OHITMAN

HD-17 Mako

e-drum set

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MUSIC IS OUR PASSION

1   General information

This user manual contains important information on the safe operation of the device. Read and follow all safety notes and all instructions. Save this manual for future reference. Make sure that it is available to all persons using this device. If you sell the device to another user, be sure that they also receive this manual.

Our products and user manuals are subject to a process of continuous development. We therefore reserve the right to make changes without notice. Please refer to the latest version of the user manual which is ready for download under *www.thomann.de*.

1.1   Further information

On our website (*www.thomann.de)* you will find lots of further information and details on the following points:

Download	This manual is also available as PDF file for you to download.
Keyword search	Use the search function in the electronic version to find the topics of interest for you quickly.
Online guides	Our online guides provide detailed information on technical basics and terms.
Personal consultation	For personal consultation please contact our technical hotline.
Service	If you have any problems with the device the customer service will gladly assist you.

1.2   Notational conventions

This manual uses the following notational conventions:

Letterings

The letterings for connectors and controls are marked by square brackets and italics.
Examples: *[VOLUME]* control, *[Mono]* button.

Displays

Texts and values displayed on the device are marked by quotation marks and italics.
Examples: *'24ch'* , *'OFF'* .

Instructions

The individual steps of an instruction are numbered consecutively. The result of a step is indented and highlighted by an arrow.

Example:

1. ▶ Switch on the device.

2. ▶ Press *[Auto]*.

⇨   Automatic operation is started.

3. ▶ Switch off the device.

Cross-references

References to other locations in this manual are identified by an arrow and the specified page number. In the electronic version of the manual, you can click the cross-reference to jump to the specified location.

Example: See ↳ *'Cross-references' on page 5*.

1.3   Symbols and signal words

In this section you will find an overview of the meaning of symbols and signal words that are used in this manual.

Signal word	Meaning
DANGER!	This combination of symbol and signal word indicates an immediate dangerous situation that will result in death or serious injury if it is not avoided.
CAUTION!	This combination of symbol and signal word indicates a possible dangerous situation that can result in minor injury if it is not avoided.
NOTICE!	This combination of symbol and signal word indicates a possible dangerous situation that can result in material and environmental damage if it is not avoided.

Warning signs	Type of danger
⚠	Warning – danger zone.

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2 Safety instructions

Intended use

Drum modules are intended to be used for converting digital trigger signals from drum pads to various percussion sounds. Use the unit only as described in this manual. Any other use or use under other operating conditions is considered to be improper and may result in personal injury or property damage. No liability will be assumed for damages resulting from improper use.

This device may be used only by persons with sufficient physical, sensorial, and intellectual abilities and having corresponding knowledge and experience. Other persons may use this device only if they are supervised or instructed by a person who is responsible for their safety.

Safety

> **DANGER!**
> **Danger for children**
>
> Ensure that plastic bags, packaging, etc. are disposed of properly and are not within reach of babies and young children. Choking hazard!
>
> Ensure that children do not detach any small parts (e.g. knobs or the like) from the unit. They could swallow the pieces and choke!
>
> Never let children unattended use electrical devices.

> **CAUTION!**
> **Possible hearing damage**
>
> With loudspeakers or headphones connected, the device can produce volume levels that may cause temporary or permanent hearing impairment.
>
> Do not operate the device permanently at a high volume level. Decrease the volume level immediately if you experience ringing in your ears or hearing impairment.

> **NOTICE!**
> **Operating conditions**
>
> This device has been designed for indoor use only. To prevent damage, never expose the device to any liquid or moisture. Avoid direct sunlight, heavy dirt, and strong vibrations.
>
> Only operate the device within the ambient conditions specified in the chapter 'Technical specifications' of this user manual. Avoid heavy temperature fluctuations and do not switch the device on immediately after it was exposed to temperature fluctuations (for example after transport at low outside temperatures).
>
> Dust and dirt inside can damage the unit. When operated in harmful ambient conditions (dust, smoke, nicotine, fog, etc.), the unit should be maintained by qualified service personnel at regular intervals to prevent overheating and other malfunction.

!

NOTICE!

External power supply

The device is powered by an external power supply. Before connecting the external power supply, ensure that the input voltage (AC outlet) matches the voltage rating of the device and that the AC outlet is protected by a residual current circuit breaker. Failure to do so could result in damage to the device and possibly the user.

Unplug the external power supply before electrical storms occur and when the device is unused for long periods of time to reduce the risk of electric shock or fire.

!

NOTICE!

Possible staining

The plasticiser contained in the rubber feet of this product may possibly react with the coating of your parquet, linoleum, laminate or PVC floor and after some time cause permanent dark stains.

In case of doubt, do not put the rubber feet directly on the floor, but use felt-pad floor protectors or a carpet.

3   Features

Special features of the device:

- 583 sounds
- 40 preset drum kits, 10 user kits
- 30 songs
- 1 × 8" Snare Mesh Head pad, 3 × 8" Tom pads, 3 × 10" Crash, Ride and Hi-hat cymbal pads
- Bass drum pedal built-in beater
- Hi-hat pedal
- Metronome
- Record and playback function
- Flexible assignment of pad sounds
- Headphones, AUX IN and USB-MIDI interface
- defeatable standby function

4 Scope of delivery

> Before you assemble your drum set, make sure the contents of package is complete according to the following list.

- Frame with 4 × stand tube
- 3 × cymbal holder
- 3 × tom drum
- 3 × cymbal (ride, crash and hi-hat)
- Snare drum
- Sound module
- Hi-hat controller pedal
- Bass drum pedal
- 1 × set of drumsticks
- Labelled wiring harness
- Velcro fastener

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5 Assembly

Loosen the screws of the clamps before sticking the tubes together. Mount the various elements in the specified sequence as shown in the illustration below.
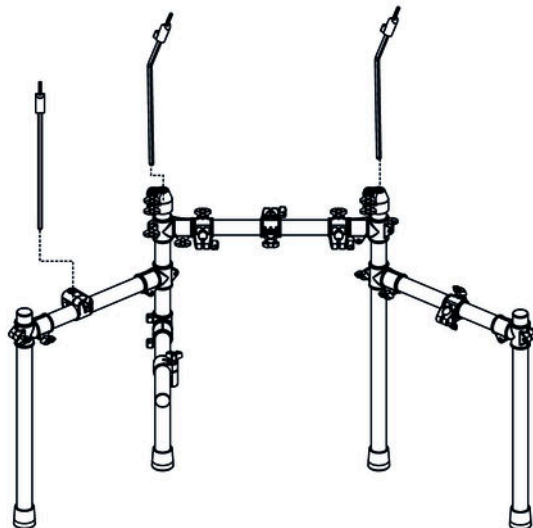
1. ▷ Attach the cymbal holders to the frame as shown.

