MOTHER-32 MANUAL ADDENDUM
FIRMWARE UPDATE V2.0

MOTHER-32 FIRMWARE UPDATE V2.0

April 2020

VERSION 2.0

Version 2.0 is a comprehensive firmware update to Mother-32, adding some new sequencer functions, more versatility with MIDI and Clock functions, an enhanced Setup menu, and a variety of other new additions and improvements.

In order to begin enjoying these new features, you will first need to update your Mother-32.

WHAT YOU WILL NEED

- A Computer with internet access
- A USB-MIDI Cable or Interface with 5-Pin MIDI Output
- A program for sending MIDI SysEx files from your computer; free options include SysEx Librarian for OS X or Bome SendSX for Windows.

HOW TO UPDATE YOUR FIRMWARE

You will need a 5-pin (DIN) MIDI output device for your computer. Connect MIDI Out from the computer to MIDI In on the Mother-32. Use a program for sending MIDI SysEx files from your computer; free options include SysEx Librarian for OS X or Bome SendSX for Windows.

1. Connect your Mother-32 to your computer using a USB to MIDI cable or via your MIDI-enabled interface.

2. Download the newest Mother-32 Firmware from https://www.moogmusic.com/products/mother-32.

3. Open the downloaded .zip file.

4. Open the folder: “Mother-32_Firmware_v2.0”.

5. Copy these files from the folder to your SysEx application’s library:
- Mother-32_ERASE_firmware.syx
- Mother-32_Firmware_v2_0_0.syx

6. Send Mother-32_ERASE_firmware.syx from your SysEx application to your Mother-32 via your USB MIDI interface. Look for the Tempo LED to flash green/red; this means unit is now in boot-loader mode. The old firmware still needs to be erased.

7. Send Mother-32_ERASE_firmware.syx a second time – you should see two slow red blinks from the Tempo LED, then it will flash green on/off. The old firmware is now erased and the unit is ready for new firmware.

8. Send new main firmware (Mother-32_Firmware_v2_0_0.syx). Observe the MIDI LED flashing red and the Tempo LED flashing yellow during transfer.

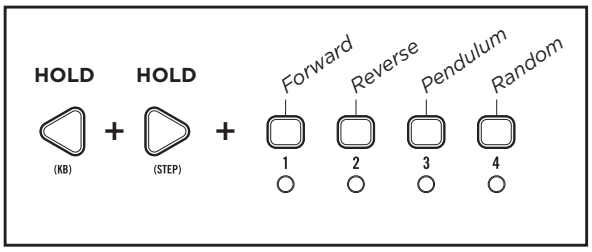
9. On completion, the Tempo LED will flash green 2-3 times and the unit will perform the normal boot-up light show sequence, indicating the update finished successfully.

If you have any questions or trouble with your update please contact techsupport@moogmusic.com.

NEW SEQUENCER FUNCTIONS

SEQUENCER PLAYBACK DIRECTION

The playback order of the notes being generated by the sequencer can be changed from Forward (normal/default), to Reverse (backward), to Pendulum (back & forth), or to Random.



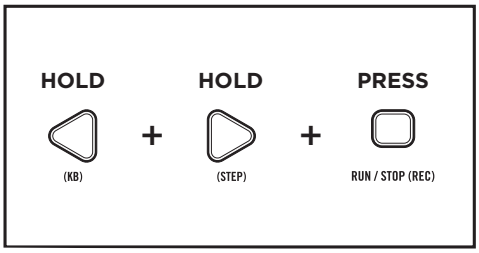
To set the playback order, hold down both the **(KB)** and **(STEP)** buttons while pressing one of the first four **(STEP)** buttons.

FORWARD / (KB) + (STEP) + 1
This combination of buttons will cause the notes stored in the sequencer to play normally, from beginning to end. This is the default setting.

REVERSE / (KB) + (STEP) + 2
This combination of buttons will cause the notes stored in the sequencer to play in reverse order, from end to beginning.

