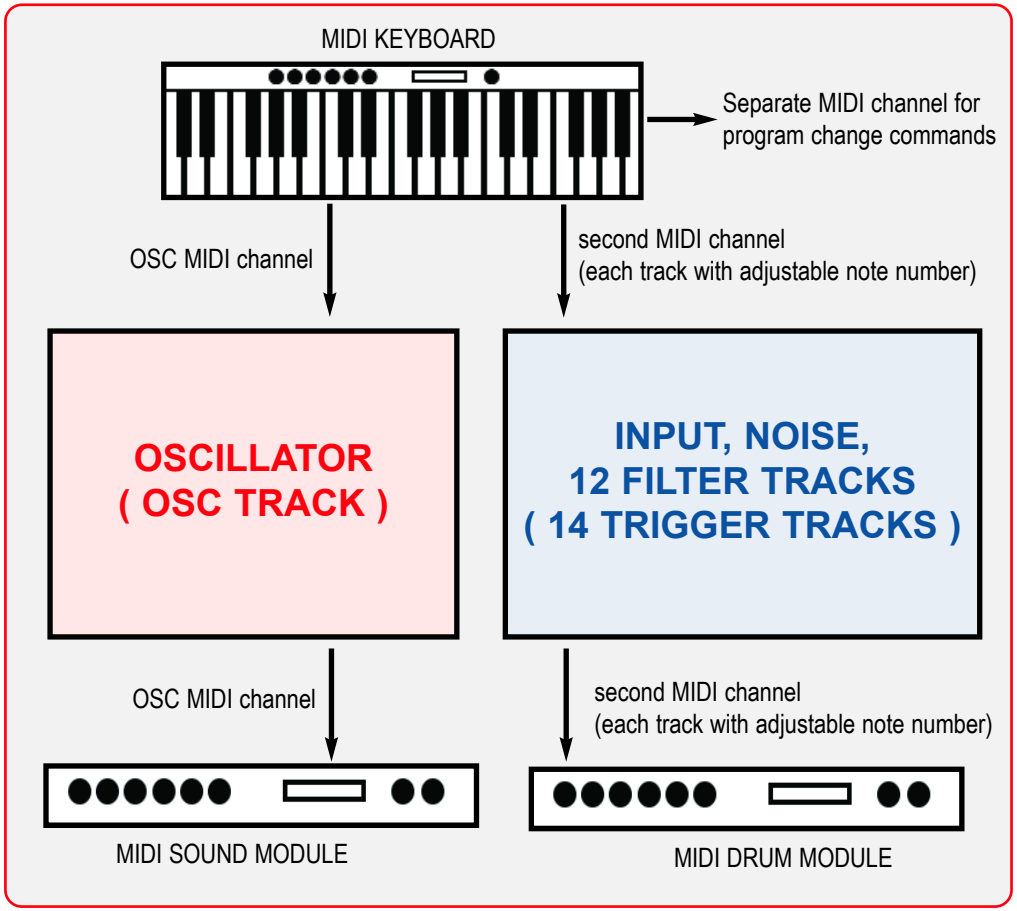
The MÄANDER is equipped with extensive MIDI functions. The internal sequencer sends its data not only to the internal sound engine and filter, but all sequencer tracks also send and receive MIDI notes (the polyphonic oscillator track and the 14 monophonic tracks each on separate MIDI channels).

Each of the 14 monophonic tracks is triggered by an adjustable MIDI note and can also send it. The received velocity affects the intensity (volume) of the track.

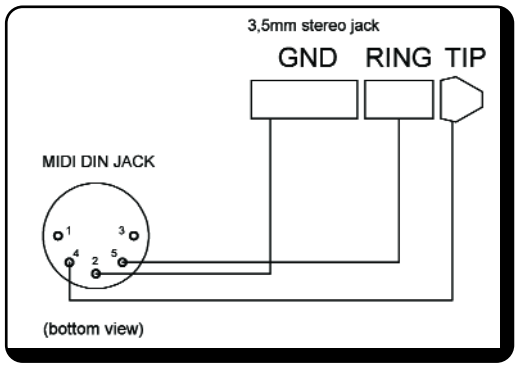
Almost all controls (with digital functions) can send/receive MIDI data. Sending and receiving can be switched off separately. Synchronize the MÄANDER via MIDI START/STOP/CLOCK; an external clock is automatically detected. Program change data can be received and/or sent on a separate MIDI channel.