2. ▷ Attach the cymbals to the holders as shown.
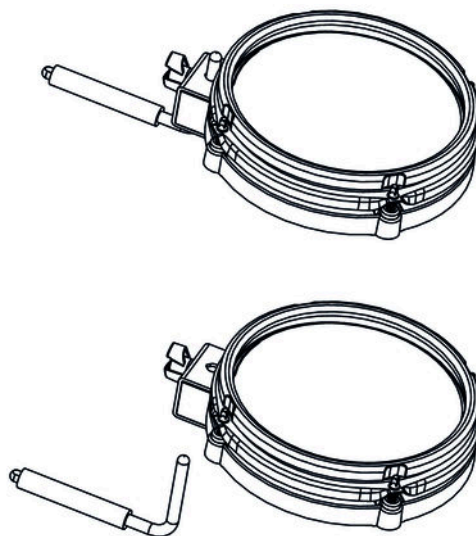
3. ▶ Attach the angle pieces to the Snare drum pad and the Tom drum pads and tighten the wing nuts.
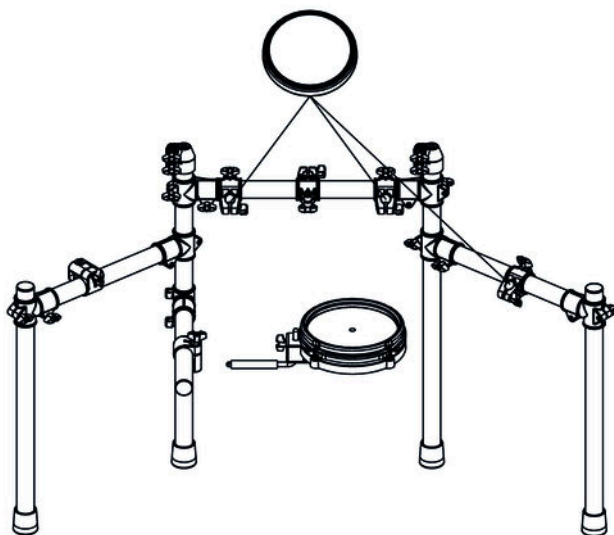
4. ▶ Attach the pads to the frame on the locations shown in the illustration.

5. ▶ Insert the rod of the sound module holder into the clamp on the frame and tighten the wing nut.
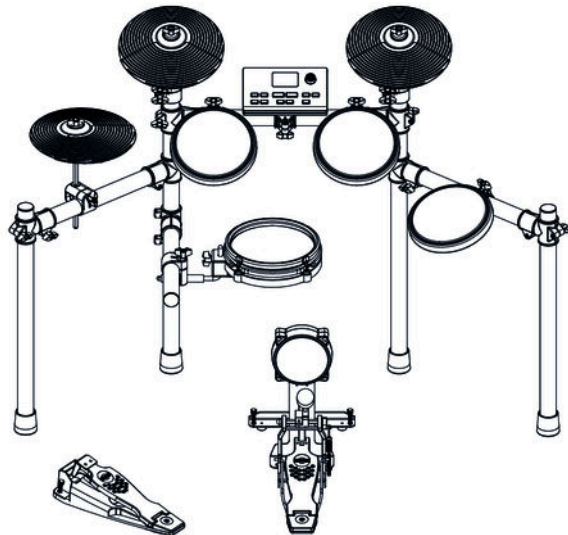
6. ▶ Place the hi-hat controller pedal on the left side and the bass drum pedal in the middle.

7. ▶ Connect the wiring harness to the interface on the rear panel of the sound module. Now connect the marked cables to the corresponding pads, cymbals and pedals.

The assembled e-drum set should now look like the following illustration:
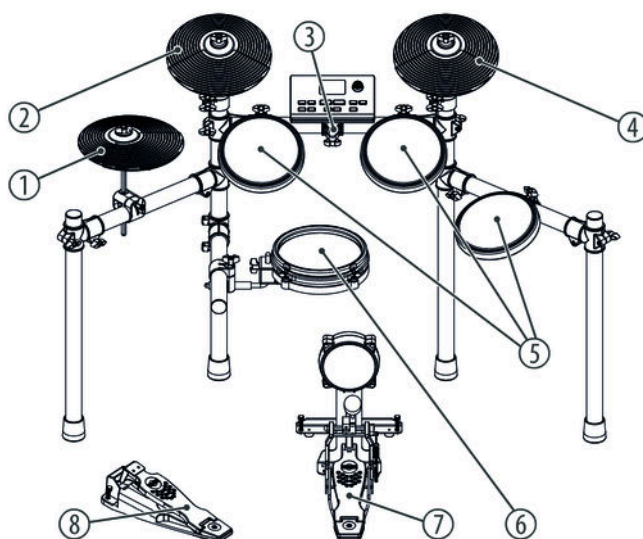
1	Hi-hat cymbal
2	Crash Cymbal
3	Sound module
4	Ride Cymbal
5	Tom drums
6	Snare drum
7	Bass drum pedal
8	Hi-hat controller pedal

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6 Drum seat assembly (option)
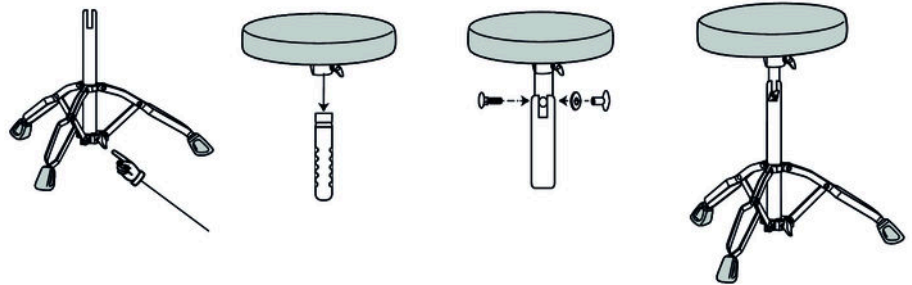
1. ▸ Pull out the legs of the seat and secure them with the wing nut.
2. ▸ Attach the drum seat to the height-adjustable pole and secure the seat with the wing nut.
3. ▸ Adjust the seat to the desired height as shown.

7 Installation

Set-up and cabling

Set up the pads and cymbals according to your needs. Connect the drum module at the back of the stand and wire all triggers to the drum module. Please observe the labelling on the rear of the drum module and the labelling on the individual cable ends. Finally check that all cables between the pads and the drum module have been properly connected.
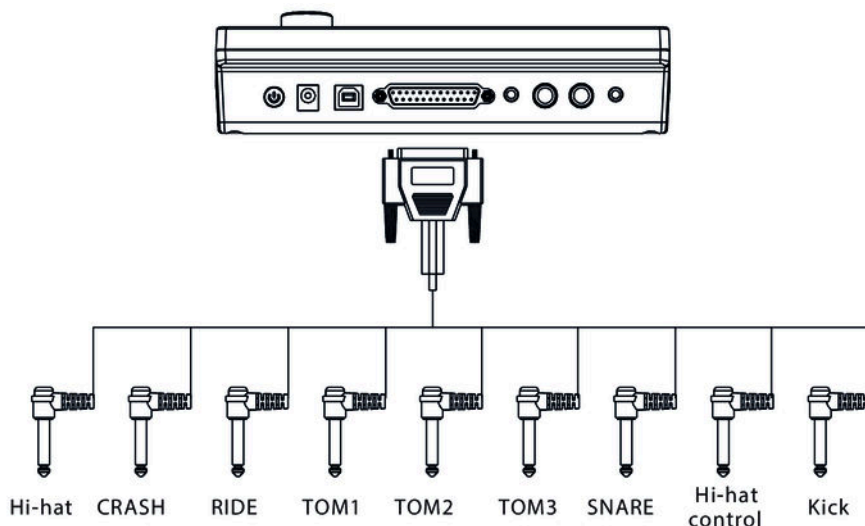
Hi-hat controller

■ You produce a closed hi-hat sound when you pedal the hi-hat controller while hitting the hi-hat

■ You produce an open hi-hat sound when you do not pedal the hi-hat controller while hitting the hi-hat

■ You produce the hi-hat pedal sound when pedalling the hi-hat controller directly without hitting the hi-hat

■ An open hi-hat sound changes smoothly to a closed hi-hat sound when you pedal the hi-hat controller while hitting the hi-hat.

