



behringer LM DRUM Classic Hybrid Sampling Drum Machine User Guide

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Specifications

- Product Name: LM DRUM
- Type: Classic Hybrid Sampling Drum Machine
- Features: 109 Drum Sounds, Sample Recording, 64-Step Sequencer, Wave Designer, Dual-Mode Filter
- Version: 0.0

Product Usage Instructions

- **Powering On the LM DRUM:** To power on the LM DRUM, plug the device into a power outlet using the provided power adapter. Press the power button located on the top or rear panel of the machine.
- **Selecting Drum Sounds:** Use the control knobs or buttons on the top panel to navigate through the 109 available drum sounds. Select the desired sound by pressing the corresponding button or turning the knob.
- **Sample Recording:** To record samples, press the sample recording button and start playing your desired sound or rhythm on the connected instrument. Press the stop button to end the recording process.
- **Sequencing Beats with the 64-Step Sequencer:** Utilize the 64-step sequencer to create intricate drum patterns. Input beats by pressing the step buttons in sequence or using the built-in pattern editor.
- **Wave Designer and Dual-Mode Filter:** Experiment with sound manipulation using the Wave Designer feature to shape and modify drum sounds. Additionally, adjust the filter settings to achieve different tonal qualities.

Important Safety Instructions

- Terminals marked with this symbol carry electrical current of sufficient magnitude to constitute risk of electric shock. Use only high-quality professional speaker cables with ¼" TS or twist-locking plugs pre-installed. All other installation or modification should be performed only by qualified personnel.
- This symbol, wherever it appears, alerts you to the presence of uninsulated dangerous voltage inside the enclosure - voltage that may be sufficient to constitute a risk of shock.
- This symbol, wherever it appears, alerts you to important operating and maintenance instructions in the accompanying literature. Please read the manual.
- Caution To reduce the risk of electric shock, do not remove the top cover (or the rear section). No user serviceable parts inside. Refer servicing to qualified personnel.
- Caution To reduce the risk of fire or electric shock, do not expose this appliance to rain and moisture. The apparatus shall not be exposed to dripping or splashing liquids and no objects filled with liquids, such as vases, shall be placed on the apparatus.
- Caution These service instructions are for use by qualified service personnel only. To reduce the risk of electric shock do not perform any servicing other than that contained in the operation instructions. Repairs have to be performed by qualified service personnel.

Warning

Please refer to the information on the exterior of bottom enclosure for electrical and safety information before installing or operating the device.

1. Please read and follow all instructions and warnings.
2. Keep the apparatus away from water (except for outdoor products).
3. Clean only with dry cloth.
4. Do not block ventilation openings. Do not install in a confined space. Install only according to manufacturer's instructions.
5. Protect the power cord from damage, particularly at plugs and appliance socket.
6. Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus (including amplifiers) that produce heat.
7. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other (only for USA and Canada). A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
8. Use only attachments and accessories recommended by the manufacturer.
9. Use only specified carts, stands, tripods, brackets, or tables. Use caution to prevent tip-over when moving the cart/apparatus combination.
10. Unplug during storms, or if not in use for a long period.
11. Only use qualified personnel for servicing, especially after damage.
12. The apparatus with protective earthing terminal shall be connected to a MAINS socket outlet with a protective earthing connection.
13. Where the MAINS plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
14. Avoid installing in confined spaces like bookcases.
15. Do not place naked flame sources, such as lighted candles, on the apparatus.
16. Operating temperature range 5° to 45°C (41° to 113°F).

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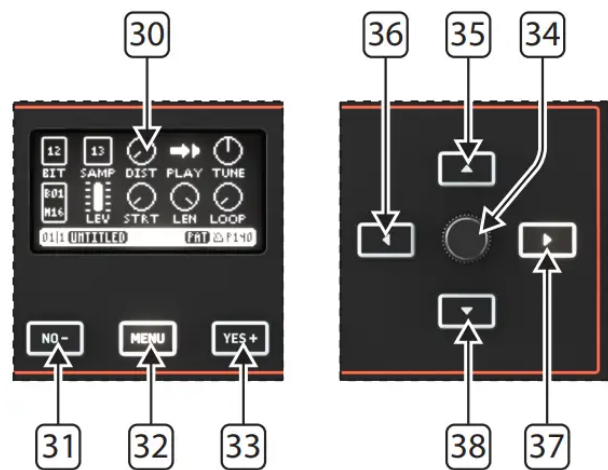
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INTRODUCTION

The Behringer LM DRUM is not just a recreation of the first sample based drum machine from the 1980s. On top of its iconic sounds the LM DRUM adds a more versatile programming environment, adapted from the RD-8 and RD-9; and the option to sample sounds and create banks of your own to use as you wish. It comes with up to date MIDI and USB connectivity, outputs for every voice, and can be linked to an electronic drumkit or pads and played as an instrument, with full velocity sensitivity. This manual is designed to help you customize your LM DRUM to your own requirements, and to help you get the best out of it. It is arranged in the same way as the Quick Start Guide that came in the box, but is able to go into much more depth.

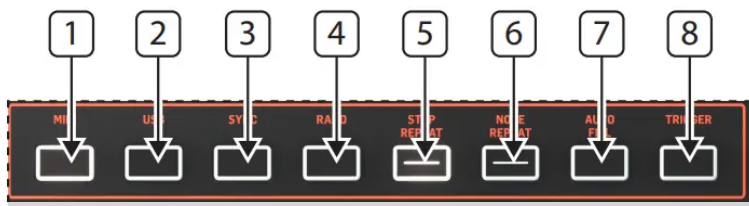
TOP PANEL

NAVIGATION



- When using the various menu pages navigation is performed using the four buttons surrounding the data control (35 – 38), the data control itself (34), and the no (31) and yes (33) buttons. On a single page menu, such as the MIDI menu, buttons 35 and 38 or the data control can be used to scroll through the options; and buttons 36 and 37 to move through the available options. Button 37 switches on any on/off option, while button 36 switches it off. Pressing the data control acts as an Enter button where necessary.
- When there are multiple pages, as is found in the main menu, then the yes button (33) steps forward into the sub-menu pages, and the No button (31) steps back. Note that the yes button can also be used to switch on an on/off option, but the no button either steps back a page or closes the menu rather than switching it off. Any menu can also be closed by pressing its access button a second time. In most instances it is not necessary to press enter to save altered options.

