

DESCRIPTION
REAL COMPETENCE

SINE MB 33 II

Analog Bass Synthesizer



TERRATEC PRODUCER/SINE MB 33 II
English Manual
Version 1.0, last revised: November 2003

CE Declaration

We:

TerraTec Electronic GmbH, Herrenpfad 38, D-41334 Nettetal, Germany

hereby declare that the product:

TerraTec Producer SINE MB 33 II,

to which this declaration refers is in compliance with the following standards or standardizing documents:

1. EN 55013

2. EN 55020

The following are the stipulated operating and environmental conditions for said compliance:

residential, business and commercial environments and small-company environments.

This declaration is based on:

Test report(s) of the EMC testing laboratory



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Important safety information

- Please read all instructions before using this device.
- Never use the device near water, i.e. next to a bathtub, sink, or drain, in a damp basement or near a swimming pool.
- Used in combination with an amplifier and headphones or speakers, this device can cause sound levels that may result in lasting hearing damage. Avoid long exposure to excessive or unpleasantly high volume levels. Consult an ear specialist immediately if you detect a loss of hearing or a ringing in your ears.
- Ensure adequate ventilation for the device when setting it up.
- Do not install it near sources of heat such as radiators, ovens or similar devices.
- Ensure that the device is connected only to a standard AC outlet.
- Position it in such a manner that no dust, liquids or foreign objects can enter the housing.
- Unplug the external power supply from the AC outlet if you do not intend to use the device for an extended period.
- The device must be serviced by trained personnel if:
 - the external power supply is damaged,
 - objects or liquids have entered the device,
 - the device was left in the rain,
 - the device was damaged by dropping,
 - the device is malfunctioning.
- Do not attempt to repair the device yourself. Please consult a trained technician.
- Please ensure that all analog devices are turned off before plugging them in. This will protect you from any possible—albeit weak—electrical shocks, as well as protecting your speakers and your hearing from sudden peaks. For digital devices, be sure to at least lower the volume on your playback equipment.

Welcome!

We are pleased that you have chosen a TerraTec Producer rack system and would like to congratulate you on your decision. You've purchased a sophisticated product representing the state of the art of studio technology, and we're convinced that our product will prove extremely useful to you in the coming years and provide you with a great deal of entertainment.

This manual describes the SINE MB 33 II analog bass synthesizer. It covers the correct use of the system in complete detail, and provides practical tips so that you can get started as soon as possible.

We hope you enjoy your synthesizer and would like to suggest that you browse this hopefully entertaining manual when you get the chance. In addition to the important information about its technology, we have outlined a number of typical applications as well as tips and tricks wherever appropriate. We're convinced that even experienced users will profit from this guide.

Thanks for your attention—and here's to your creativity.

Sincerely, Your TerraTec Producer Team

Scope of delivery

Start by making sure that the contents of the package are complete. The **SINE MB 33 II** bass synthesizer package should contain at least the following:

- 19" Rack Synthesizer SINE MB 33 II
- 12V AC power adapter
- Customer service card
- Registration card with the serial number
- BeSonic Premium Account registration card
- This manual

Please return the enclosed registration card to us at the earliest possible opportunity or register online at <http://www.terratec.com/register.htm>. This is important for support and hotline services.

Connections and controls

The front panel:



1. POWER: Power switch
2. STATUS ON: Status LED
3. STATUS MIDI: LED for MIDI data
4. EDIT MODE: Normal/Move switch
5. AUTOSLIDE: ON/OFF switch
6. VCO TUNE: Fine pitch adjustment (+/- 1 semitone)
7. VCO WAVEFORM: Sawtooth/square-wave signal switch
8. VCO SUB MIX: Ratio of sub-oscillator (square-wave) to sawtooth/square-wave
9. VCO ENV PWM: Intensity of the square-wave pulse width modulation
10. VCF CUTOFF: Upper cutoff frequency of the VCF
11. VCF RESONANCE: Generates resonance in the cutoff frequency range
12. VCF ENV MOD: Determines the intensity with which the envelope generator modulates the cutoff frequency of the VCF
13. VCA/VCF ACCENT: Regulates the intensity of the accent effect. It is triggered via MIDI and affects the envelope generator, volume and cutoff frequency.
14. ENVELOPE DECAY: Envelope generator decay time
15. MASTER DISTORTION: Intensity of distortion effect
16. MASTER VOLUME: Output volume control