PENDULUM / (KB) + (STEP) + 3
This combination of buttons will cause the notes stored in the sequencer to play in pendulum order, alternating from beginning to end, from end to beginning, from beginning to end, etc.

RANDOM / (KB) + (STEP) + 4
This combination of buttons will cause the notes stored in the sequencer to play in a random order.



PRE-ARMING THE SEQUENCER FOR AN EXTERNAL CLOCK

If the Tempo Input mode is set to Single Clock Advance or to Analog Clock (see **page 3**), then holding down the **(KB)** and **(STEP)** buttons then pressing the **RUN / STOP** button will arm the sequencer for use with an external clock. In this case, the sequencer is stopped, but it will begin playing as soon as the next clock or trigger is detected at the **TEMPO** input jack.

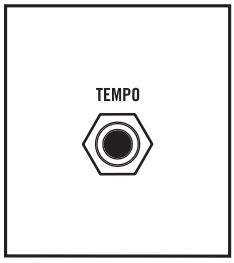
NOTE: *To start the sequencer playing from the beginning, press* ***RESET*** *after arming the sequencer and before starting the external clock.*

SWING AMOUNT AND RATCHET VALUE

In the sequencer, pressing **(SHIFT)** while rotating the **TEMPO** knob will vary the Swing Amount. Pressing **(SHIFT)** while rotating the **GLIDE** control will select a Ratchet value. Swing sets a percentage that the off beats are ahead of or behind the beat. Ratchet specifies a number (1-4) of note-repeats occurring during the length of a single step.

NOTE: *In addition to setting the Swing Amount, Version 2.0 now allows the Swing Interval (note value) to be set independently as well. Please refer to the* ***SWING*** *section on* ***page 5****.*

NEW TEMPO INPUT MODES



TEMPO INPUT

TEMPO is a configurable input for modulating the internal clock tempo, or for replacing the internal clock signal. Beginning with Version 2.0, the **TEMPO** input has 4 available modes, which are assigned using the **SETUP** mode. See **page 9** for details on selecting the mode for this input.

NOTE: *By default, the* ***TEMPO*** *input accepts a -5V to +5V signal. 0V to +5V is selectable via Setup Mode, Page 8, Option 5 (see* ***page 11*** *of this doc).*

MODE 1 - TEMPO CV

The input is summed with the position of the **TEMPO** panel control. With the **TEMPO** knob in the center position, a -5V to +5V control voltage changes the internal clock tempo from minimum to maximum (20 BPM to 300 BPM).

MODE 2 - SINGLE CLOCK ADVANCE (DEFAULT)

When the input of a clock's rising edge is detected, the internal clock is suppressed, and the Tempo LED is lit green. The pattern is advanced one step for each rising edge detected. If the clock applied is at a steady tempo, then any Ratchets will be performed in synchronization with the incoming clock pulses. A rising edge must be faster than 1V / msec to be detected as an edge, so slowly changing signals will be ignored. In this mode, the **TEMPO** panel control is ignored. If clock pulses to this input stop, the Mother-32 internal clock may be restarted by pressing **RUN / STOP** or by turning the **TEMPO** knob.

MODE 3 - ANALOG CLOCK

Prior to Version 2.0, this mode was fixed at 24 pulses per quarter note (PPQN) and was referred to as "DIN Sync mode." Beginning with Version 2.0, the Analog Clock Mode can be used to synchronize with any regular analog clock signal applied to the **TEMPO** input. The time base for the analog clock input is set on Setup Page 4 (Clock Input PPQN). While the **TEMPO** input is in Analog Clock mode, a clock detected at the **TEMPO** input will override both the internal clock and MIDI sync. Stop the external clock or disconnect it from the **TEMPO** input in order to use internal clock or MIDI sync again.

MODE 4 - STEP ADDRESS CV

In the Step Address CV mode, the sequencer isn't driven by a clock. Instead, individual sequence steps are selected and played directly based on the CV level received at the **TEMPO** input. The total CV input voltage range is evenly divided across the number of sequence steps in the pattern. Any input voltage within the range allocated to each step will select that step. When the input voltage crosses the division between one step address and another, the new step is played. Smaller voltage changes which do not cross a boundary between step addresses have no effect. A ramp LFO will play the sequence normally, and will be synced to the ramp LFO rate. Experiment with patching in different modulation sources to find fun new playing techniques.