CONTROL SECTION



MIDI



- The MIDI button accesses the MIDI options menu, with the available alternatives RX Channel – choose between All, 1 – 16 or Out, which matches the RX channel to that selected for TX. TX Channel – choose between All, 1 – 16 or Off, which disables transmission of MIDI messages.
- Forward to USB – when this option is selected any MIDI messages received on the MIDI In socket, will be forwarded to the USB socket.
- Soft Thru – when this option is selected then the MIDI Out socket doubles as a second MIDI Thru.

USB

- The USB button accesses the USB options menu, with the available alternatives shown on the display:



- RX Channel – choose between All, 1 – 16 or Out, which matches the RX channel to that selected for TX.
- TX Channel – choose between All, 1 – 16 or Off, which disables transmission of MIDI messages.
- Forward to MIDI – when this option is selected any MIDI messages received on the USB socket, will be forwarded to the MIDI Out socket.

SYNC The sync button accesses the sync options menu, with the available alternatives shown on the display:



- **INT** – the internal clock will be used.
- **MIDI** – the LM DRUM will synchronize to MIDI clock on the MIDI In socket.
- **USB** – the LM DRUM will synchronize to MIDI clock on the USB socket.
- **TRIG** – the LM DRUM will synchronize to an analog clock on the Sync In socket.

- **TRIG RATE** – the clock value of the internal clock feeding the Sync Out socket, or the incoming Sync In when TRIG is selected can be set to either 1 pulse per step (pps), 1 pulse per quarter note (ppqn), 2 ppqn, 4 ppqn, 24 ppqn (default) or 48 ppqn. The selection does not affect MIDI or USB clocks, which will always be set to 24 ppqn.

RAND



- The LM DRUM can be set to allow the random triggering of sounds on any given step in a pattern. Pressing the rand button opens up the rand menu. Any number of sounds can be selected for randomization by using the voice select buttons (53). Any button that is flashing is not selected, those that are will be continuously lit. Use the data control and/or buttons 35 and 38 to scroll through the steps and buttons 36 and 37 to turn randomization on or off for any given step.
- Randomization is stored on a pattern-by-pattern basis.

STEP REPEAT



Step repeat is used to loop a number of steps. Use buttons 35 – 38 to select whether 1, 2, 4 or 8 steps will be repeated. Pressing the trigger button will cause that number of steps to repeat until the button is released. **NOTE REPEAT**

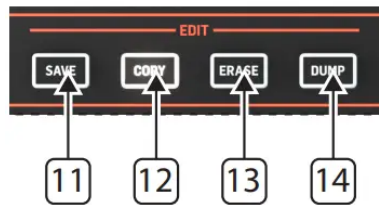
- Note repeat adds a rachet effect to any drum while playing. Use buttons 35 – 38 to select whether a note will repeat once, twice, four times or eight times. Use the voice select buttons (53) to select which drum will be affected. The selected drum's button will be continuously lit. In the case of the hi-hat if the closed hat is selected the button will light in red, open in white. Pressing the trigger button while a pattern is playing will add the selected number of repeats until the trigger button is released.
- Note that Note Repeat can also be programmed on a drum-by-drum basis in the main menu; and is stored separately for each pattern.

AUTOFILL Autofill is used to add a 'fill' pattern while the LM DRUM is in pattern mode and playing. Any pattern can be set as the Autofill pattern by pressing the Autofill button and using the corresponding step/pad button (39) for the pattern required. When the fill has finished the LM DRUM will either revert to the pattern that was playing previously, or a new pattern if one has been selected while the fill was playing. **TRIGGER** The Trigger button will trigger whichever drum sound is selected when the LM DRUM is stopped or paused; or will activate step or note repeat when it is playing. **TEMPO**

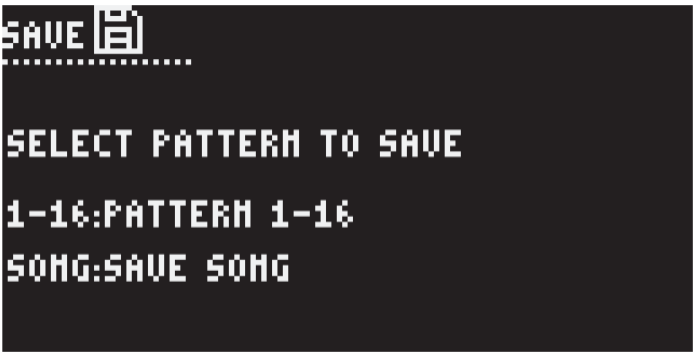
SECTION



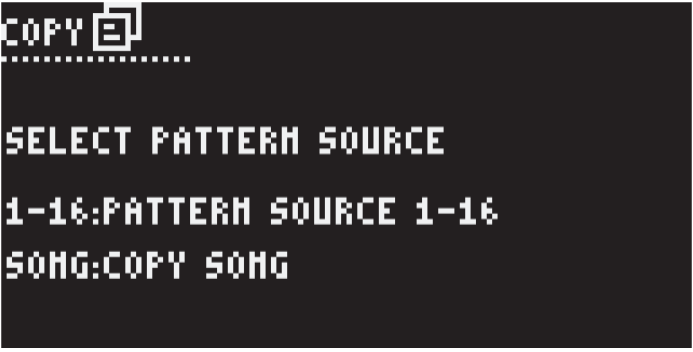
RATE The rate control is used to set the speed of the LM DRUM's internal clock, from 20 bpm to 240 bpm. Current tempo is shown at the bottom right of the default display. **TAP** Tap this button three times to set the tempo of the internal clock. Over-rides the rate control (9). Using the rate control after setting the tempo using the tap button allows the tempo to be adjusted from the tap setting. The tap button and rate control are also used to set the values for Swing, Probability and Flam. To access these press and hold the tap button and turn the rate control while on the default screen to scroll through Tempo, Swing, Probability and Flam. The current value of each is displayed in the bottom right hand corner. To adjust a value release the tap button and use the rate control or data control to set the required value. It is advisable to return to Tempo once other parameters have been adjusted. Swin s the o y one these i ms not o have ub-me u of its wn. The va e can be set between 25% and 75% with a default of 50% (no swing). **EDIT SECTION**