The rear panel:



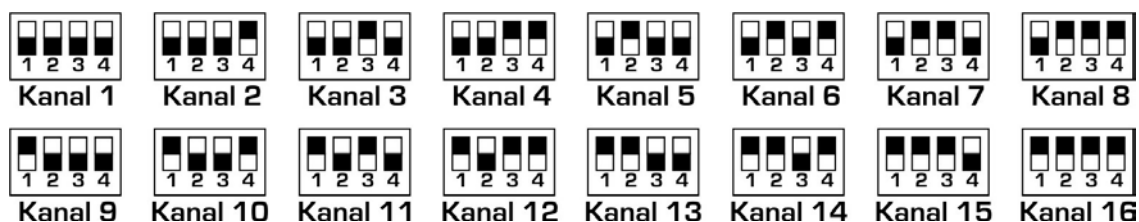
17. OUTPUT: Output socket (1/4" mono jack)
18. RES ADJUST: Maximum resonance adjuster (resonance strength with resonance control on full)
19. VCF INPUT: Connector for processing external audio signals with the VCF
20. 12 V AC: AC power adapter (alternating current)
21. MIDI INPUT: MIDI data applied to this input affect the audio signal generation and MIDI-controllable parameters of the SINE MB 33 II.
22. MIDI THRU: MIDI feed-through socket
23. MIDI OUTPUT: Controller data output of the edited parameters
24. MIDI CHANNEL: Selector for MIDI send and receive channels (1 - 16)

Properties

- Monophonic bass synthesizer
- Analog audio generation—the audio signal generation of the MB33II is purely analog and is based on the traditional VCO-VCF-VCA-ENV principle. The VCO features sawtooth and square-wave (with pulse width modulation) waveforms and an additional sub-oscillator (square-wave). The VCF is an 18 dB low-pass filter with an adjustable cutoff frequency and resonance. The envelope generator (ENV) with its adjustable decay time modulates the cutoff frequency and the pulse width of the square wave. The MB33II also features "groove functions" such as Accent, Autoslide and Distortion.
- MIDI control of Cutoff, Resonance, ENV MOD, Decay, Accent and Distortion.
- Processing of external audio signals by the VCF.

Getting started

1. Set the MIDI-CHANNEL to the desired channel. The illustration below shows the switch positions assigned to the MIDI channels 1-16:



Note: controller messages related to MIDI-enabled parameters and note messages are only received and processed on the currently selected MIDI channel of the SINE MB 33 II.

2. Connect the output of the SINE MB 33 II to a mixer, amplifier or other suitable equipment. Take care and turn down the volume of both devices first.
3. To control the SINE MB 33 II, connect the MIDI IN socket to the MIDI OUT (or THRU) of a MIDI controller device (computer, keyboard, sequencer, etc.). Ensure that the preset receive channel of the SINE MB 33 II corresponds to the send channel of the MIDI controller.
4. Connect the included power adapter to the AC socket of the SINE MB 33 II.
5. The SINE MB 33 II will autotune itself when it is switched on. As soon as the tuning operation is complete, the MIDI LED will go out and the synthesizer will be operational. The POWER LED will remain lit for as long as the device remains switched on. When sending notes to the SINE MB 33 II via MIDI, the MIDI LED will light up in sync with the notes.

Function

VCO

The VCO is a voltage-controlled oscillator that can generate either square-wave or sawtooth waveforms. Choose the waveform with the WAVE switch.

An additional sub-oscillator can be added to this waveform with the MIX control. It generates a square wave with a pulse width of 50%, but one octave lower.

- MIX control to the left: only the sub-oscillator can be heard.
- MIX control to the right: only the waveform selected using the WAVE switch can be heard.
- MIX control at the center: the square-wave/sawtooth and sub-oscillator are at the same level.

The TUNE control changes the pitch of the VCO um +/-1 semitone. In the middle position, the pitch matches that of the other MIDI instruments.