There are two functionally identical MIDI inputs that are internally merged. MIDI Input 2 also has a THRU jack (data arriving via MIDI IN 2 is passed through to this jack). A MIDI connection can be established directly with a computer via USB (class compliant). Firmware updates can be loaded via USB-MIDI using a SysEx file.

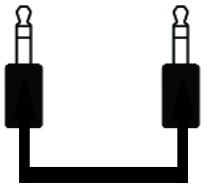
NOTICE: Note that the MIDI jacks are of type MIDI-TRS-B.



Adapter diagrams
MIDI DIN socket to 3.5mm mini jack in MIDI-TRS-B standard



3.5mm Mini Jack Stereo Cable for direct MIDI connection between two TRS-B jacks



MIDI

MIDI RECEIVE DATA

The MÄANDER can receive MIDI data on three separate MIDI channels (1-16):

OSC TRACK (direct oscillator and OSC sequencer track)
NOTE ON / NOTE OFF (note numbers between 24 and 103)
VELOCITY (for all received notes)
PITCH BEND (routed to internal oscillator)
CONTROL CHANGE (parameter control with fixed controller numbers)

14 TRIGGER TRACKS (input, noise, and 12 filter bands)
NOTE ON / NOTE OFF (each channel with adjustable note number)
VELOCITY

PROGRAM CHANGE
for switching patches

GLOBAL
MIDI CLOCK, START, STOP
SYSEX DATA (firmware, wavetables, patches)

MIDI TRANSMIT DATA

The MÄANDER can send MIDI data on three separate MIDI channels (1-16):

OSC TRACK (OSC sequencer track)
NOTE ON / NOTE OFF (note numbers between 24 and 103)
VELOCITY (for all received notes)
CONTROL CHANGE (parameter control with fixed controller numbers)

14 TRIGGER TRACKS (input, noise, and 12 filter bands)
NOTE ON / NOTE OFF (each channel with adjustable note number)
VELOCITY

PROGRAM CHANGE
Sending PATCH program numbers

GLOBAL
MIDI CLOCK, START, STOP
SYSEX DATA (Patch Dump)

NOTICE:
The selected MIDI channels are simultaneously the transmit and receive channels!

MIDI

MIDI MENU

In the MIDI menu, you can configure the MIDI channels and note numbers of the trigger tracks for the Meaner. You also specify whether certain data should be sent or received. The MIDI menu also allows you to enable or disable the 16th-note quantization of recorded notes in SHOTS mode.

Here's how to set the MIDI parameters: First, access the MIDI menu by pressing the MIDI button; it will now light up. Pressing the button repeatedly will cycle through the parameters to be set. The display will show the following order:

CHn - MIDI channels
not - Note numbers
trt - Transmit data
rCE - Receive data
O.nt - Quantize (16th-note quantization of recorded notes)

SETTING MIDI CHANNELS:

Press the MIDI button so that **"CHn"** (CHANNEL) appears on the display.

Set the MIDI channel for the OSC track:
...Then press the OSC button for the MIDI channel of the oscillator track. The display will alternate between the set MIDI channel number and the menu name, e.g.:
CHn 002 CHn 002 ...
Now turn the data knob to set the desired channel (001..016)

Set the MIDI channel for the 14 trigger tracks:
...Then press one of the filter channel buttons for the MIDI channel of the 14 trigger tracks. The display will flash alternately between the set MIDI channel number and the menu name, e.g., **CHn 001 CHn 001...**
Now turn the data knob to set the desired channel (001 to 016).
Exit the menu (e.g., by pressing WAVE) or set the next MIDI parameter. The new values will be saved permanently immediately.

Setting the MIDI Channel for Program Change:
... Then press the PATCH button for the MIDI channel program change. The display will alternate between the set MIDI channel number and the menu name, e.g.:
CHn 002 CHn 002 ...
Now turn the data knob to set the desired channel (001..016).