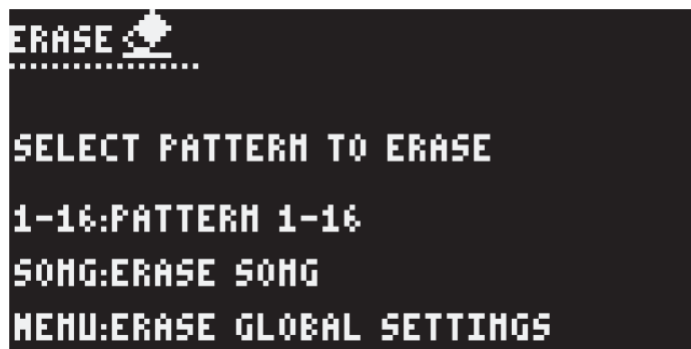
SAVE



This button is used to save the current pattern or song. Follow the instructions on the display to action. Pressing the pattern button while in save mode allows any of the sixteen patterns associated with the current song to be saved. Pressing the song button allows any of the eight songs in memory to be saved. The selection is made using the sixteen pad/step buttons. Press save again to confirm the save operation and exits the menu. **COPY**



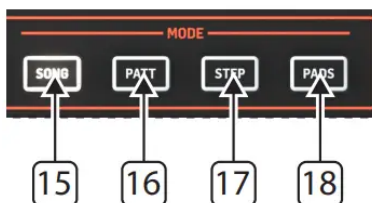
This button is used to copy patterns or songs to a different location. Pressing the pattern button while in copy mode allows any of the sixteen patterns associated with the current song to be selected for copying. Pressing the song button allows any of the eight songs to be selected, using the sixteen pad/step buttons. Once a pattern or song has been selected the copy button needs to be pressed again to confirm. After that a new location can be selected using the pad/step buttons. The copy is confirmed by pressing the copy button again and exits the menu. **ERASE**



The erase button allows any pattern, song or global settings to be erased for memory. Pressing the pattern button while in erase mode allows any of the sixteen patterns associated with the current song to be selected to be erased. Pressing song allows any of the eight songs to be selected, using the sixteen step/pad buttons. Pressing menu selects all of the global settings. Pressing the erase button again confirms the erasure and exits the menu. **DUMP**

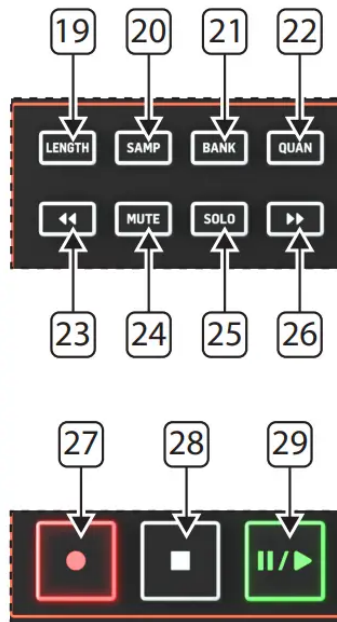


The dump button initiates a SysEx dump to a suitable piece of software, for example MIDIOX™ for Windows or SysEx Librarian™ for Mac, running on a computer connected to the LM DRUM's MIDI or USB port, selected using the MIDI or USB buttons when in the dump menu. Pressing the pattern button allows any of the sixteen patterns associated with the current song to be selected, pressing song allows any of the eight songs to be selected, using the step/pad buttons. Pressing the menu button dumps the global settings. Set the software to record and make the relevant selection, then press the dump button again to confirm. Once the dump is complete the LM DRUM will return to its default state. The dump will be available on your computer to be named and saved according to the software settings. **MODE SECTION**

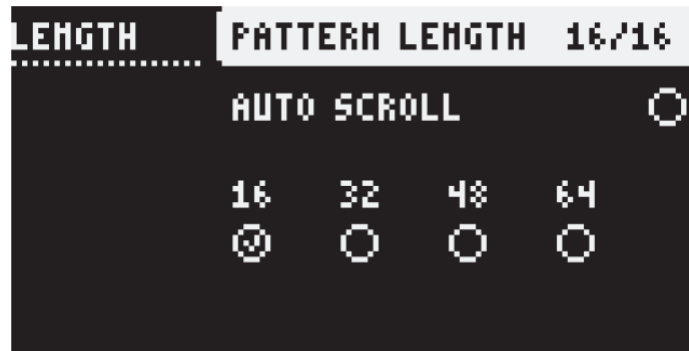


SONG This button is used to enter song mode; and to select a song for saving, copying, erasing or dumping. **PATTERN** This button is used to enter pattern mode; and to select a pattern for saving, copying erasing or dumping. **STEP** This button is used to enter step mode, where patterns can be created in step time. **PADS** This button is used to enter pads mode, where patterns can be created in real time using the voice pads (39) or an external MIDI device such as an electronic drumkit. **See the PROGRAMMING section below for more detail on how these buttons are used.**

PROGRAM & PLAYBACK SECTION



LENGTH



- The length menu is used to set the length of the currently selected pattern, up to the maximum value of 64 steps. The default, as shown, is sixteen steps. To set the pattern length to another value use the sixteen step/pad buttons in conjunction with the forward (26) and back (23) buttons. For values under sixteen steps press the step/pad button with the required number on it. All buttons associated with steps above this value will flash.
- For values above sixteen steps use the forward button to move to one of the upper blocks, which will be indicated on the display, then press the button with the required number. The number of steps is displayed in the top right hand corner of the display.
- Autoscroll allows the playhead to move between blocks of steps when playing or programming, so that the current block is represented on the step/pad buttons. When length is selected the copy button will flash. Pressing copy copies the current step block. To paste use the << and >> buttons to move to a different block, then press save to complete the process.