NOTE: *While in Step Address CV mode, a changing voltage at the* ***TEMPO*** *input will override normal playback. Pressing the* ***RUN / STOP*** *button will restore normal playback until / unless the voltage at the* ***TEMPO*** *input changes again.*

NEW CLOCK DIVISIONS ADDED

CLOCK/TEMPO OVERVIEW

The Mother-32 sequencer runs in musical time, using note durations (quarter note, sixteenth note and so on) based on some tempo in beats per minute. The tempo is set by a "clock", which in the world of analog sequencers is just an equally spaced series of pulses. The Mother-32 can follow its own internal clock, or an external clock signal connected to the **TEMPO** input jack. The Tempo LED located above the **(SHIFT)** button blinks to indicate how fast the sequencer is stepping. The color of the Tempo LED shows the current clock source: red for internal clock or green for external clock (MIDI, or an analog clock connected to the **TEMPO** input).

The internal clock Tempo is set by the panel **TEMPO** knob. When using the internal clock, the **TEMPO** knob can vary the base tempo from 20 BPM to 300 BPM.

The **TEMPO** knob is also used to set the note value (interchangeably called the clock division) at which the sequencer will advance relative to the clock.

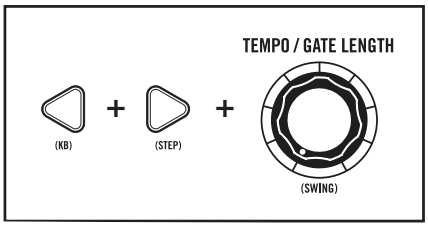
When synchronized to an external clock (analog or MIDI), or if you hold the **(KB)** or **(STEP)** buttons while turning it, the **TEMPO** knob is used to set the clock division value.

Previously, the **TEMPO** knob offered only eight clock divisions. With Version 2.0, this has been increased to twenty-four clock divisions. These twenty-four values are arranged in three groups of eight; one group for dotted note values, one group for triplet note values, and one for straight timing.

HERE ARE THE AVAILABLE CLOCK DIVISION VALUES:

1.	Two whole notes	(dotted, triplet, straight)
2.	Whole note	(dotted, triplet, straight)
3.	Half note	(dotted, triplet, straight)
4.	Quarter note	(dotted, triplet, straight)
5.	Eighth note	(dotted, triplet, straight)
6.	Sixteenth note	(dotted, triplet, straight)
7.	Thirty-second note	(dotted, triplet, straight)
8.	Sixty-fourth note	(dotted, triplet, straight)

HERE IS HOW TO ACCESS THE CLOCK DIVISION VALUES:



DOTTED NOTES
Hold down the **(KB)** button while turning the **TEMPO** knob to select one of the eight dotted note values.

TRIPLET NOTES
Hold down the **(STEP)** button while turning the **TEMPO** knob to select one of the eight triplet note values.

STRAIGHT NOTES
When Mother-32 is synced to MIDI or to an analog clock input, simply rotate the **TEMPO** knob to select one of the eight straight note values. If Mother-32 is synced to the internal clock, then hold down both the **(KB)** and **(STEP)** buttons whole rotating the **TEMPO** knob to select one of the eight straight note values.

NOTE: *The selected clock division will be shown by yellow OCTAVE / LOCATION LEDs.*

CLOCK PRIORITY

CLOCK PRIORITY RULES

1: With no other clock source connected, the internal clock has priority.

2: A connected MIDI Clock will override the internal clock.

3: A connected Analog Clock will override a connected MIDI clock, and / or the internal clock.