SETTING THE NOTE NUMBERS OF THE 14 TRIGGER TRACKS:

Press the MIDI button twice so that "not (NOTE)" appears on the display.

Setting note numbers for the 14 trigger tracks:
Then press the corresponding channel button (e.g., AUDIO) to set the note. The display will alternate between the set note number and the menu name, e.g.,
not 036 not 036 ...
Now turn the Data knob to change the note number.

Proceed in the same way with the other trigger channels: press the corresponding channel button and turn the Data knob.

Exit the menu (e.g., by pressing WAVE) or set the next MIDI parameter. The new values are saved immediately.

MIDI

SETTING MIDI TRANSMIT DATA:
Press the MIDI button three times so that **trt** (TRANSMIT) appears on the display.

Sending the OSC track on/off:
Press the OSC button. The display will alternate between **on** or **oFF** and the menu name, e.g., **trt oFF trt OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

Sending the trigger channel tracks on/off:
Press one of the trigger track buttons. The display will alternate between **on** or **oFF** and the menu name, e.g., **trt oFF trt OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

Sending the MIDI controller knobs on/off:
Turn one of the knobs, e.g., RESOLUTION. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **trt oFF trt OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To send MIDI Clock on/off:
Press the TEMPO button. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **trt oFF trt OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To send PROGRAM CHANGE on/off:
Press the PATCH button. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **trt oFF trt OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

Exit the menu (e.g., by pressing WAVE) or set the next MIDI parameter. The new values are immediately and permanently saved.

SETTING MIDI RECEIVE DATA:
Press the MIDI button four times until **rCE** (RECEIVE) appears on the display.

To enable/disable note reception on the OSC track:
Press the OSC button. The display will alternate between **on** or **oFF** and the menu name, e.g., **rCE oFF rCE OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To enable/disable note reception on the 14 trigger channel tracks:
Press one of the trigger track buttons. The display will alternate between **on** or **oFF** and the menu name, e.g., **rCE oFF rCE OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To enable/disable MIDI controller data reception:
Turn one of the knobs, e.g., RESOLUTION. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **rCE oFF rCE OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To receive MIDI Clock on/off:
Press the TEMPO button. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **rCE oFF rCE OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

To receive PROGRAM CHANGE on/off:
Press the PATCH button. The display will flash alternately between **on** or **oFF** and the menu name, e.g.: **rCE oFF rCE OFF ...**
Turn the data knob to the right for **on** or to the left for **oFF**.

Exit the menu (e.g., by pressing WAVE) or set the next MIDI parameter. The new values are immediately and permanently saved.

MIDI

16th note QUANTIZATION OF PLAYED NOTES (PLAYBACK) ON/OFF:

Press the MIDI button five times so that O.nt (Quantization) appears on the display.

Quantization on/off:

Press the OSC button. The display will flash alternately between **on** or **oFF** and the menu name, e.g.:

O.nt oFF O.nt OFF ...

Turn the data knob to the right for **on** or to the left for **oFF**.

Exit the menu (e.g., by pressing WAVE) or set the next MIDI parameter. The new values will be saved immediately.

MIDI SYNC

The MÄANDER can be synchronized with MIDI SYNC (MIDI CLOCK, START, STOP). Sending and receiving MIDI clock data can be configured in the MIDI menu. The MÄANDER automatically detects MIDI clock signals when stopped (if reception is enabled).

> See the chapters “Setting MIDI Receive Data” and “Setting MIDI Send Data” for more information.

LIST OF MIDI CONTROLLER (CONTROL CHANGE NUMBERS)

(The MIDI transmit and receive channel corresponds to that of the OSC track)

PARAMETER	CC Nr
OSCILLATOR	
FINETUNE	32
PITCH AMOUNT	36
DETUNE	41
UNISONO	58
GLIDE	39
COLOR	40
COLOR AMOUNT	38
ADSR	
ATTACK	51
DECAY	52
SUSTAIN	45
RELEASE	42
SHOTS	
VELOCITY	50
GATETIME	43
RESOLUTION	54
REPEATS	44