Connecting the power adapter
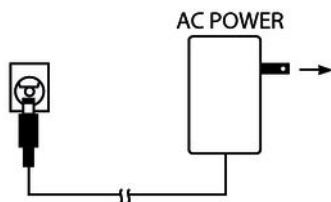
Connect the included power supply unit to the DC 9V input on the rear of the bottom case and then insert the power plug into the socket outlet.

Connecting USB devices

Connect your computer to the USB port on the rear panel of the drum module.

Connecting audio devices
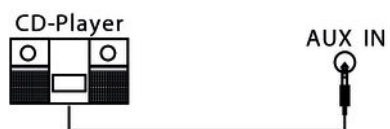
Connect audio devices like CD or MP3 player etc. to the AUX IN input socket on the rear panel of the drum module.

Connecting headphones
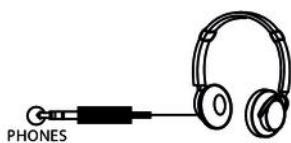
Connect your stereo headphones to the PHONES output on the rear panel of the drum module.

8   Connections and controls

Drum module top view
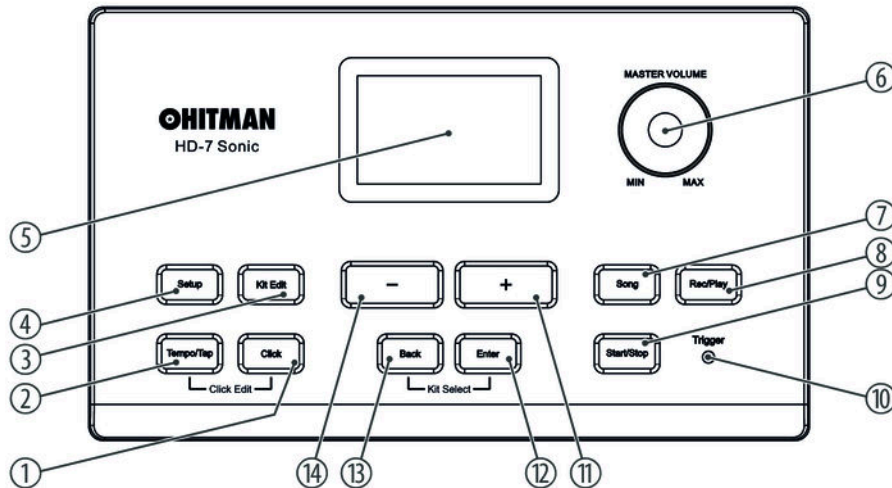
1	*[Click]*
	Turns the metronome on and off.
	By simultaneously pressing *[Tempo/Tap]*: Opens the metronome configuration.
2	*[Tempo/Tap]*
	Adjusts the tempo of the metronome and song playback.
	By simultaneously pressing *[Tempo/Tap]*: Opens the metronome configuration.
3	*[Kit Edit]*
	Opens the drum kit selection.
	Calls up the setting mode. In this mode, various device parameters can be adjusted and the standby function can be switched off and on.
4	*[Setup]*
	Sets various parameters, e.g. for threshold, velocity curve, effect, etc.
5	LED display
6	*[MASTER VOLUME]*
	Adjusts the volume of the e-drum module.
7	*[Song]*
	Opens the song selection menu.
8	*[Rec/Play]*
	Opens the menu for song record and playback.

9	*[Start / Stop]*
	Starts and stops song playback or recording.
10	LED *[Trigger]*
	Lights up when trigger pulses are generated.
11	*[+] / [–]*
	Scrolls forward or backward through drum kits, parameters, sounds, etc.
12	*[Enter]*
	Confirms a selected value or parameter. Activates the next submenu level.
	By simultaneously pressing *[Back]*: Back to drum kit selection menu.
13	*[Back]*
	Returns to the parent menu level without changing the displayed value.
	By simultaneously pressing *[Enter]*: Back to kit selection menu.
14	*[–] / [+]*
	Scrolls forwards or backwards through a displayed selection.

Display
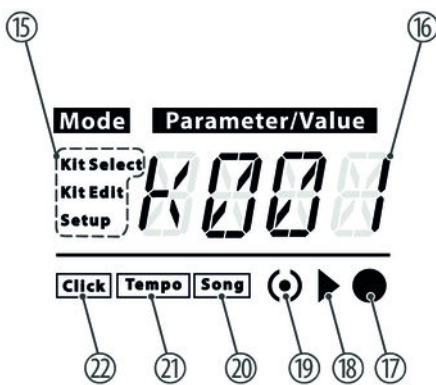
15	Shows the selected mode (kit select, kit edit, setup).
16	Shows the current selection (song, drum kit, parameter or value).
17	Shows that the recoding function is active.
18	Shows that the playback function is active.
19	Flashes to the beat when the metronome is active, during recording or during playback.
20	Shows that song mode is active.
21	Shows that tempo mode is active. The value shown in the display indicates in this mode the tempo of the metronome or of the song being played. By hitting the pad or with *[+] / [–]* , the tempo can be changed.
22	Shows that the metronome is active.

Rear of the drum module
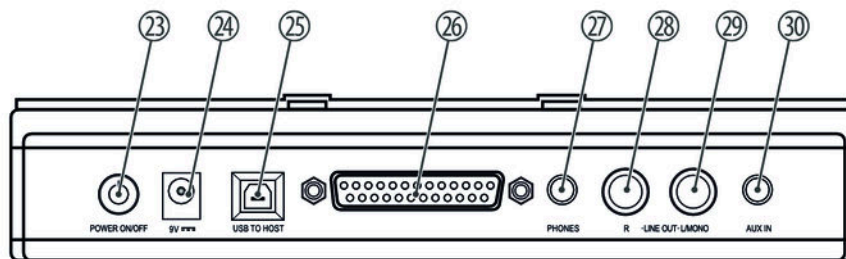
23	*[POWER ON/OFF]* Main switch. Turns the device on and off in mains operation.
24	Connection socket for the 9 V power supply unit
25	*[USB TO HOST]* USB port for connecting a computer with USB-MIDI interface.
26	Serial interface for connecting the pads and cymbals
27	*[PHONES]* Headphones (3.5-mm stereo mini jack)
28, 29	*[LINE OUT L/R]* Connecting option for external powered speakers or amplifiers.
30	*[AUX IN]* Input jack (3.5-mm stereo mini jack) for connecting audio devices, such as CD, MP3 players, etc.

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9 Operating

9.1 Functions

Switching on

> ⓘ *Check all cable connections for correct fit before turning on*
>
> *Before switching on, turn the volume control [MASTER VOLUME] on the drum module to minimum.*

▷ Turn the drum module on using the main switch *[POWER ON/OFF]* on the rear panel.

⇨ The display shows *'K001'*. You can now select a drum kit.

Adjusting the volume

1. ▷ Turn the *[MASTER VOLUME]* control to *[MIN]*.

2. ▷ Press *[Start / Stop]*.

3. ▷ Turn the *[MASTER VOLUME]* control clockwise until you hear the playing song at a comfortable volume.

⇨ The drum module volume is set.

4. ▷ Press *[Start / Stop]* to stop song playback.

Resetting the drum module to factory defaults

1. ▷ Turn the device on using the main switch *[POWER ON/OFF]*.

2. ▷ Simultaneously press *[+]* and *[–]*.

3. ▷ Turn the device back on using the main switch *[POWER ON/OFF]*.