SAMPLE This button is used to access the user sampling menus, which are described in the SAMPLING section below.

BANK

LM2	
000:OFF	0.00KB
001:LM2-BASS1	8.00KB
002:LM2-BASS2	8.00KB
003:LM2-SHARE1	8.00KB
004:LM2-SHARE2	8.00KB
005:LM2-SIDESTICK	8.00KB
006:LM2-HIGH HAT	32.0KB

This button is used to select a sound/sample bank to be used when programming patterns to make up a song. There are sixteen banks, each of which contains 127 sample slots. The banks are factory loaded as follows:

Bank 1	LM 2 drums
Bank 2	LM 1 drums
Bank 3	LM9000 drums
Bank 4	DT drums
Bank 5	SDS drums
Bank 6	TMC drums
Bank 7	All samples from banks 1 - 6

The other banks are empty. Slots in banks 1-7 that are not used for the default samples are also empty, and can be used for user samples, which can be allocated to the step/pad buttons instead of the default sounds, as described in the SAMPLING section below. The required bank is selected using the step/pad buttons. A sample can be previewed by highlighting it then holding the Tap button and pressing Yes. **Pressing the navigate right button (37) opens up a sub-menu:**

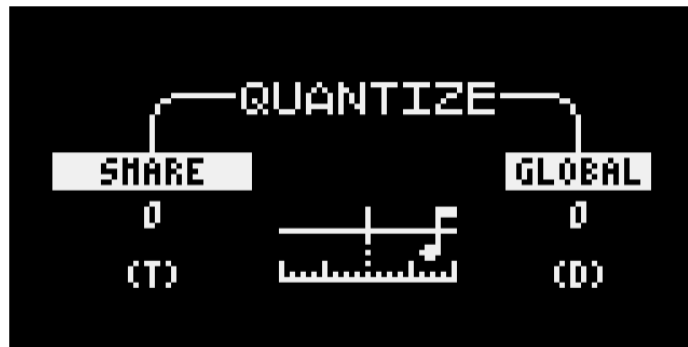
L	
000:OFF	SELECT ALL
001:LM2-BASS1	SELECT UNUSED
002:LM2-BASS2	DESELECT ALL
003:LM2-SHARE1	UNLOAD
004:LM2-SHARE2	REPLACE
005:LM2-SIDEST:	
006:LM2-HIGH Hf	

The options are:

- **SELECT ALL** – selects all the samples in the bank. A tick appears next to each.
- **SELECT UNUSED** – selects all sample locations that are not assigned to a pad. A tick appears next to each.
- **DESELECT ALL** – deselects all samples.
- **UNLOAD** – removes either the sample that is highlighted, or all selected samples from the bank. Yes or No must be pressed to either complete this action or to abort it.
- **REPLACE** – allows a different sample to replace the current highlighted sample. Pressing the data control opens a list of samples, use the data control or navigation buttons 35 and 37 to navigate to the new sample, then Yes to replace or No to abort.
- Pressing and holding the Tap button and pressing Bank opens the bank naming sub-menu. Use buttons 36 and 37 to navigate through the character slots and buttons 35 and 38 or the data control to change the character.

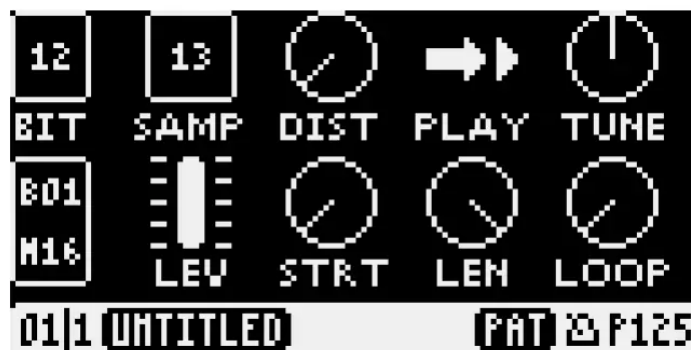


QUAN



This button is used to set the quantization for real time programming. Use the data control (34) to adjust global quantization; and the rate control (9) in conjunction with the voice select buttons (53) to adjust an individual voice. Both have a range of 0 (default) to 127. Quantization can be switched on and off when recording by pressing and holding the record button and pressing play. **BACK** This button is used to step backward through groups of steps when running a pattern of more than 16 steps in length. **MUTE** This button is used in conjunction with the select buttons (53) to mute and unmute voices during playback and programming. **SOLO** This button is used in conjunction with the select buttons (53) to solo voices during playback and programming. **FORWARD** This button is used to step forward through groups of steps when running a pattern of more than 16 steps in length. **RECORD** This button is used to put the LM DRUM into record mode. Press play (29) to start recording. See PROGRAMMING below. **STOP** This button is used to stop recording or playback. The current pattern or song will revert to its first step. **PLAY/PAUSE** This button is used to start playing back a pattern or song. A second press will pause playback; a third will resume from the point at which it was paused.

MENU SECTION DEFAULT MENU



The default menu is that which shows on the display when none of the sub-menus accessed by the Menu button, as described below, is in use. It shows the settings of various parameters and alters when they are changed. Some parameters can only be selected for editing in this screen, some can be edited in this or the second screen. When a parameter is changed the changes are automatically saved. Edits are non-destructive, so making further adjustments is possible. **TOP ROW**(left to right)

- **BIT** – shows the bit level of the current sample being played. The default sampling is 12 bit, but this can be altered using the bitcrusher (see below).
- **SAMP** – shows which sample is assigned to the most recently used pad, which will be edited by other controls.
- **DIST** – introduces distortion to the current sample.
- **PLAY** – shows which PLAY option has been selected: Forward (default), Forward Looping, Reverse Looping or Reverse selected with the data control. Pressing and holding the Tap button allows the sample's decay to be adjusted using the data control, in the range 10 ms to 10 seconds.
- **TUNE** – if the sample is one of those that has a tuning control (see below) then the position and value of the tuning is shown here.