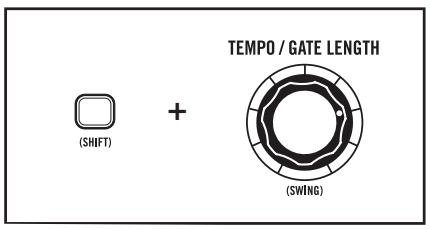
SWING

NEW SWING INTERVAL CONTROL

Previously, Swing simply alternated between longer and shorter timing on every sequencer step. You can now set the sequencer to Swing at a different beat interval than the one at which it is stepping. The rhythmic relationship between these two different intervals can create many new and interesting patterns of longer and shorter notes.

HOW SWING WORKS GENERALLY (AND ON THE MOTHER-32)

Generally speaking, Swing involves alternating between rushing and dragging the speed of playing relative to the tempo, creating a pattern of alternating longer and shorter notes. Here we refer to these two alternating phases of Swing as the “onbeat” and the “offbeat.”



THE SWING AMOUNT

The Swing Amount controls the relative duration of the on beat versus the offbeat; this is adjusted by holding **SHIFT** and turning the **TEMPO / GATE LENGTH (SWING)** knob. With Swing Amount at 50% (12:00 on the **TEMPO** knob), timing is precisely aligned with the clock and there is no audible swing feel. As Swing Amount is adjusted clockwise from 12:00, the on beat is stretched out to be longer and the offbeat is compressed to be correspondingly shorter. If swing is adjusted counterclockwise from 12:00 (less than 50%), then the on beat is compressed, and the offbeat starts sooner (before the beat) and lasts correspondingly longer.

THE SWING INTERVAL

The Swing Interval sets the interval, using musical note-length values, used to alternate between the on beat and the offbeat. The speed of the on beat versus the speed of the offbeat is proportional; as you slow one down, the other speeds up, so that an on beat plus an offbeat always takes the same total amount of total time (two Swing Intervals). Because of this, every other Swing Interval is aligned with the underlying clock. The on beat always aligns with the clock; the offbeat can start earlier or later relative to the clock tempo, depending on the Swing Amount.

In the vast majority of sequencers, the Swing Interval is fixed to match the rate of the sequencer, i.e. every other step alternates back and forth between long swung beat and short swung beat. This is depicted in the diagram on the following page.

THE SWING INTERVAL (Continued)

BEAT	1		2		3		4	
STEP INTERVAL: 1/8	1	2	3	4	5	6	7	8
SWING INTERVAL: 1/8								
ON/OFFBEAT IF SWING AMT 66%								
SEQUENCER STEPS IF SWING 66%	1	2	3	4	5	6	7	8

The following diagram shows an example where the Step Interval is eighth notes, and the Swing Interval is eighth note triplets.

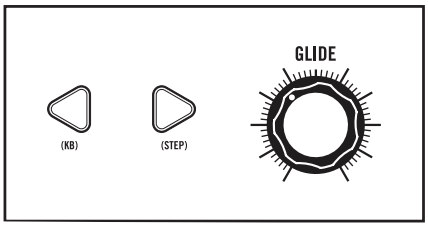
BEAT	1			2			3			4		
STEP INTERVAL: 1/8	1	2	3	4	5	6	7	8				
SWING INTERVAL: 1/8 TRIPLET												
ON/OFFBEAT IF SWING AMT 66%												
SEQUENCER STEPS IF SWING 66%	1		2	3		4	5		6	7		8

Experiment with different combinations of Swing Interval divisions and Swing % to advance the sequencer in new and interesting ways!

HERE ARE THE AVAILABLE SWING INTERVAL VALUES:

1. Two whole notes (dotted, triplet, straight)
2. Whole note (dotted, triplet, straight)
3. Half note (dotted, triplet, straight)
4. Quarter note (dotted, triplet, straight)
5. Eighth note (dotted, triplet, straight)
6. Sixteenth note (dotted, triplet, straight)
7. Thirty-second note (dotted, triplet, straight)
8. Sixty-fourth note (dotted, triplet, straight)

HERE IS HOW TO ACCESS THE SWING INTERVAL VALUES:



DOTTED NOTES
Hold down the **(KB)** button while turning the **GLIDE** knob to select one of the eight dotted note values.