Pulse width modulation (PWM)

The pulse width of the square wave can be modulated using the envelope generator, which also modulates the cutoff frequency. The ENV PWM control sets the intensity of the modulation. In the left-hand position, the pulse width is a constant 50%. From a certain intensity (PWM = 100%), the square wave and sub-oscillator cut off and are no longer audible when the envelope is triggered. The duration of the pulse width modulation depends on the decay time (DECAY control) of the envelope. An interesting sound results when the sub-oscillator cuts off and is mixed with the sawtooth wave (the sawtooth wave is not affected by the pulse width modulation).

Autoslide

- ON: slides (a smooth transition from one pitch to another) are automatically triggered when more than one note is played at the same time on the MB33II. The envelope generator is not triggered in this case.
- OFF: slides are permanently disabled. The envelope generator is triggered for each new note.

VCF

The VCF is an 18 dB low-pass filter with an adjustable resonance. It can be used to increase or reduce the harmonics in the VCO's output signal. It features controls for cutoff, resonance and envelope modulation:

- The CUTOFF control determines the cutoff frequency of the VCF. Harmonics above the cutoff frequency are clipped; all overtones below the cutoff frequency pass the VCF unchanged. The range of the cutoff control has been designed to ensure that the VCO does not modify signals when it is at its maximum position. In the minimum position, virtually all harmonics are suppressed.
- The RESONANCE control boosts harmonics around the cutoff frequency. When the control is to the left, the harmonics remain unchanged. Turning the control clockwise increases the resonance.

Note: The RES ADJUST trimmer on the rear panel of the MB 33 II can be used to set the maximum resonance, i.e. the resonance level available when the resonance control is turned all the way up.

- The ENV MOD control determines the intensity with which the envelope generator (ENV) modulates the cutoff frequency.

Envelope generator (ENV)

The envelope generator (ENVELOPE) generates a control voltage that can be used to modulate the cutoff frequency (ENV MOD control) and the pulse width of the square wave (the VCA features a separate envelope generator with a fixed voltage characteristic). This control voltage is generated every time a new note is received, but not when the AUTOSLIDE function is enabled (when more than one note is being played at the same time). The position of the DECAY control determines the speed with which the envelope voltage drops.

Accent

The accent determines the playing dynamics by differentiating the individual notes from one another. The accent of the SINE MB 33 II is especially effective in that it affects several parameters at the same time.

- The volume is raised significantly. The accent's volume boost is reduced as the distortion level increases.
- The decay time is set to minimum for the duration of the accent. At the end of the accent, the time currently set on the decay control is applied. The effect of the accent can therefore be enhanced further by setting a long decay time.
- The accent causes an additional boost of the cutoff frequency. This effect, in turn, depends of the position of the resonance control: at a low resonance, the accent results in a brief, percussive boost of the cutoff frequency. At a high resonance, the boost of the cutoff frequency is delayed and less intense.
- The intensity of the volume and cutoff frequency boosts can be adjusted with the accent control.
- The accent is triggered via MIDI at velocity values of 120 or greater. The intensity of the accent can be regulated with the accent control in such cases. The accent control has no effect if the accent is not triggered.

Distortion

This effect is comparable to that of a fuzztone. It is the result of overdriving the filtered VCO signal; its intensity can be adjusted as needed. The sound resulting from the distortion effect depends not only on the intensity, but also the cutoff frequency and resonance.

- A lower cutoff frequency will result in a weaker distortion effect.
- A lower resonance will add dirt to the sound.
- Additional harmonics result as the resonance increases. The sound becomes more metallic (comparable to the sync effect with 2 oscillators). The sound becomes more shrill when the cutoff frequency is raised while the resonance is high.

Volume

The VOLUME control regulates the output volume of the SINE MB 33 II.