PARAMETER	CC Nr
FILTERBANK	
AMP EG AMOUNT	33
CUTOFF	1
CUTOFF AMOUNT	37
BANDLEVEL	46
FILTERTYPE	48
ENVELOPE	49
RANDOM	47
EXPRESSION PEDAL	35
LFO	
LFO1 RATE	56
LFO1 SHAPE	57
LFO1 SYNC	59
LFO1 RETRIG	60
LFO1 ONESHOT	61
LFO2 RATE	55
LFO2 SHAPE	53
LFO2 SYNC	62
LFO2 RETRIG	63
LFO2 ONESHOT	65

UPDATES

FIRMWARE UPDATE

To perform a firmware update, you need a SYSEX program on your computer to send SYSEX files via MIDI (e.g., MIDI-OX for PC or SYSEXLIBRARIAN for Mac). A firmware update can consist of one or sometimes two SYSEX files. Download the new firmware file (or files) from our website.

- Connect the MÄANDER to your computer via USB MIDI.
- While switching it on, press and hold the WAVE and TEMPO buttons simultaneously.
- The display will show UPd (UPDATE).
  The MÄANDER is now waiting to receive the SYSEX file.
- Set the MIDI OUT PORT in your SYSEX program to "**Mäander**".
- Load the SYSEX firmware file into the SYSEX program and send it to the MÄANDER.
- A counter will increment on the display during the transfer.
- Once the file has finished loading, the MÄANDER will restart automatically.
- The new version number will briefly appear on the display during startup.
- Then briefly switch the MÄANDER off and on again.
- The update is now complete.

NOTICE:
If the update consists of two files, transfer one file first and then the other file as described above.

WAVETABLE UPDATE

To update the wavetable, you need a SYSEX program on your computer to send SYSEX files via MIDI (e.g., MIDI-OX for PC or SYSEXLIBRARIAN for Mac). You can download compatible wavetables from our website. The MÄANDER uses the same format as the FLAME 4VOX eurorack module.

1. Transfer the complete wavetable bank:
The wavetables have a memory location number defined in the SYX file. The wavetables are automatically saved to these locations. This is recommended if you want to automatically load an entire bank into the already defined memory locations.

- Establish a MIDI connection to your computer (USB or MIDI DIN jacks).
- Load the SYSEX wavetable files into the computer program.
- Press the WAVE button and select wavetable bank A or B.
- If a dot appears next to the bank, press the EDIT wheel (the dot will disappear).
- Now send the files to the Meander.

2. Transferring individual wavetables to specific memory locations:
Here's how to save a wavetable to a specific bank number:

- Establish a MIDI connection to your computer (USB or MIDI DIN jacks).
- Load the SYSEX wavetable file into the computer program.
- Press the WAVE button and select wavetable bank A or B and the wave number.
- Press the EDIT wheel (a dot will now appear next to the bank;
  this ignores the memory number specified in the file).
- Now send the file to the Meander.
- If necessary, select a new memory location and send the next file, and so on...

FAQ / TROUBLESHOOTING

Which parameters can I control via CV?
You can control all digital controls via CV input, but only one at a time (see the list in the "Using CV Input" section). Select the parameter globally in the MIDI menu.

Which parameters can I control via MIDI?
You can control all digital controls simultaneously via MIDI controllers (see the list in the MIDI section). For this to work, controller reception in the MIDI menu must be set to "ON". The Meander can also send and receive program changes. All digital controls can also send MIDI controller signals (see the MIDI section).

Firmware update or MIDI dump is not working:
Check the MIDI cables (use a TRS-B adapter) and ensure you are using a direct MIDI connection to the computer, not a USB hub or similar. Other errors often occur with the SysX program – make sure the correct MIDI port is selected. If you are a Mac user using the "SYSEX LIBRARIAN" program, always receive the SysEX data via the "Record Many" button (top right).

If it still doesn't work, try a different (older) sound card – many newer and especially cheaper sound cards have a different power supply at the MIDI port and therefore often have limited functionality.

You can also connect the MIDI-USB port to the computer. Select the "Meander MIDI Driver" as the port in your SYSEX program.

I'm using the audio input, but I can't hear the sound!
You can only route the audio input through the filter bank while the sequencer is running. First, you need to turn up the GAIN control. Slide the AUDIO track's slider up. Now, with the sequencer running, you need to play the AUDIO track (the AUDIO slider LED will then light up). After that, the signal goes through the filter bank. The filter bands there also need to run sequentially, and the sliders need to be turned up, so that the signal is audible at the output.