TRIPLET NOTES
Hold down the **(STEP)** button while turning the **GLIDE** knob to select one of the eight triplet note values.

STRAIGHT NOTES
Hold down both the **(KB)** and **(STEP)** buttons whole rotating the **GLIDE** knob to select one of the eight straight note values.

THE SWING INTERVAL (Continued)

NOTE: *The selected clock division will be shown in green using the OCTAVE / LOCATION LEDs.*

NOTE: *The Swing Amount and Swing Interval are stored per pattern.*

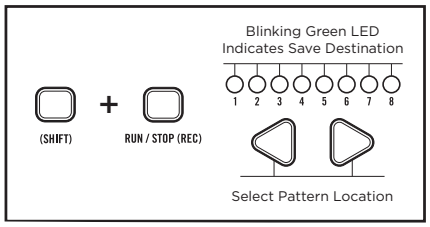
NOTE: *A step will play for a duration determined by the current Swing Interval and Swing Amount settings. If the on-beat Swing Interval ends in the middle of a step, the step will complete its remaining duration at the rate of the off-beat Swing Interval, and vice versa.*

TIP: *To initialize the Swing Amount and Swing Interval to default values, first set or reset your Sequencer Clock Division (this will also reset your Swing Interval), then press* ***SHIFT*** *+* ***TURN****.* ***TEMPO*** *knob to 12 o'clock for a 50% Swing Amount. Alternatively, initializing or reloading the pattern is a quick way to reset Swing settings, but these are destructive actions, so be sure you aren't losing any work since your last save!*

NEW PATTERN SAVE MODES

SAVING A PATTERN

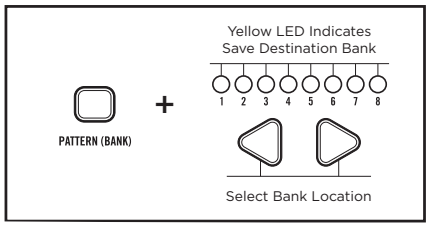
In addition to the Manual Save mode, two additional save modes have been added in Version 2.0 – Auto Save and Write Protect. Selecting the Save mode can be done on Page 6 of the Mother-32 Setup mode.



MANUAL SAVE MODE

In this mode, you must manually save any changes. If you change patterns before saving your changes, the changes will be lost. To manually save the pattern press the **(SHIFT)** + **RUN / STOP** buttons simultaneously for about a second. One of the OCTAVE / LOCATION LEDs (1-8) will begin to blink rapidly, indicating the location where the pattern will be saved. To save the pattern to this location, simply press the **(SHIFT)** + **RUN / STOP** buttons again. Otherwise, use the **(KB)** button or the **(STEP)** button to select a different pattern location Again, the blinking LED will indicate the specified location. Press the **(SHIFT)** + **RUN / STOP** buttons to save your pattern to this location, or simply press the **RUN / STOP** button to exit without saving.

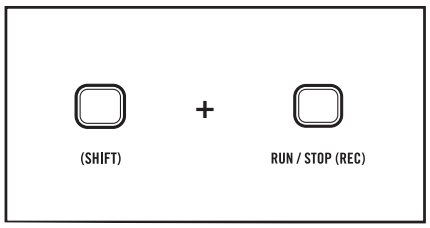
NOTE: *You can also hold* ***(SHIFT)*** *and press one of the eight corresponding pattern location buttons.*



To manually save the pattern to a location in a different bank (1-8), first press and hold the **(BANK)** button while using the **(KB)** button or the **(STEP)** button to select a different bank. Release the **(BANK)** button and you can now use the **(KB)** button or the **(STEP)** button to select a pattern location within that bank. Press the **(SHIFT)** + **RUN / STOP** buttons to save your pattern to this location, or simply press the **RUN / STOP** button to exit without saving.

NOTE: *You can also hold* ***(BANK)*** *and press one of the eight corresponding bank location buttons.*

SAVING A PATTERN (Continued)



CANCEL / SAVE
To complete the saving process press **(SHIFT)** + **RUN / STOP**.
To exit the saving process at any time, simply press **RUN / STOP**.