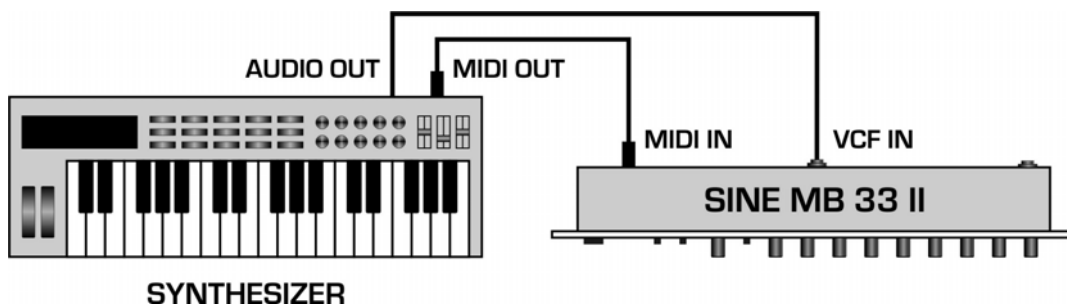
VCF IN

External audio signals can be applied to the VCF IN socket for processing by the SINE MB 33 II.

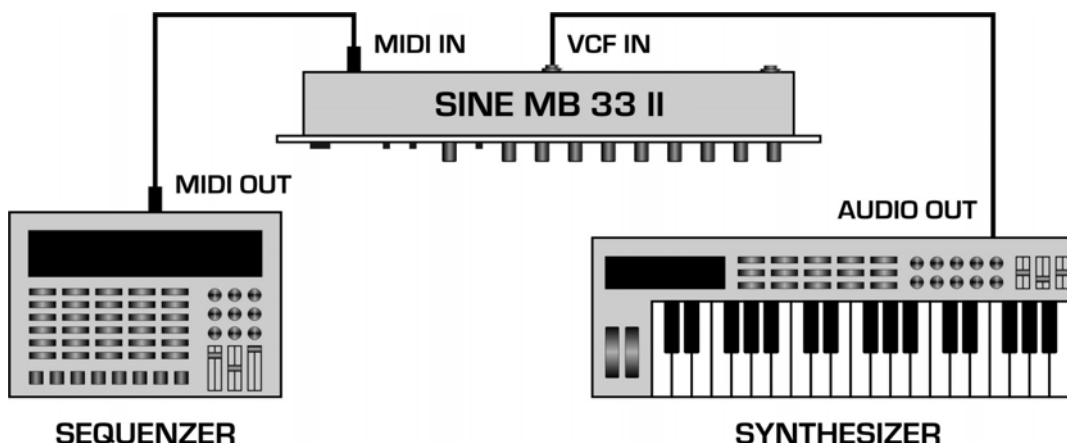
- Connect an external audio signal source to the VCF INPUT socket of the SINE MB 33 II. The internal oscillator is disconnected from the input of the VCF and replaced by the external signal. As a result, only the processed signal will be available at the output of the MB33II. All functions of the MB33II—including MIDI control—will remain active.
- As the external signal first passes through the SINE MB 33 II's VCF, then the VCA, it must be triggered via MIDI. Only Note ON (VCA open for signal) and Note OFF messages (VCA closed) are required for this; pitch information is not processed. Triggering the VCA automatically triggers the envelope generator to modulate the cutoff frequency of the VCF. Please note that the envelope is not triggered if Autoslide is enabled (the SINE MB 33 II is receiving more than one note at a time).

The following configurations are possible:

Trigger via keyboard



Trigger via additional control device such as a sequencer



- Use the Cutoff, Resonance, ENV Mod, Accent, Decay and Distortion controls to process the external audio signal.

MIDI control

If a sound is modified by changing one of the controls, the SINE MB 33 II will send an appropriate control-change message to the MIDI OUT which can then be recorded by a MIDI sequencer. If these controller messages are returned to the SINE MB 33 II, this will change the sound in a manner identical to the previous manual change. Recorded audio sequences can be changed subsequently by editing or inserting controller values. The following table provides an overview of the parameters and the associated controller messages sent and received via MIDI.