MIDDLE ROW (left to right)

- Bxx – shows the current sample bank in use.
- Mxx – shows the current step block (16, 32, 48 or 64). If autoscroll is enabled this will show as Axx. Autoscroll can be quickly enabled by pressing and holding the Tap button and pressing >> (Fwd); or disabled by pressing and holding Tap and pressing << (Back).

MUTE This button is used in conjunction with the select buttons (53) to mute and unmute voices during playback and programming. **SOLO** This button is used in conjunction with the select buttons (53) to solo voices during playback and programming. **FORWARD** This button is used to step forward through groups of steps when running a pattern of more than 16 steps in length. **RECORD** This button is used to put the LM DRUM into record mode. Press play (29) to start recording. See PROGRAMMING below. **STOP** This button is used to stop recording or playback. The current pattern or song will revert to its first step. **PLAY/PAUSE** This button is used to start playing back a pattern or song. A second press will pause playback; a third will resume from the point at which it was paused.

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- SAMP – shows which sample is assigned to the most recently used pad, which will be edited by other controls.
- **DIST** – introduces distortion to the current sample.
- **PLAY** – shows which PLAY option has been selected: Forward (default), Forward Looping, Reverse Looping or Reverse selected with the data control. Pressing and holding the Tap button allows the sample's decay to be adjusted using the data control, in the range 10 ms to 10 seconds.
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MIDDLE ROW (left to right)

- Bxx – shows the current sample bank in use.
- **Mxx** – shows the current step block (16, 32, 48 or 64). If autoscroll is enabled this will show as Axx. Autoscroll can be quickly enabled by pressing and holding the Tap button and pressing >> (Fwd); or disabled by pressing and holding Tap and pressing << (Back).

- **LEV** – allows the level of the sample to be altered. The default is the maximum of 127.
- **STRT** – shows the start point of the current sample. Samples can be edited to have a different start point (see SAMPLING section below).
- **LEN** – shows the length of the current sample. Samples can be edited to shorten their length (see SAMPLING section below).
- **LOOP** – shows whether looping is in use on the current. Samples can have looping added to them in the editing process (see SAMPLING section below).

BOTTOM ROW (left to right)



- 01 – shows the current pattern number, from 1 - 16
- 1 – shows the current song number, from 1 – 8
- UNTITLED – by default the pattern name is set as UNTITLED. To change this press and hold the tap button, then press the pattern button to open the naming menu: Use the left and right navigation buttons (36 & 37) to move the cursor and the up and down buttons (35 & 38) to change the character. Yes to save, No to abort. Tap and any navigation key or the data control to edit, tap & No to delete an unwanted character, tap & Yes to insert a character.
- MODE – shows whether the play mode is PAT(tern), SON(g) or SET(list). P130 – depending on the preceding symbol this number shows:

Tempo Flam Probability Swing To edit the current sample press down on the data control to call up the second screen:



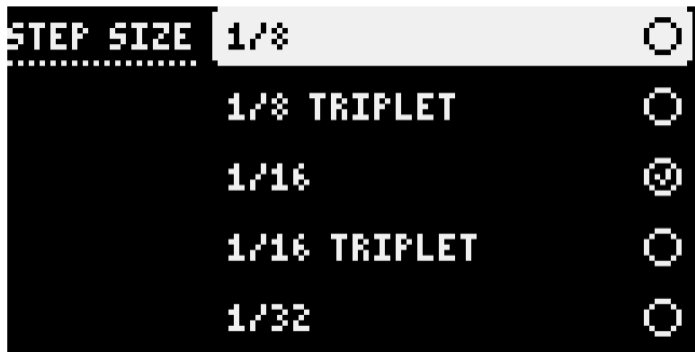
- Use the navigation controls to select which parameter is to be edited, and the data control to change the settings. A further press of the data control reverts to the main default screen, where it is still possible to edit these parameters:
- **SAMP** – allows a different sample from the current bank to be used instead of the current one.
- **DIST** – allows distortion to be introduced to the sample. Range is 0 – 127, default is 0.
- **PLAY** – alters the way that the sample is played: FWD (forward, default), FWD-L (forward looping), REV-L (reversed looping), REV (reversed).
- **TUNE** – allows the tuning of any sample which also has a physical tune control, in the range -24 to +24 semitones, with a default of 0. If the sample does not have a physical tuning control then this option will not be shown.
- **LEV** – allows the level of the sample to be reduced from the default value of 127 to 0.

- **STRT** – allows the start point of the sample to be adjusted from the current start point to the end of the sample.
- **LEN** – allows the length of the sample to be adjusted, back from the end to the start.
- **LOOP** – sets the looping start point within the sample. Default is off, which means that no looping takes place. The use of the navigation controls is described in the NAVIGATION section above.

MENU This button is used to enter the main menu options. Use the data control, or buttons 35 and 38 to scroll through the options, and button 37 or Yes button (33) to access each sub-menu. Use the No button (31) to exit a sub-menu.



Step Size



Use this option to set the step size. The setting depends on whether Step Size has been set to pattern, song or global in the Preferences sub-menu (see below). Available options are 1/8th note, 1/8th triplet, 1/16th note (default), 1/16th triplet or 1/32nd note.