⇨ The display shows *'RSET'*. All parameters of the drum module are reset to factory settings.

9.2 Drum kits

Selecting a drum kit

A drum kit is a compilation in which a certain sound and several sound parameters are assigned to each trigger. Selecting different drum kits lets you customise the sound of your e-drum sets in seconds to the desired music genre.

1. ▷ Simultaneously press *[Back]* and *[Enter]* to call up the menu item *'Kit Select'*. The display shows the number of the first preset drum kit.

2. ▷ Use *[+]* or *[–]* to select the desired kit.

Selecting an instrument

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Confirm the selection with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows the desired instrument. The following instruments are available:

Display	Instrument
KICK	Bass Drum
SNAR	Snare
SN-R	Snare Rim
TOM1	Tom 1
TOM2	Tom 2
TOM3	Tom 3
RIDE	Ride
CRSH	Crash
HH-0	Open hi-hat
HH-C	Closed hi-hat
HH-P	Hi-hat pedal
HH-S	Hi-hat splash

4. ▶ Use *[Enter]*, use *[+]* or *[–]* or a strong hit on the respective pad to select the desired instrument and confirm with *[Enter]*. You can now listen to the selection with *'Start/Stop'*.

5. ▶ Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

6. ▶ Simultaneously press *[+]* or *[–]* to restore the factory settings.

Setting the pad volume

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'LEVL'*.

3. ▶ Use *[Enter]*, use *[+]* or *[–]* or a strong hit on the respective pad to select the desired instrument and confirm with *[Enter]*.

4. ▶ Press *[+]* or *[–]* repeatedly until the display shows the desired volume value (display shows *'000'* … *'127'*). You can now listen to the selection with *'Start/Stop'*.

5. ▶ Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Setting the reverb

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'REVL'* and confirm with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows the desired value for the reverb effect (display shows *'000'* … *'127'*).

4. ▶ Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Setting the chorus

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'CHOL'* and confirm with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows the desired value for the chorus effect (display shows *'000'* … *'127'*).

4. ▶ Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Copying drum kits

You can copy drum kits from any of the 24 memory locations, to e.g. change the order of the drum kits.

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'COPY'* and confirm with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows the number of the drum kit you want to target.

4. ▶ Press again *[Enter]* to save the previously set drum kit to the number of the selected drum kit.

⇨ The display shows *'END'*. The drum kit previously stored on this number will be overwritten with the selected drum kit.

5. ▶ Press *[Back]*to return to the previous menu level without saving the settings.

Resetting the drum kit effects to factory defaults

You can separately reset the drum kit's instruments and effects to factory settings.

To reset the instruments to factory settings:

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'*.

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'REST'* and confirm with *[Enter]*.

⇨ The display shows *'END'*. The drum kit's instruments are reset to factory settings.

To reset the effects to factory settings:

1. ▶ Press *[Kit Edit]* to call up the menu for editing the drum kits. The display shows *'INST'* .

2. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'RSET'* and confirm with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows *'EFCT'* .

4. ▶ Press again *[Enter]*.

⇨ The display shows *'END'* . The drum kit's effects are reset to factory settings.

9.3 Setup

Configuring the triggers

The trigger function lets you set how the e-drum set responds to your playing style. You can set the parameters for sensitivity, threshold, velocity curve, and crosstalk.

1. ▶ Press *[Setup]* to call up the menu for editing the settings. The display shows *'TRIG'* .

2. ▶ Confirm the selection with *[Enter]*.

3. ▶ Press *[+]* or *[–]* repeatedly until the display shows the desired instrument.

4. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows the desired parameter you want to change. The following parameters are available:

Display	Function	
'RE-C'	Sets the sensitivity of the selected instrument (display shows *'001'* … *'008'*).	
'THRS'	Sets the threshold that must be exceeded for a pad to respond. This is to prevent a pad from responding to the vibrations of other pads (display shows *'000'* … *'050'* .	
'CURV'	Sets the velocity values for the selected instrument to define the type of response. There are four velocity curves to choose from.	
	'EASY'	Easily play the maximum MIDI Velocity 127
	'NORL'	Even transitions with velocity changes
	'DYN'	High adaptability to loud or quiet play
	'FID'	MIDI Velocity 100, regardless of the strength of the hit
'XTLK'	Sets the crosstalk value to avoid overlays caused by unintentionally addressed pads. If a pad unintentionally responds to the hit on another pad, this can be prevented by raising the crosstalk value for the respective pad (display shows *'000'* … *'080'*).	

5. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows the desired new value.

6. Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Using a drum pad as MIDI trigger (Local Off)

By hitting a pad, external audio sources can be triggered via USB without the pad itself being heard. This feature is called Local Off.

1. Press *[Setup]* to call up the menu for editing the settings. The display shows *'TRIG'*.

2. Press again *[Setup]*, *[+]* or *[–]* repeatedly until the display shows *'LOCL'*.

3. Press *[Enter]* and use *[+]* or *[–]* to select either *'Off'* or *'On'*. The default setting is *'On'*. In the *'Off'* setting, the pads are not addressed directly.

4. Press *[Enter]* and use *[+]* or *[–]* to select either *'Off'* or *'On'*. The default setting is *'On'*.

5. Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Turning off all drum kit effects

Many drum kits include effects like reverb and chorus by default. They can be turned off if e.g. external effects are to be fed in.

1. Press *[Setup]* to call up the menu for editing the settings. The display shows *'TRIG'*.

2. Press again *[Setup]*, *[+]* or *[–]* repeatedly until the display shows *'EFCT'*.

3. Press *[Enter]* and use *[+]* or *[–]* to select either *'REVB'* to turn the reverb effect on or off, or *'CHRS'* to turn the chorus effect on or off.

4. Press again *[Enter]* to save the selection. With *[Back]* to return to the previous menu level without saving the settings.

Enabling sleep mode

1. Press *[Setup]* to call up the menu for editing the settings. The display shows *'TRIG'*.

2. Press again *[Setup]*, *[+]* or *[–]* repeatedly until the display shows *'SAVE'*.

3. Press *[Enter]*, use *[+]* or *[–]* to select either *'On'* or *'Off'* and confirm the selection with *[Enter]*.

Display	Function
'On'	Sleep mode is activated. After 30 minutes inactivity, the unit will automatically switch off. To start from sleep mode, press *[POWER ON/OFF]* twice.
'Off'	Sleep mode is not activated.

Resetting triggers to factory defaults

1. ▶ Press *[Setup]* to call up the menu for editing the settings. The display shows *'TRIG'*.

2. ▶ Press again *[Setup]*, *[+]* or *[–]* repeatedly until the display shows *'REST'*.

3. ▶ Press *[Enter]*.

   ⇨ The display shows *'END'*. The values for the parameter sensitivity *'RE-C'*, threshold *'THRS'*, velocity curve *'CURV'* and crosstalk *'XTLK'* are reset to factory defaults.

9.4 Songs

1. ▶ Press *[Song]* to call up the song list. The display shows the number of the last selected song.

2. ▶ Use *[+]* or *[–]* to select the desired song.

3. ▶ Press *[Start / Stop]* to start or stop song playback.

Muting the drum track

The drum track in the preinstalled songs can be muted to, e.g., let you play the drums along with it yourself.

1. ▶ Press *[Song]* to call up the song list. The display shows *'S001'*.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'DRUM'*.

3. ▶ Press *[Enter]*, use *[+]* or *[–]* to select *'Off'* to mute the drum track. Confirm the selection with *[Enter]*.