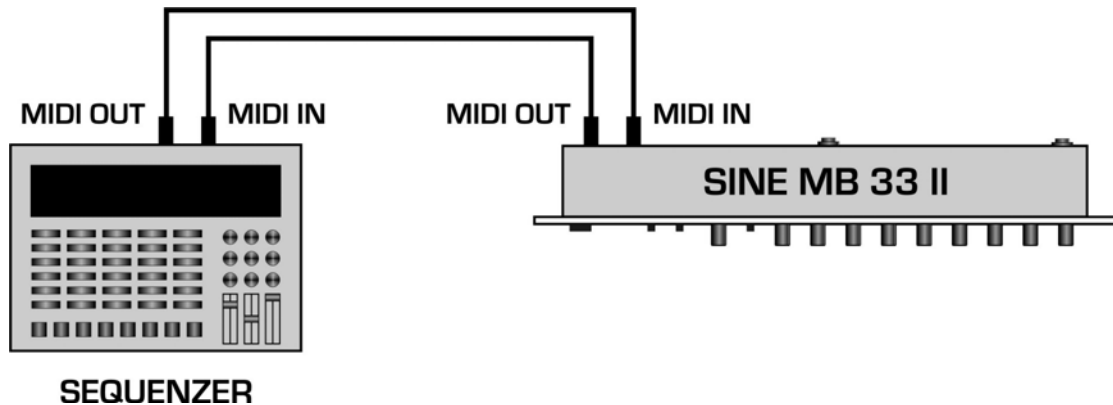
Parameter	Controller number	Controller values
Cutoff	107	0 – 127
Resonance	106	0 – 127
ENV MOD	104	0 – 127
Accent	103	0 – 127
Decay	102	0 – 127
Distortion	105	0 – 127
Autoslide	108	0: OFF / 1: ON

NOTE Controller 102 – 107: controller value 0 = control knob at maximum
controller value 127 = control knob at minimum

Recording sound changes

Procedure:

- Connect the MIDI OUT of the SINE MB 33 II to the MIDI IN of the MIDI recording device (e.g. computer, hardware sequencer, etc.). Sound changes are generally made while playing a melody sequence on the SINE MB 33 II. Connect the MIDI OUT of the SINE MB 33 II to the MIDI IN of the MIDI recording device.



- Setting the MIDI channel: Please note that notes must be received and controller data sent on the same MIDI channel (MIDI channel setting on the rear panel of the SINE MB 33 II).
- Set the EDIT MODE switch to NORM.
- Activate the recording function of the MIDI recording device while playing a melody.
- Change the sound by modifying a control setting. The SINE MB 33 II sends controller messages (controller number of the control and its value, i.e. the current position of the control) when a control is changed.

Note: if more than one parameter is changed at the same time, the SINE MB 33 II will send the controller data of all changed parameters on the selected MIDI channel.

Playback of sound changes

The SINE MB 33 II has two operating modes—NORM and MOVE—to process controller data received at MIDI IN. Both modes can only process controller data sent on the MIDI channel currently selected on the SINE MB 33 II.

Edit mode: NORM

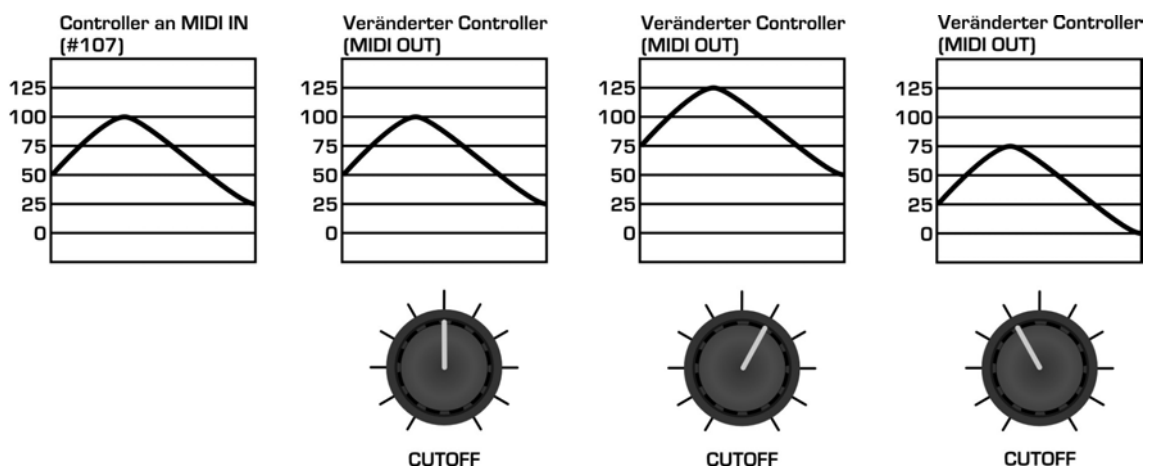
A parameter will respond to both incoming controller data as well as manual changes to the controls. For example, changing the Cutoff control will set the cutoff frequency to the value corresponding to the control's position. Receiving controller data with the number 103 will also set the cutoff frequency to the value specified in the controller data.