I'm using a MIDI keyboard, but I can't trigger the sound!
First, check the MIDI receive channel in the MIDI menu. Send the notes on this channel. The LED on the OSC button indicates when a note command is received (the LED lights up, for example, when a key is pressed). Also, check the cable connection. Only use MIDI TRS-B type cables.

I can send a MIDI note (the OSC button lights up accordingly), but I don't hear any sound!
Turn the BANDLEVEL and CUTOFF controls to their maximum positions. Set the FILTERTYPE to, for example, LP (low-pass). Set a suitable AMP-EG envelope (Attack=0, Decay=max, Sustain=max, Release=center). Mute the OSC track. Move the OSC slider all the way up. Turn the MAINOUT control up. Turn the COLOUR control to select a different waveform in the wavetable, if necessary. Check your sound system. Use headphones to check if the oscillator is playing the sound.

Why are there two MIDI inputs?
Both MIDI inputs are internally mixed (merger function). This means both inputs behave identically. However, this allows you, for example, to use a keyboard to play notes on the OSC track and a drum sequencer on the other input to trigger the filter tracks. The two are separated by their different MIDI channels. This eliminates the need for an external MIDI merger.

Does the filter sequence gradually disappear after starting a patch?
You probably haven't set the REPEATS control to its end position (infinity). This causes the velocity (volume) of the tracks where HOLD is off to decrease with each loop iteration.

APPENDIX & TECHNICAL DETAILS

Technical Details

Connections:
Flat ribbon cable adapter for Doepfer bus +/-12V, +5V
Inputs: 2x MIDI-TRS-B, 1x CV, 1x 3.5mm mono/stereo audio jacks
Outputs: 2x MIDI-TRS-B, 4x 3.5mm mono/stereo audio jacks
MIDI-USB port (class compliant), stereo headphone output (100 ohm impedance)

Controls:
43 illuminated pushbuttons, 28 potentiometers, 1 data input encoder
2 toggle switches, 1 slide switch, 1 illuminated LED display

Resolutions: DAC: 16-bit, Audio output: +/-5V
Power consumption: +/-12V, +5V 200mA each
Size: Euro format 3U / 56HP 284x128.5mm, Mounting depth: 25-37mm

56HP Case with wooden side panels (desk-style), Accessories:
12V/18W power supply
4x case rubber bumpers
Mäander-M module
Quickstart Manual (English)
Flame Mini Catalog 2025 (English)
Case materials: Aluminum and wood (European elm, cherry)
The case power supply provides +5V/500mA, +12V/500mA, -12V/500mA

Dimensions (case + module):
Width: 304mm
Depth: 155mm
Height (front): 60mm
Height (rear): 110mm

Weight:

Case incl. power supply:	850g
Mäander module:	700g

Warrenty

Despite careful manufacturing, defects may occasionally occur. Under warranty, manufacturing defects will be repaired free of charge. This does not include defects caused by improper use of the device. The warranty period is governed by the legal regulations of the individual countries in which the device is sold. If necessary, please contact your dealer/distributor or send an email to:
service@flame-instruments.de

Terms of production

conformity: CE, RoHS, UL

Disposal

The device is produced with RoHS-conformity (subject to the regulations of the European Union) and is free of hazardous substances (like mercury, plumb, cadmium and hexavalent chrome). But electronical scrap is hazardous waste. Please don't add this to consumer waste. For an environment friendly disposal of waste please contact your distributor or specialist dealer.

Support

Updated and additional informations, updates, downloads and more see:
http://www.flame-instruments.de
Instagram: @flame_instruments

Acknowledgment

For help and assistance big thanks to: Sebastian Preller, Thomas Wagner + Martina Dünkelmann (Flirren), Felix Bergleiter, Anne-Kathrin Metzler, Daniel Dorsch, Matthias Kuhl (Marva-Holzdesign), Alex4 and Schneiders Büro Berlin.

The module was handcrafted in Berlin. The wooden side panels of the case are made from European elm or cherry wood by Marva-Holzdesign Berlin.