When power is turned off, the setting is automatically reset to *'On'*.

Setting the drum track volume

The volume of the drum track in the preinstalled songs can be set separately.

1. ▶ Press *[Song]* to call up the song list. The display shows *'S001'*.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'DRLV'*.

3. ▶ Press *[Enter]* and use *[+]* or *[–]* to adapt the drum track volume. Simultaneously press *[+]* and *[–]* to reset the volume of the drum track to factory settings (value 028). Confirm the selection with *[Enter]*.

When power is turned off, the drum track volume is automatically reset to factory setting.

Setting the accompaniment instruments volume

The volume of the accompaniment instruments in the preinstalled songs can be set separately.

1. ▶ Press *[Song]* to call up the song list. The display shows *'S001'*.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'ACCV'*.

3. ▶ Press *[Enter]* and use *[+]* or *[–]* to adapt the volume of the accompaniment instruments. Simultaneously press *[+]* and *[–]* to reset the volume of the accompaniment instruments to factory settings (value 028). Confirm the selection with *[Enter]*.

When power is turned off, the accompaniment instruments volume is automatically reset to factory setting.

Resetting mix to factory defaults

1. ▶ Press *[Song]* to call up the song list. The display shows *'S001'*.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'REST'*.

3. ▶ Press *[Enter]*.

⇨ The display shows *'END'*. The values for the songs are reset to factory settings.

9.5 Metronome

Setting the metronome volume

1. ▶ Simultaneously press *[Tempo/Tap]* and *[Click]* to call up the menu for editing the metronome.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'LEVL'*.

3. ▶ Press *[Enter]* and use *[+]* or *[–]* to adapt the volume of the metronome. Simultaneously press *[+]* and *[–]* to reset the metronome volume to factory settings (value 020). Confirm the selection with *[Enter]*.

Setting the metronome time signature

1. ▶ Simultaneously press *[Tempo/Tap]* and *[Click]* to call up the menu for editing the metronome.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'TYPE'*.

3. ▶ Press *[Enter]* and use *[+]* or *[–]* to select the desired time signature (display shows *'1–4'*, *'2–4'*, *'3–4'*, *'4–4'*, *'6–4'*, *'3–8'*, *'6–8'*, *'12–8'*). Simultaneously press *[+]* and *[–]* to reset the time signature of the metronome to factory settings (value 4 4). Confirm the selection with *[Enter]*.

Setting the metronome sound

1. ▶ Simultaneously press *[Tempo/Tap]* and *[Click]* to call up the menu for editing the metronome.

2. ▶ Press *[Enter]* and press *[+]* or *[–]* repeatedly until the display shows *'SOND'*.

3. ▸ Press *[Enter]* and use *[+]* or *[–]* to select one of the metronome sounds. Confirm the selection with *[Enter]*.

Resetting the metronome to factory defaults

1. ▸ Simultaneously press *[Tempo/Tap]* and *[Click]* to call up the menu for editing the metronome.

2. ▸ Press *[+]* or *[–]* repeatedly until the display shows *'REST'*.

3. ▸ Press *[Enter]*.

⇨ The display shows *'END'*. The values for the metronome are reset to factory settings.

9.6 Tempo

Changing the tempo

There are two ways you can change the tempo using the *[Tempo/Tap]* button.

1. ▸ Press *[Tempo/Tap]*. The display shows the currently set tempo.

2. ▸ Press *[+]* or *[–]* repeatedly until the desired value is shown (display shows *'020'* to *'240'*.

or:

3. ▸ Press *[Tempo/Tap]*. The display shows the currently set tempo.

4. ▸ Press *[Enter]*. The value of the currently set tempo is shown briefly in the display.

5. ▸ Rhythmically hit a pad four times to change the tempo. The new value is determined by the time interval between the four hits.

6. ▸ To reset the tempo to factory settings, simultaneously press *[+]* and *[–]*.

9.7 Record and playback

Record

1. ▸ Press *[Rec/Play]* and press *[+]* or *[–]* until the display shows *'RECD'*.

2. ▸ Press *[Start / Stop]* to start recording. Press *[Start / Stop]* again to stop recording.

Playback

1. ▸ Press *[Rec/Play]* and press *[+]* or *[–]* until the display shows *'PLAY'*.

2. ▸ Press *[Start / Stop]* to start playback. Press *[Start / Stop]* again to stop playback.

Deleting a recording

1. ▶ Press *[Rec/Play]* and press *[+]* or *[–]* until the display shows *'CLER'*.

2. ▶ Press *[Enter]*. The recording is deleted.

Specifying the start mode of the recording

1. ▶ Press *[Enter]* to select the start mode of the recording.

2. ▶ Press *[+]* or *[–]* repeatedly, to select *'SYN'* or *'AUTO'*. In *'SYN'* mode, recording starts automatically when you start playing. In *'AUTO'* mode, recording starts four bars after starting to play.

3. ▶ Press *[Enter]* to confirm the selection.

Resetting the device to factory defaults

1. ▶ Turn the device off using the main switch.

2. ▶ Simultaneously press *[+]* and *[–]* and keep the buttons pressed.

3. ▶ Turn the device back on using the main switch.

⇨ The display shows *'REST'*. All device settings are reset to factory settings.

10   Technical specifications

Input connections	USB port	USB 2.0 type B
	Combined trigger connection	1 × sub D
	AUX in	1 × 3.5 mm phone socket
Output connections	Headphones	1 × 3.5 mm phone socket
	Main output left	1 × 1/4" phone socket
	Main output right	1 × 1/4" phone socket
Voices	583	
Effects	Reverb, Chorus	
Drum kits	40 preset kits, 10 user kits	
Demo and practice songs	30 preprogrammed songs	
Power supply	Plug-in power supply (9 V ⎓ / 600 mA, centre positive)	
Dimensions (W × H × D)	1100 mm × 630 mm × 1050 mm	
Weight	15.6 kg	
Ambient conditions	Temperature range	0 °C…40 °C
	Relative humidity	50 %, non-condensing

Further information

Rack included	Yes
Seat included	No
Pedal included	Yes
Headphones included	No
Mesh Head Pads	Yes
Pads in Stereo	No
Number of direct outputs	0

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11 Cleaning

Components

Clean the externally accessible device parts regularly. The frequency of cleaning depends on the operating environment: wet, smoky or particularly dirty surroundings can cause more accumulation of dirt on the device parts.

- Clean with a soft dry cloth.
- Stubborn dirt can be removed with a slightly dampened cloth.
- Use only pH-neutral, solvent-free and non-abrasive cleaning agents. Never use cleaners containing alcohol or thinner.
- Do not place vinyl objects on the device, as vinyl may stick to the surface or cause it to discolour.

12   Protecting the environment

Disposal of the packaging material

For the transport and protective packaging, environmentally friendly materials have been chosen that can be supplied to normal recycling.

Ensure that plastic bags, packaging, etc. are properly disposed of.

Do not just dispose of these materials with your normal household waste, but make sure that they are collected for recycling. Please follow the notes and markings on the packaging.

Disposal of your old device

This product is subject to the European Waste Electrical and Electronic Equipment Directive (WEEE) in its currently valid version. Do not dispose with your normal household waste.

Dispose of this device through an approved waste disposal firm or through your local waste facility. When discarding the device, comply with the rules and regulations that apply in your country. If in doubt, consult your local waste disposal facility.