AUTO SAVE MODE
In this mode, changes you make to the current pattern will automatically be saved. The original pattern remains unchanged and resides in a buffer. To restore the pattern to its original state (as first loaded before any editing began), hold the **PATTERN** button and press the **RESET** button. Otherwise, selecting a new pattern will cause the changes you have made to become permanent.

WRITE PROTECT MODE
In this mode, changes you make to the current pattern cannot be saved. The patterns can be tweaked and modified as part of a performance or sonic exploration, but the contents of the Mother-32 pattern memory will remain unaffected.

NEW VISUAL FEEDBACK ADDED

The OCTAVE / LOCATION LEDs now provide visual feedback during the initialization, saving (or not saving) of a pattern.

1. **INITIALIZE PATTERN -** When initializing the current pattern, the OCTAVE / LOCATION LEDs will sweep from right to left, in red, to indicate that the pattern has been initialized.
2. **PATTERN SAVE SUCCESSFUL -** When saving the current pattern, the OCTAVE / LOCATION LEDs will sweep to the center, in green, to verify that the pattern has been saved.
3. **PATTERN SAVE CANCELED -** When canceling the save operation, the OCTAVE / LOCATION LEDs will sweep to the center, in red, to signify that the save operation was canceled, and that the pattern was not saved.
4. **BANK NUMBER LED -** When selecting a Bank Number, the Bank Number LED will now be shown in yellow, to distinguish it from the Pattern Number LED which is shown in green.

NEW PATTERN CHANGE OPTIONS

DELAY PATTERN CHANGE
Normally, when a new pattern is selected as the sequencer is playing, the current pattern will finish playing before the new pattern will begin (Delay Pattern Change On). Beginning with Version 2.0, it is possible to have the newly selected pattern begin instantly, without waiting for the previous pattern to finish (Delay Pattern Change Off). This Delay Pattern Change parameter can be accessed can be found on Setup menu Page 8, option 6.

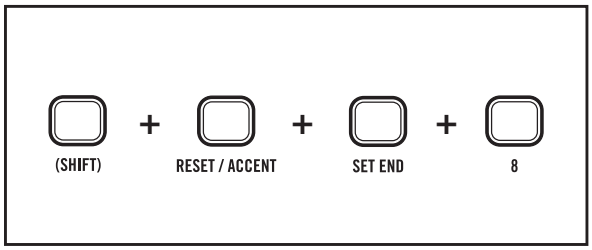
LOAD SAVED TIMING
By default, when a pattern is loaded from memory, it also restores the Clock Division, Swing Amount, and Swing Interval that were active when the sequence was saved (Load Saved Timing On). If Load Saved Timing is Off, then changing patterns will not change the timing settings which are currently active. Load Saved Timing can be adjusted on Setup Menu page 8, option 7.

NEW SETUP PAGES AND PARAMETERS

SETUP MODE

Setup mode is a non-performance mode that uses the Keyboard and sequencer buttons to access certain Mother-32 parameters (MIDI Channel, Assignable Output, etc.) and to specify their values.

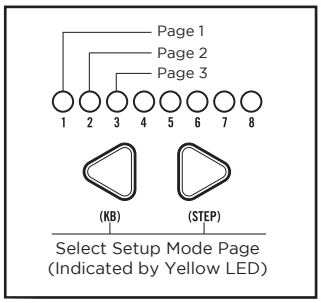
NOTE: *Settings made in Setup mode are remembered on power down.*



ENTER SETUP MODE

Press **(SHIFT)** + **RESET** + **SET END** + **STEP 8** buttons. The Tempo LED will flash yellow, and the OCTAVE/ LOCATION LEDs will show a single yellow LED indicating the currently-active Setup mode page. Setup mode values are shown using a green or red OCTAVE/LOCATION LED.