Probability

PROB	SHARE 01	<input checked="" type="radio"/>
	SHARE 02	<input type="radio"/>
	SHARE 03	<input type="radio"/>
	SHARE 04	<input type="radio"/>
	SHARE 05	<input type="radio"/>

If the probability range has been set to anything other than 100% using the tap button and rate control as described above then the probability sub-menu can be used on a drum-by-drum basis to select the steps on which Probability is active. A rate of 100% means that a selected drum programmed on a selected step will always sound, a setting of 50% means that it will only sound half the time, and 0% means that it will never sound. This allows a degree of variance to be introduced to your patterns without having to program it in. The Options sub-menu allows probability to be set on a pattern, song or global level. **Flam**

FLAM	SHARE 01	<input checked="" type="radio"/>
	SHARE 02	<input type="radio"/>
	SHARE 03	<input type="radio"/>
	SHARE 04	<input type="radio"/>
	SHARE 05	<input type="radio"/>

As with probability the amount of flam is set using the tap button and rate control, and its level of use is set in preferences. The flam sub-menu allows it to be selected on a drum-by-drum, step-by-step basis. **Note Repeat**

REPEAT	SHARE 01	OFF
	SHARE 02	OFF
	SHARE 03	OFF
	SHARE 04	OFF
	SHARE 05	OFF

Note repeat is set on a pattern basis only and can be set on any step for any drum. The available values are Off (default), 1, 2, 4 or 8. **Polymeter**

POLYMER	BASS	16
	SHARE	16
⊙	SIDESTICK	16
ON/OFF	CLOSED HAT	16
	OPEN HAT	16

- Polymeter, as opposed to polyrhythm, works by having different step numbers for different drums within a pattern. So, for example, in a sixteen step pattern if the bass drum is set to 16 steps then it will repeat with the pattern, whereas if

the hi hat is set to 7 steps then its pattern will play twice followed by the first two steps before the pattern repeats. It is a concept that is worth exploring to discover the possibilities.

- In the sub-menu polimeter can be switched on or off using the >> (forward) button (26) or off with the << (back) button (23), then the step length for any drum can be set using the navigation and data controls. The default step length is sixteen. As with other parameters the preferences sub-menu allows polimeter to be set on a pattern, song or global basis.

Filter

FILTER		SEQ STEP 01	127
		SEQ STEP 02	127
		SEQ STEP 03	127
○ AUTO		SEQ STEP 04	127
		SEQ STEP 05	127

- The filter sub-menu allows a filter cutoff value, in the range 0 – 255, with a default of 127, to be set for each step in a pattern Like the other parameters the filter can be set to be on the basis of individual patterns, songs or global.
- The filter cutoff can also be recorded into a pattern by putting the pattern into step record with the filter switched on and turning the cutoff control(see ANALOG FILTER and RECORDING below).
- Use the auto button to switch the filter automation on or off.

Preferences

The preferences sub-menu allows the settings for various parameters:

- Tempo (pattern (default), song, global)
- Swing (pattern (default), song, global)
- Probability (pattern (default), song, global)
- Flam (pattern (default), song, global)
- Filter HPF (pattern, song, global (default))
- Filter On (pattern, song, global (default))
- Filter Auto (pattern (default), song, global)
- Polymeter (pattern (default), song global)
- Metronome (pattern (default), song, global)
- Step Size (pattern (default), song, global)
- Auto Scroll (pattern, song, global (default))
- FX Bus (pattern, song, global (default))
- Mute (pattern, song, global (default))
- Solo (pattern, song, global (default))
- Bank (pattern (default), song, global)

MIDI Map

Note #	Note Name	Controls Drum / Transmitted
36	C1	Bass Drum
37	C#1	Sidestick
40	E1	Snare Drum
42	F#1	Closed Hi-hat
46	A#1	Open Hi-hat
49	C#2	Crash Cymbal
51	D#2	Ride Cymbal
50	D2	Hi Tom
47	B1	Mid Tom
45	A1	Lo Tom
69	A3	Cabasa
54	F#2	Tambourine
63	D#3	Hi Conga
64	E3	Lo Conga
56	G#2	Cowbell
39	D#1	Claps

The MIDI Map sub-menu allows the MIDI note assigned to each drum to be re-assigned. **Note** that the same note is used both for TX and Rx. The defaults are: **Trigger Assign**

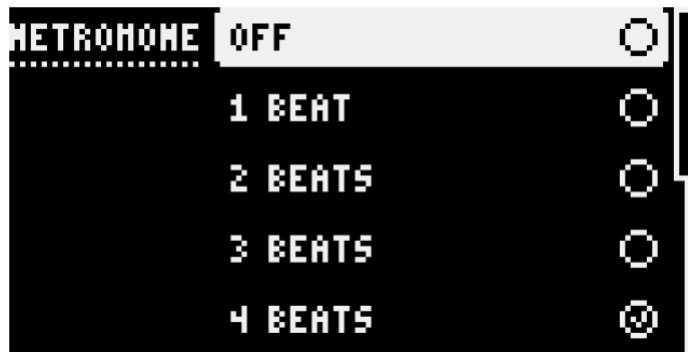
TRIGGER	TRIGGER 1	CABASA
	TRIGGER 2	TAMBOURINE
	TRIGGER 3	COWBELL

There are three analog trigger outputs on the rear panel of the LM DRUM, which can be assigned to trigger with specific drums. The defaults are:But these can be changed in this sub-menu. Note that these settings are Global only. **Bitcrusher**

BITCRUSH	BASS	12BIT
	SNARE	12BIT
	SIDESTICK	12BIT
	CLOSED HAT	12BIT
	OPEN HAT	12BIT

By default the LM DRUM sounds, and user samples (see SAMPLING below) are made at 12 bit at a sample rate of 24 kHz. The bit crusher allows any of the default sounds to have its bit rate changed in the range of 11 bit down to 1 bit. With

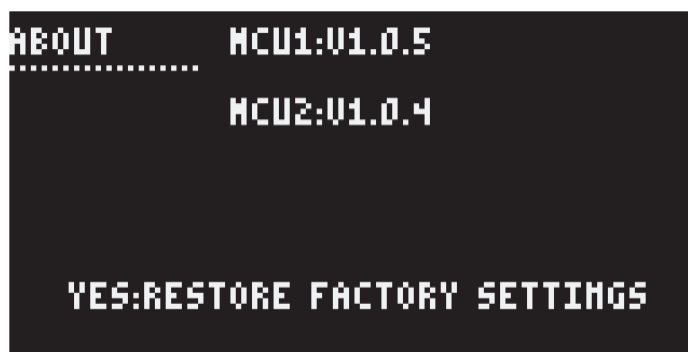
each reduction the sound of the drum becomes more grainy and distorted. **Metronome**