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13 Appendix

13.1 Kit list

No.	Name		No.	Name
1	Acoustic 1		26	Mute Standard 1
2	Acoustic 2		27	Mute Standard 2
3	Room		28	Electronic 1
4	Nine-oh		29	Mute Standard 3
5	Rock 1		30	Jazz 1
6	Dance Club		31	Jazz 2
7	Jazz		32	Latin 1
8	Rap-hop		33	Power Rock 1
9	Early R&B		34	Latin 2
10	Electronic 1		35	Power Rock 2
11	Crunch		36	Power Rock 3
12	Compressed		37	Electro Rock 1
13	Electronic 2		38	Hard Rock 1
14	Analog		39	Explosion
15	Drum Box 1		40	Electro Rock 2
16	Latin		41	User 1
17	Pop		42	User 2
18	Eight-oh		43	User 3
19	Electro-pop		44	User 4
20	Trash		45	User 5
21	Rock 2		46	User 6
22	Reggae-pop		47	User 7
23	Brush		48	User 8
24	Modern R&B		49	User 9
25	Drum Box 2		50	User 10

13.2 Song-style list

No.	Name	No.	Name
01	Rock Shuffle	16	Pop Ballad
02	Surf Pop	17	8 Beat Dance
03	Techno	18	8 Beat Modern
04	60's Rock	19	70's Disco
05	Hard Rock	20	Big Band
06	Pop Bossa	21	Country 8 Beat
07	80's Rock	22	3/4 Gospel
08	16 Beat	23	Soul
09	Pop Shuffle	24	8 Beat Two
10	Guitar Pop	25	Reggae
11	Modern 6/8	26	Swing Reggae
12	Swing Funk	27	English Waltz
13	Piano Ballad	28	Tango
14	Rap	29	Rhythm & Blues
15	16 Beat Ballad	30	Polka

13.3 Sound list

Group 1: Kick Drums			
01	Acoustic kick 1	12	Rock kick 2
02	Acoustic kick_2	13	Reggae-pop kick
03	Room kick 1	14	Brush kick
04	Room kick 2	15	Modern R&B kick
05	Rock kick 1	16	Big kick
06	Jazz kick 1	17	Rock kick 3
07	Early R&B kick	18	Rock kick 4
08	Compressed kick	19	Rock kick 5
09	Latin kick	20	8-oh kick
10	Pop kick	21	9-oh kick
11	Trash_kick	22	Dance club kick

23	Rap-hop kick		33	BD_DP50_Tape
24	Electronic kick 1		34	BD_DP50_Warm_Fatso
25	Electronic kick 2		35	BD_DP50_Warm_Tape
26	Analog kick		36	BD_DP50_X
27	Drum box kick 1		37	BD_DP50_Warm_X
28	Drum box kick 2		38	DM16_BD_Elec_1
29	Crunch kick		39	DM16_BD_Gated_2
30	Electro-pop kick		40	DM16_BD_Slap_1
31	Thick kick		41	DM16_BD_Slap_2
32	BD_DP50_Fatso			

Group 2: Snare Drums				
01	Acoustic snare 1		22	Rap-hop snare
02	Piccolo snare 1		23	Analog snare
03	Piccolo snare 2		24	Modern R&B snare
04	Room snare 1		25	Rock snare 5
05	Room snare 2		26	Electronic snare 1
06	Rock snare 1		27	Drum box snare 1
07	Rock snare 2		28	8-oh snare
08	Rock snare 3		29	Dance club snare
09	Rock snare 4		30	9-oh snare
10	Compressed snare		31	Drum box snare 2
11	Jazz snare		32	Crunch snare 1
12	Acoustic snare 2		33	Electronic snare 2
13	Acoustic snare 3		34	Analog snare 2
14	Trash snare		35	Crunch snare 2
15	Pop snare 1		36	Drum box snare 3
16	Reggae-pop snare		37	Noise snare
17	Brush snare		38	Reso-snare
18	Early R&B snare		39	Bubble snare
19	Pop snare 2		40	Acoustic rimshot 1
20	Latin snare + tambourine		41	Early R&B rimshot
21	Electro-pop snare		42	Pop rimshot 1

43	Piccolo rimshot 1		65	Piccolo snare 3
44	Rock rimshot 1		66	Piccolo rimshot 2
45	Jazz rimshot 1		67	Rock snare 6
46	Acoustic rimshot 2		68	Rock rimshot 3
47	Compressed rimshot		69	SD_DP50_Fatso
48	Room rimshot		70	SD_DP50_Tape
49	Pop rimshot 2		71	SD_DP50 warm_Fatso
50	Rock rimshot 2		72	SD_DP50_warm_Tape
51	Reggae-pop rimshot		73	MD16_SD_Fusion_1
52	Brush rimshot		74	MD16_SD_Acoust_1
53	Analog rimshot 1		75	MD16_SD_Killa_1
54	Modern R&B rimshot		76	MD16_SD_Acoust_1
55	Trash rimshot		77	Rim_DP50_Fatso
56	Drum box rimshot 1		78	Rim_DP50_Tape
57	8-oh rimshot		79	Rim_DP50 warm_Fatso
58	Dance club rimshot		80	Rim_DP50_warm_Tape
59	Electronic rimshot 1		81	Tamb_DP50_Fatso
60	Crunch rimshot		82	MD16_Stick_2
61	Electronic rimshot 2		83	MD16_Stick_3
62	Analog rimshot 2		84	MD16_SD_Ska_3
63	Drum box rimshot 2		85	MD16_Clap_1
64	Electro-pop rimshot			

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Group 3: Toms			
01	Acoustic tom 1 (high)	32	Rock tom 3 (mid)
02	Acoustic tom 1 (mid)	33	Rock tom 3 (low)
03	Acoustic tom 1 (low)	34	Rock tom 4 (high)
04	Acoustic tom 2 (high)	35	Rock tom 4 (mid)
05	Acoustic tom 2 (mid)	36	Rock tom 4 (low)
06	Acoustic tom 2 (low)	37	Rock tom 5
07	Room tom 1 (high)	38	Modern R&B tom (high)
08	Room tom 1 (mid)	39	Modern R&B tom (mid)
09	Room tom 1 (low)	40	Modern R&B tom (low)
10	Compressed tom (high)	41	Jazz tom (high)
11	Compressed tom (mid)	42	Jazz tom (mid)
12	Compressed tom (low)	43	Jazz tom (low)
13	Rock tom 1 (high)	44	Brush tom (high)
14	Rock tom 1 (mid)	45	Brush tom (mid)
15	Rock tom 1 (low)	46	Brush tom (low)
16	Rock tom 2 (high)	47	Early R&B tom (high)
17	Rock tom 2 (mid)	48	Early R&B tom (mid)
18	Rock tom 2 (low)	49	Early R&B tom (low)
19	Pop tom 1 (high)	50	Reggae-pop tom & timbale
20	Pop tom 1 (mid)	51	Reggae-pop tom & conga
21	Pop tom 1 (low)	52	Reggae-pop tom & conga
22	Pop tom 2 (high)	53	Latin tom & conga
23	Pop tom 2 (mid)	54	Latin tom & bongo
24	Pop tom 2 (low)	55	Electro-pop tom (high)
25	Tight tom (high)	56	Electro-pop tom (mid)
26	Tight tom (mid)	57	Electro-pop tom (low)
27	Tight tom (low)	58	Electro-pop tom 2 (high)
28	D-dub tom (high)	59	Electro-pop tom 2 (mid)
29	D-dub tom (mid)	60	Electro-pop tom 2 (low)
30	D-dub tom (low)	61	Trash tom (high)
31	Rock tom 3 (high)	62	Trash tom (mid)