Edit mode: MOVE

In this operating mode, controller sequences can be moved up or down using the appropriate manual control, i.e. a value corresponding to the position of the manual control (MOVE value) will be added or subtracted from the received controller values.

Example: changing the controller sequence for the cutoff frequency

- Connect the MIDI OUT of the SINE MB 33 II to the MIDI IN of the MIDI recording device (e.g. computer, hardware sequencer, etc.) and the MIDI IN of the SINE MB 33 II to the MIDI OUT of the recording device. Start the sequencer so that it sends a melody and a controller sequence with cutoff frequency data to the SINE MB 33 II.
- Set the EDIT MODE switch to MOVE.
- To change the controller sequence for the cutoff frequency, the cutoff control must be at least in the middle position. In this position the original controllers will remain unchanged. Turning the cutoff control clockwise will now increase the MOVE value (up to a maximum of 64). The MOVE value will be added to each received controller value. Turning the cutoff control to the left will also cause the MOVE value to increase (up to a maximum of 64). This MOVE value will be subtracted from every received controller value, however. The controller sequence modified in this manner is continuously sent to MIDI OUT, even if the cutoff control is not changed further.



- Recording the modified controller sequence at the MIDI recording device.

Note: If the SINE MB 33 II receives controller data for multiple parameters (e.g. cutoff and resonance), only the controller data of the last edited parameter will be sent to MIDI OUT. For example, if the cutoff control is changed, the modified controller data will be sent to MIDI OUT. If the resonance is then changed, the modified resonance controller value will be sent, but not the previously-changed cutoff controller values.

Technical data

VCO: Waveforms: sawtooth or square-wave, mixable with sub-oscillator (square-wave)

Pulse width modulation of square wave by ENV

TUNE control: +/- 1 semitone

Autoslide function: ON/OFF

Range: 4 octaves (C0 – C4)

VCF: 18d B low-pass filter

Cutoff frequency control (20 Hz – 20 kHz)

Resonance control

ENV modulation depth control

ENV: decay time control (200 ms – 2.5 s)

Accent: accent intensity control, triggered at velocity values of 120 or greater

Distortion: intensity control

MIDI: send and receive via MIDI: Cutoff, Resonance, ENV MOD, Accent, Decay, Distortion, Autoslide ON/OFF

Connections: Output (1/4" mono jack)

VCF input, 1/4" mono jack

MIDI In

MIDI Out

MIDI THRU

Connection for power supply (12V AC)

Power consumption: approx. 2 watts

Dimensions: 482,6 x 135 x 44 mm (19", 1U)

Service at TerraTec Producer

Sometimes, no matter how good the weather is, things do not always work as they should. Problems can arise in the best studio systems. If this happens to you, the TerraTec Producer team is happy to offer its service and support.

Internet, Hotline

If you have a tough problem—where you cannot solve the problem yourself, the support in this manual doesn't resolve the problem, and your dealer can't fix it either—please contact us directly.

If possible, try our Internet support system first: under <http://www.terratec.com/> you will always find current answers to frequently asked questions (FAQ).

If these options do not provide the necessary help, please contact our phone hotline. You can also reach us online.

To do so, visit us at <http://supporten.terratec.net/>.

In either case, please have the following information handy:

- your registration number
- this documentation.

In addition, it would be helpful to our technicians if you are at your device during the phone call to directly carry out tips and tricks. Please do not forget to write down the name of the respective support technician if you contact our Support Team. You will need this name if a defect is present and your device needs to be mailed to us.