The metronome submenu allows the metronome to be switched off, or to sound on any number of beats between 1 and 9. The default setting is four beats. **Options** The options sub-menu controls various miscellaneous features of the LM DRUM:

- Random Closed Hat (0-127) – allows the LM DRUM to randomize the sample start point of the closed hi-hat, which allows for variations in its sound. Note that this can only be used if the sample is set to play forwards.
- Velocity THD (range 3 – 127, default 110) – when there is more than one sample available (Bass, Snare, Closed Hi Hat, Ried Cymbal, Cabasa and Tambourine) the setting of Velocity THD determines the velocity level at which the sample switches from first to second when using an external MIDI controller.
- Velo(city) Sens(itive) Pad (on / off (default)) - when Velo Sensitive Pad is set to off the velocity of each pad is fixed and sounds which have multiple samples will change sample at specified points. When it is set to on the pads are velocity sensitive, but will still switch samples as the velocity increases.
- Chromatic MIDI In – allows an external MIDI keyboard to play or program tunable sounds chromatically (see Chromatic Programming and Playing in the PROGRAMMING section).
- Sample Record Mode – the LM DRUM’s record mode can be changed between AGC (Automatic Gain Control (default)) where the gain is automatically controlled; NOR (Normalized) where samples will be adjusted to the highest gain setting after sampling (note: if you sample at too low a level then noise may be introduced) or RAW where the sample data is left unprocessed.
- Auto Save (on (default)/off) – allows the LM DRUM to periodically save your work. Cautionary note: even if Auto Save is switched on it is still good practice to regularly save what you are doing while programming and/or sampling.
- Beep On (on/off (default)) – turns the metronome sound used for real-time programming on or off.
- LCD Brightness (range 1 – 15, default 11) – sets the brightness of the display.
- LED Brightness (range 1 – 10, default 7) – sets the brightness of the LEDs, including those in the buttons.

About



The About sub-menu shows the current firmware version for each of the two MCUs and allows a restoration of factory settings using the Yes button (33). Note that factory restore will wipe out any programming, so please back up your work either to SynthTribe or a SysEx app such as MIDI OX™ for Windows, SysEx Librarian™ for Mac OS.

STEPS/PADS

39

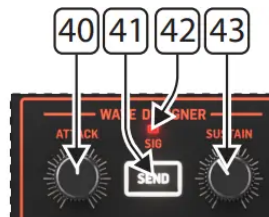


STEP/PAD BUTTONS The Step/Pad buttons have multiple functions, depending on which other buttons they are used with:

- When programming in step time they are used to place a specific drum (selected using the Voice Select buttons (53)) on the required step.
- When programming in real time they are used to play their associated drum sounds. Note that button 16 is used as a shift button to access the percussion sounds on buttons 1 – 8.
- They are used to select a pattern to play, record, copy, erase or dump.
- Buttons 1 – 8 are used to select a song to play, record, copy, erase or dump.

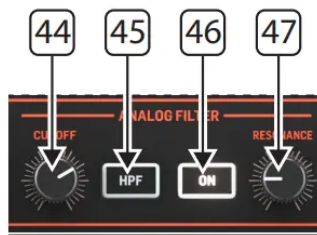
It will be noted that some sounds are present on multiple buttons (for example snare on 10, 11 and 12). In these instances the sounds are variations on the same sample rather than different samples.

WAVE DESIGNER



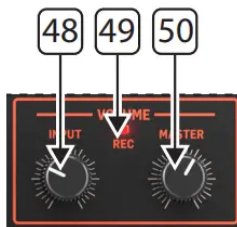
The wave designer, which is identical to that already used on the RD-8 and RD-9, is a means by which the transients of selected drums can be altered, via the attack and sustain controls. Please note that the Wave Designer can only be used on the main outputs, it does not affect the individual voice outs. Any sound selected for processing by the wave designer will also be fed to the analog filter. **ATTACK** This control is used to set the attack time for the wave designer. This enables sounds to become punchier by reducing the attack, or less immediate by increasing it. Set the control to 12 o'clock for no alteration of the sound. **SEND** This button is used to send selected voices to the wave designer and filter. To select voices for processing press the button until it flashes. The voice select buttons (53) can now be used to select the voices. Each selected voice will light up in pink. Press the button again, so that it is continuously lit, and processing can now take place. **SIG** This LED will light when a signal is present on the wave designer's input. **SUSTAIN** This control is used to set the wave designer's sustain level. Increasing sustain will lengthen the sound's peak, while decreasing it will act as a compressor. Set the control to 12 o'clock for no alteration of the sound. Note that at high levels noise may be introduced at the end of the sample, so care should be taken with the setting of this control.

ANALOG FILTER

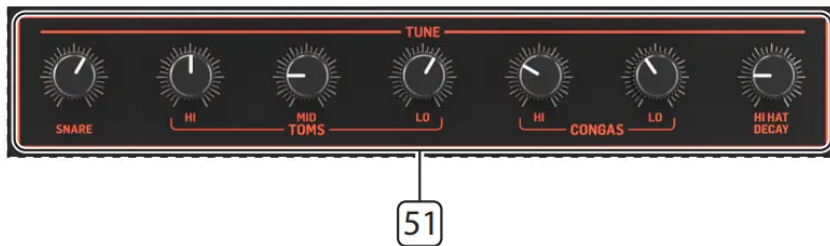


The analog filter is another porting from the RD-8 and RD-9; and allows the timbre of the LM DRUM's sounds to be altered as you would do when creating a sound on an analog synthesizer. Any sound that has been selected by the wave designer is subsequently fed to the analog filter, although the filter can be switched out if required. **CUTOFF** This control is used to set the cutoff frequency of the filter. When in its normal, low pass, mode turning the control counter-clockwise reduces the high frequency content of the samples, while turning it clockwise increases them. This action is reversed when the filter is in high pass mode. The filter cutoff can also be set using MIDI continuous controller #74. **HPF** This button is used to change the filter from its normal low pass mode (button unlit) to high pass mode (button lit). **ON** Use this button to switch the filter on (button lit) for the selected voice(s). **RESONANCE** This control is used to set the resonance level of the filter, which emphasizes the frequencies around the cutoff frequency. Note that unlike on many analog synthesizers it is not possible to make the LM DRUM filter self-oscillate by using high resonance settings.