NOTE: *The same button combo will exit Setup mode.*



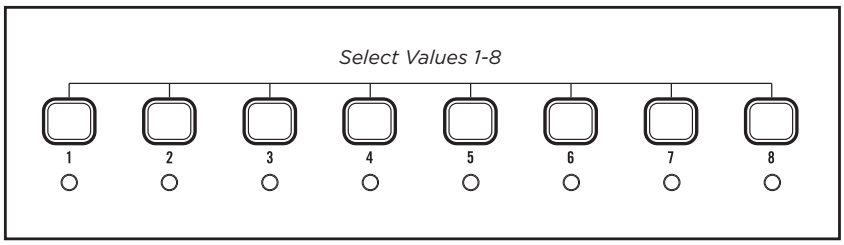
SELECTING A PAGE

Use the **(KB)** and **(STEP)** arrows to select a Setup mode page (page 7 is reserved and is not selectable). Yellow OCTAVE / LOCATION LEDs indicate the current Setup mode page.

PAGE 1: ASSIGNABLE Output jack function (new default is sequencer clock)
PAGE 2: MIDI channel selection
PAGE 3: TEMPO Input jack mode (new features added in Version 2.0)
PAGE 4: Clock Input PPQN (new for Version 2.0)
PAGE 5: Clock Output PPQN (new for Version 2.0)
PAGE 6: Save mode (new for Version 2.0)
PAGE 7: [Reserved]
PAGE 8: On / Off Settings (new for Version 2.0)

SELECTING A PARAMETER

Each Page may contain up to 16 value options. **(STEP)** buttons 1-8 select values 1-8. The value is indicated by green OCTAVE / LOCATION LEDs.



To access values 9-16, press **(SHIFT)** + **(STEP)** buttons 1-8 (9-16). The value is indicated by red OCTAVE / LOCATION LEDs.

NOTE: *If the Parameter number is the same as the current Page number, the LED will alternately flash between the yellow Page color and the green (1-8) or red (9-16) Parameter color.*

PAGE 1: ASSIGNABLE OUTPUT JACK

From this page, you can specify which Mother-32 signal is available via the **ASSIGN** output jack. The full descriptions of each option can be found in the ASSIGNABLE OUTPUT: ASSIGN OUTPUT section of this manual.

1: Accent
2: Sequencer Clock (Default)
3: Sequencer Clock / 2
4: Sequencer Clock / 4
5: Sequencer Step Ramp
6: Sequencer Step Saw
7: Sequencer Step Triangle
8: Sequencer Step Random
9: Sequencer Step 1 Trigger Output
10: MIDI Velocity
11: MIDI Channel Pressure
12: MIDI Pitch Bend
13: MIDI CC 1
14: MIDI CC 2
15: MIDI CC 4
16: MIDI CC 7

PAGE 2: MIDI CHANNEL

Here you can set the MIDI Channel your Mother-32 will use to send and receive MIDI data.

1: MIDI Channel 1
2: MIDI Channel 2
3: MIDI Channel 3
4: MIDI Channel 4
5: MIDI Channel 5
6: MIDI Channel 6
7: MIDI Channel 7
8: MIDI Channel 8
9: MIDI Channel 9
10: MIDI Channel 10
11: MIDI Channel 11
12: MIDI Channel 12
13: MIDI Channel 13
14: MIDI Channel 14
15: MIDI Channel 15
16: MIDI Channel 16

PAGE 3: TEMPO INPUT JACK MODE

This page allows you to specify the operating mode for the **TEMPO** input jack. The full descriptions of each mode can be found under the CLOCK / TEMPO OVERVIEW: TEMPO INPUT section of this manual.

1: CV Input mode
2: Single Clock Advance mode
3: Analog Clock mode (revised in Version 2.0)
4: Step Address CV mode (added in Version 2.0)

PAGE 4: CLOCK INPUT PPQN (Pulse Per Quarter Note)

Here you can set the number of incoming clock pulses that will equal one quarter note.