63	Trash tom (low)		96	Dance club tom (low)
64	Crunch tom (high)		97	Tom_Dp50_01_Fatso
65	Crunch tom (mid)		98	Tom_Dp50_02_Fatso
66	Crunch tom (low)		99	Tom_Dp50_03_Fatso
67	Rap-hop tom (high)		100	Tom_Dp50_01_Tape
68	Rap-hop tom (mid)		101	Tom_Dp50_02_Tape
69	Rap-hop tom (low)		102	Tom_Dp50_03_Tape
70	Electronic tom 1 (high)		103	Tom_Dp50_01_warm_Fatso
71	Electronic tom 1 (mid)		104	Tom_Dp50_02_warm_Fatso
72	Electronic tom 1 (low)		105	Tom_Dp50_03_warm_Fatso
73	Electronic tom 2 (high)		106	Tom_Dp50_01_warm_Tape
74	Electronic tom 2 (mid)		107	Tom_Dp50_02_warm_Tape
75	Electronic tom 2 (low)		108	Tom_Dp50_03_warm_Tape
76	Analog tom (high)		109	Tom_Dp50_01_X
77	Analog tom (mid)		110	Tom_Dp50_02_X
78	Analog tom (low)		111	Tom_Dp50_03_X
79	9-oh tom (high)		112	Tom_Dp50_01_warm_X
80	9-oh tom (mid)		113	Tom_Dp50_02_warm_X
81	9-oh tom (low)		114	Tom_Dp50_03_warm_X
82	9-oh tom 2 (high)		115	Conga_DP50_H_Fatso
83	9-oh tom 2 (mid)		116	Conga_DP50_L_Fatso
84	9-oh tom 2 (low)		117	MD16_Tom_Elec_1
85	8-oh tom fall (high)		118	MD16_Tom_Elec_2
86	8-oh tom fall (mid)		119	MD16_Tom_Elec_3
87	8-oh tom fall (low)		120	MD16_Tom_1
88	Drum box tom 1 (high)		121	MD16_Tom_2
89	Drum box tom 1 (mid)		122	MD16_Tom_3
90	Drum box tom 1 (low)		123	MD16_Timb_1
91	Drum box tom 2 (high)		124	MD16_Timb_2
92	Drum box tom 2 (mid)		125	MD16_Timb_3
93	Drum box tom 2 (low)		126	MD16_Cow_03
94	Dance club tom (high)		127	MD16_Cow_02
95	Dance club tom (mid)			

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Group 4: Cymbals			
01	Crash cymbal 1	33	Cimbal ride plus bell 3
02	Crash cymbal 2	34	Latin ride & cowbell
03	Rap-hop crash	35	Cymbal ride plus bell 1
04	Mid crash 1	36	Cymbal ride plus bell 2
05	Mid crash 2	37	Trash ride
06	Dark crash	38	Electronic ride 1
07	18" crash 1	39	Electro-pop ride
08	18" crash 2	40	High ping ride
09	Mid splash	41	Drum box ride
10	High splash	42	9-oh ride crash
11	Crispy splash	43	Pie tin ride
12	Trash splash	44	Electronic ride 2
13	Small splash	45	Crunch ride
14	Electro splash	46	Electronic crash-ride
15	Dark splash	47	Electronic ride 3
16	Low crash 1	48	Ride_DP50_Fatso
17	Low crash 2	49	Ride_DP50_Tape
18	Analog crash	50	Crash_DP50_Tape
19	Electro-pop crash	51	Ride_DP50_Fatso
20	Dance club crash	52	Crash_DP50_Fatso
21	Electro crash 1	53	Shaker_DP50_Fatsp
22	Electro crash 2	54	MD16_Ride
23	Falling crash	55	MD16_Crash
24	Submarine crash	56	MD16_Whistle
25	Sizzle ride	57	MD16_Shaker
26	Sizzle ride plus bell	58	00105_Rim
27	Cimbal ride bell 1	59	000ed_Rim
28	Cimbal ride bell 2	60	00100_Rim
29	Low ride	61	000ea_Rim
30	Early R&B ride	62	00103_Rim
31	Ride crash	63	000e7_Rim
32	Brush ride	64	00110_Rim

65	000f1_Rim		81	000f4_Rim
66	00101_Rim		82	000fa_Rim
67	0010f_Rim		83	00108_Rim
68	000F0_Rim		84	0010a_Rim
69	00111_Rim		85	000ee_Rim
70	000e9_Rim		86	0010d_Rim
71	00104_Rim		87	000f9_Rim
72	000eb_Rim		88	0010b_Rim
73	00112_Rim		89	000f2_Rim
74	000fb_Rim		90	00107_Rim
75	00113_Rim		91	000ef_Rim
76	000fd_Rim		92	00106_Rim
77	0010c_Rim		93	00115_Rim
78	000f7_Rim		94	000fc_Rim
79	0010e_Rim		95	Ride_DP50_Fatso_Rim
80	000f8_Rim		96	Crash_DP50_Fatso_Rim

Group 5: Hi-hats			
01	Brush hat 1 closed		16	Rock hat 1 splash
02	Brush hat 1 foot		17	Rock hat 2 closed
03	Brush hat 1 open		18	Rock hat 2 foot
04	Brush hat 1 splash		19	Rock hat 2 open
05	Brush hat 2 closed		20	Rock hat 2 splash
06	Brush hat 2 foot		21	Small hat 1 closed
07	Brush hat 2 open		22	Small hat 1 foot
08	Brush hat 2 splash		23	Small hat 1 open
09	Room hat closed		24	Small hat 1 splash
10	Room hat foot		25	Small hat 2 closed
11	Room hat open		26	Small hat 2 foot
12	Room hat splash		27	Small hat 2 open
13	Rock hat 1 closed		28	Small hat 2 splash
14	Rock hat 1 foot		29	Snappy brush hat closed
15	Rock hat 1 open		30	Snappy brush hat foot

31	Snappy brush hat open		63	Electronic hat 2 foot
32	Snappy brush hat splash		64	Electronic hat 2 open
33	Trash hat closed		65	Electronic hat 2 splash
34	Trash hat foot		66	Analog hat closed
35	Trash hat open		67	Analog hat foot
36	Trash hat splash		68	Analog hat open
37	Early R&B hat closed		69	Drum box hat 1 closed
38	Early R&B hat foot		70	Drum box hat 1 foot
39	Early R&B hat open		71	Drum box hat 1 open
40	Early R&B hat splash		72	9-oh hat closed
41	Boom snap hat closed		73	9-oh hat foot
42	Boom snap hat open		74	9-oh hat open
43	Boom snap hat splash		75	9-oh hat splash
44	Rock hat 3 closed		76	Electro-pop hat closed
45	Rock hat 3 open		77	Electro-pop hat foot
46	8-oh hat closed		78	Electro-pop hat open
47	8-oh hat foot		79	Electro-pop hat splash
48	8-oh hat open		80	Modern R&B hat closed
49	Dance club hat closed		81	Modern R&B hat foot
50	Dance club hat foot		82	Modern R&B hat open
51	Dance club hat open		83	Modern R&B hat splash
52	Rap-hop hat closed		84	Drum box hat 2 closed
53	Rap-hop hat foot		85	Drum box hat 2 foot
54	Rap-hop hat open		86	Drum box hat 2 open
55	Rap-hop hat splash		87	Shaker hat closed
56	Electronic hat 1 closed		88	HHo_DP50_Fatso
57	Electronic hat 1 foot		89	HH_DP50_Fatso
58	Electronic hat 1 open		90	HHo_DP50_Tape
59	Crunch hat closed		91	HH_DP50_Tape
60	Crunch hat foot		92	TriOpen_DP50_Fatso
61	Crunch hat open		93	TriClosed_DP50_Fatso
62	Electronic hat 2 closed		94	MD16_HH_2