VOLUME

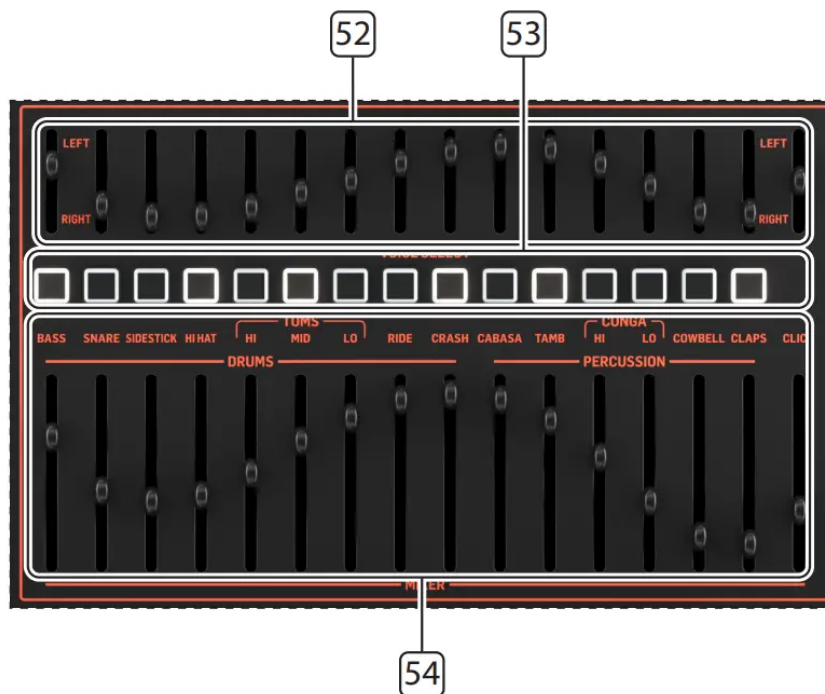


INPUT This control is used to set the input gain when recording user samples. Note that although it is optimized for receiving line level signals it is possible to get good results from a dynamic microphone at higher gain settings. Condenser microphones cannot be used, as there is no phantom power available. **REC** This LED will be lit when the LM DRUM is recording a user sample. **MASTER** This control is used to set the volume for the master outputs and headphone output.



TUNE CONTROLS These controls are used to tune the snares, toms and congas and set the hi-hat decay. Apart from hi-hat decay this can also be achieved using the following MIDI continuous controllers:

CC Number	Action
75	Snare Tuning
76	Hi Tom Tuning
77	Mid Tom Tuning
78	Lo Tom Tuning
79	Hi Conga Tuning
80	Lo Conga Tuning



PAN CONTROLS These controls are used to set the pan positions of the drums and metronome on the master outputs. When the controls are at the lowest position the drums will be panned hard right, at the top hard left. **VOICE SELECT** These buttons are used to select the required voice(s) for programming, muting, soloing, wave designer and filter. They also light up following the drums when the LM DRUM is being programmed or played with the pad buttons or an external MIDI controller. **MIXER** These controls are used to set the level of the drums and metronome on the master outputs. They do not affect the level of individual voice outputs. To remove a drum from the main output reduce its level to zero.

REAR PANEL

MAIN OUTPUTS Use these 6.35mm (1/4") TS unbalanced jack sockets to access the main outputs of the LM DRUM, with level set by the mixer (54) and panning by controls 52. If a mono output is required use only the left output. Note that sounds panned to the right will appear quieter than their mixed settings when the mono output is used. **HEADPHONE OUTPUT** Use this 6.35mm (1/4") TRS stereo jack sockets to monitor the LM DRUM's output using a suitable set of headphones. **REC INPUT** Use this 6.35mm (1/4") TS unbalanced jack socket to sample sounds into the LM DRUM's sample memory. Normally this would be a line level input, but with a higher gain setting a dynamic microphone can be used. Phantom power is not available. **VOICE OUTS** Use these 3.5mm TS jack sockets to output individual voices. The level on these sockets is unaffected by the mixer (54). **TRIGGER OUTS** Use these 3.5mm TS jack sockets to access +5 v analog triggers, which can be assigned to specified voices using the Trigger Assign menu or via the SynthTribe app. **SYNC IN** Use this 3.5mm TS jack socket to synchronize the LM DRUM to an external analog sync source. **SYNC OUT** Use this 3.5mm TS jack socket to synchronize external analog devices to the LM DRUM's internal clock. **MIDI IN** Use this 5-pin DIN socket to control the LM DRUM over MIDI. **MIDI OUT** Use this 5-pin DIN socket to control external MIDI devices from the LM DRUM's MIDI output. **MIDI THRU** Use this 5-pin DIN socket to mirror the MIDI In for use by external devices. **USB** Use this USB 2.0 Type B socket to control the LM DRUM over MIDI, to use the LM DRUM's MIDI output to control external devices, and to access functions and update firmware using the SynthTribe app. **POWER SOCKET** Use this socket to connect the LM DRUM to its 12 V 2000 mA PSU. Only use the supplied PSU to avoid damaging the LM DRUM. **POWER SWITCH**

PROGRAMMING

The LM DRUM's programming has a hierarchy of selection. First you select the song that you want to program, by pressing the song button (15) and using the first eight step/pad buttons to choose song 1 – 8. Then, within the song, select a pattern to program by pressing the pattern button (16) and using the step/pad buttons to select pattern 1 – 16. At this