NOTE: *24 PPQN is used by the DIN SYNC standard; 48 PPQN is used by some older drum machines*

1: 1 PPQN
2: 2 PPQN
3: 3 PPQN
4: 4 PPQN
5: 5 PPQN
6: 6 PPQN
7: 7 PPQN
8: 8 PPQN
9: 9 PPQN
10: 10 PPQN
11: 11 PPQN
12: 12 PPQN
13: 13 PPQN
14: 14 PPQN
15: 24 PPQN
16: 48 PPQN

PAGE 5: CLOCK OUTPUT PPQN (Pulse Per Quarter Note)

Here you can set the number of outgoing clock pulses that will equal one quarter note.

NOTE: *24 PPQN is used by the DIN SYNC standard; 48 PPQN is used by some older drum machines*

1: 1 PPQN
2: 2 PPQN
3: 3 PPQN
4: 4 PPQN
5: 5 PPQN
6: 6 PPQN
7: 7 PPQN
8: 8 PPQN
9: 9 PPQN
10: 10 PPQN
11: 11 PPQN
12: 12 PPQN
13: 13 PPQN
14: 14 PPQN
15: 24 PPQN
16: 48 PPQN

PAGE 6: SAVE MODE

This page allows you to specify the Save mode for your Mother-32. The full descriptions of each mode can be found under the SAVING A PATTERN section of this manual.

1: Manual Save mode
2: Auto Save mode (added in Version 2.0)
3: Write Protect mode (added in Version 2.0)

PAGE 7: [RESERVED]

There are no user accessible parameters on this Page.

PAGE 8: ON / OFF PARAMETERS

The parameters available on this page can be toggled On or Off so that your Mother-32 will behave in a way conductive to your creative process.

1: Follow MIDI Clock (On / Off)
2: Follow MIDI Start Stop (On / Off)
3: Clock Output Swing (On / Off)
4: Accent Out CV Only
ON: The internal Accent circuit is disabled when the **ASSIGN** Output Jack is set to Accent (Page 1; Parameter 1).
OFF: The internal Accent circuit is enabled.
5: Tempo Input Range
ON: The voltage range of the **TEMPO** input is 0V to +5V
OFF: The voltage range of the **TEMPO** input is -5V to +5V
6: Delay Pattern Change
ON: When a new Pattern is selected, the sequencer will finish playing the current pattern before switching to the new pattern
OFF: When a new Pattern is selected, the sequencer will begin to play the new pattern immediately.
7: Load Saved Timing
ON: When a new Pattern is selected, the timing settings (Clock Division, Swing Interval, and Swing Amount) that were saved with the pattern will be restored.
OFF: When a new Pattern is selected, the previously-active timing settings will remain unchanged.

SETUP MODE GLOBAL DEFAULTS

PAGE 1:	ASSIGNABLE Output Jack	Sequencer Clock Output
PAGE 2:	MIDI Channel Selection	Channel 1
PAGE 3:	TEMPO Input jack	Step Advance / Trigger
PAGE 4:	Clock Input PPQN	4 (sixteenth note)
PAGE 5:	Clock Output PPQN	4 (sixteenth note)
PAGE 8:	Follow MIDI Clock	On
PAGE 8:	Follow MIDI Start / Stop	On
PAGE 8:	Clock Output Swing	On
PAGE 8:	Tempo Input Range	Off (-5V to +5V)
PAGE 8:	Accent Out CV Only	Off
PAGE 8:	Load Saved Timing	On

BUG LIST

BUGS FIXED IN VERSION 2.0

1. The Clock Output (Assignable Output Modes 2, 3, 4) is no longer affected by Ratcheting steps.

2. MIDI note-off commands received while sequencer is playing no longer truncate the currently-playing note.

3. Invalid glide times present after changing patterns have been fixed.

4. MIDI notes will now transpose the sequence even when sequence is not playing. (i.e. before the sequencer is started.)

5. Phase alignment is maintained between the Mother-32 sequencer and the analog clock output.

KNOWN ISSUES IN VERSION 2.0

1. If starting/resuming playback while synchronized to an external clock, you must start playback on a swing onbeat in order to stay correctly aligned to the external clock.

Example: *If using MIDI Song Position Pointer to begin playback later than the beginning of a pattern, you should start playback on a swing onbeat. Otherwise, pattern playback may begin with a slight delay.*