95	MD16_HH_1		97	MD16_HHo
96	MD16_HH_pedal			

Group 6: Percussion 1				
01	Agogo (high)		11	Triangle (open/mute)
02	Agogo (low)		12	Woodblock (high)
03	Agogo (high/low)		13	Woodblock (low)
04	Conga (high)		14	Woodblock (high/low)
05	Conga (low)		15	Shaker
06	Hand claps		16	Tambourine (down)
07	Timbale (high)		17	Tambourine (up)
08	Timbale (low)		18	Tambourine (up/down)
09	Triangle mute		19	Cowbell
10	Triangle open		20	8-oh cowbell

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Group 7: Percussion 2			
1	Tom_DP50_04_Fatso	33	Kit6_Tom3_Rim
2	Tom1_DR220e	34	Kit7_Tom1_Rim
3	Tom2_DR220e	35	Kit7_Tom2_Rim
4	Tom3_DR220e	36	Kit7_Tom3_Rim
5	MD16_Tabla_3	37	Kit8_Tom1_Rim
6	MD16_Tabla_4	38	Kit8_Tom2_Rim
7	MD16_Tabla_5	39	Kit8_Tom3_Rim
8	MD16_Tabla_4	40	Kit9_Tom1_Rim
9	MD16_Tabla_5	41	Kit9_Tom2_Rim
10	Tom1_DR220e	42	Kit9_Tom3_Rim
11	Tom2_DR220e	43	Kit10_Tom1_Rim
12	Tom3_DR220e	44	Kit10_Tom2_Rim
13	DMX606_Tom_01	45	Kit10_Tom3_Rim
14	DMX606_Tom_02	46	Kit11_Tom1_Rim
15	DMX606_Tom_03	47	Kit11_Tom2_Rim
16	Kit1_Tom1_Rim	48	Kit11_Tom3_Rim
17	Kit1_Tom2_Rim	49	Kit12_Tom1_Rim
18	Kit1_Tom3_Rim	50	Kit12_Tom2_Rim
19	Kit2_Tom1_Rim	51	Kit12_Tom3_Rim
20	Kit2_Tom2_Rim	52	Kit13_Tom1_Rim
21	Kit2_Tom3_Rim	53	Kit13_Tom2_Rim
22	Kit3_Tom1_Rim	54	Kit13_Tom3_Rim
23	Kit3_Tom2_Rim	55	Kit14_Tom1_Rim
24	Kit3_Tom3_Rim	56	Kit14_Tom2_Rim
25	Kit4_Tom1_Rim	57	Kit14_Tom3_Rim
26	Kit4_Tom2_Rim	58	Kit15_Tom1_Rim
27	Kit4_Tom3_Rim	59	Kit15_Tom2_Rim
28	Kit5_Tom1_Rim	60	Kit15_Tom3_Rim
29	Kit5_Tom2_Rim	61	Kit17_Tom1_Rim
30	Kit5_Tom3_Rim	62	Kit17_Tom2_Rim
31	Kit6_Tom1_Rim	63	Kit17_Tom3_Rim
32	Kit6_Tom2_Rim	64	Kit18_Tom1_Rim

65	Kit18_Tom2_Rim	92	Kit27_Tom2_Rim
66	Kit18_Tom3_Rim	93	Kit27_Tom3_Rim
67	Kit19_Tom1_Rim	94	Kit28_Tom1_Rim
68	Kit19_Tom2_Rim	95	Kit28_Tom2_Rim
69	Kit19_Tom3_Rim	96	Kit28_Tom3_Rim
70	Kit20_Tom1_Rim	97	Kit29_Tom1_Rim
71	Kit20_Tom2_Rim	98	Kit29_Tom2_Rim
72	Kit20_Tom3_Rim	99	Kit29_Tom3_Rim
73	Kit21_Tom1_Rim	100	Kit30_Tom1_Rim
74	Kit21_Tom2_Rim	101	Kit30_Tom2_Rim
75	Kit21_Tom3_Rim	102	Kit30_Tom3_Rim
76	Kit22_Tom1_Rim	103	Kit31_Tom1_Rim
77	Kit22_Tom2_Rim	104	Kit31_Tom2_Rim
78	Kit22_Tom3_Rim	105	Kit31_Tom3_Rim
79	Kit23_Tom1_Rim	106	Kit32_Tom1_Rim
80	Kit23_Tom2_Rim	107	Kit32_Tom2_Rim
81	Kit23_Tom3_Rim	108	Kit32_Tom3_Rim
82	Kit24_Tom1_Rim	109	MD16_Tom_Elec_1_Rim
83	Kit24_Tom2_Rim	110	MD16_Tom_Elec_2_Rim
84	Kit24_Tom3_Rim	111	MD16_Tom_Elec_3_Rim
85	Kit25_Tom1_Rim	112	MD16_Tom_1_Rim
86	Kit25_Tom2_Rim	113	MD16_Tom_2_Rim
87	Kit25_Tom3_Rim	114	MD16_Tom_3_Rim
88	Kit26_Tom1_Rim	115	MD16_TomB_3
89	Kit26_Tom2_Rim	116	MD16_TomB_4
90	Kit26_Tom3_Rim	117	MD16_TomB_5
91	Kit27_Tom1_Rim		

13.4 MIDI implementation

Function		Sent	Received	Notes
Basic Channel	Default	1-16 CH	1-16 CH	
	Changed	1-16 CH	1-16 CH	
Mode	Default	Mode 3	Mode 3	
	Messages	No	No	
	Altered	********	No	
Note Number		0 … 127	0 … 127	
	True voice	********	0 … 127	
Velocity	Note ON	Yes 9nH, v = 1…– 127	Yes 9nH, v = 1…– 127	
	Note OFF	Yes, 8nH, v = 0	Yes, 9nH, v = 0 or 8nh	
After Keys		No	No	
Pitch Bender		No	Yes	
Control Change	0.32	Yes	Yes	Bank Select
	1	No	Yes	Modulation
	5	No	Yes	Portamento Time
	6	Yes	Yes	Data Entry
	7	Yes	Yes	Volume
	10	No	Yes	Pan
	11	No	Yes	Expression
	64	No	Yes	Sustain
	65	No	Yes	Portamento
	66	No	Yes	Sostenuto
	67	No	Yes	Soft Pedal
	80, 81	Yes	Yes	DSP Type
	91, 93	Yes	Yes	DSP Depth
	100, 101	No	Yes	RPN LSB, MSB
	121	No	= (*1)	Reset All Controllers
Program Change	True	Yes 0 … 127	Yes 0 … 127	
System Exclusive		No	No	
System Common	Song Position	No	No	

Function		Sent	Received	Notes
	Song Select	No	No	45
	Tune	No	No	
Aux Messages	Local ON/OFF	No	Yes	
	All Notes OFF	Yes	Yes	
	Active Sense	No	Yes	
	Reset	No	Yes	

Mode 1: OMNI ON, POLY. Mode 2: OMNI ON, MONO. Mode 3: OMNI OFF, POLY. Mode 4: OMNI OFF, MONO

*1: Registered parameter number: #0: Pitch sensitivity, #1: Fine tuning, #2: Coarse tuning in half-tones

HD-17 Mako

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