

future.retro

nobius
operator's manual

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INTRODUCTION

Thank you for purchasing the Mobius!

The Mobius is a programmable digital sequencer for recording and playing back musical patterns and songs. All the information for a musical part can be recorded or changed while the sequencer is either running or stopped, and the sequencer automatically saves all changes made to patterns and songs. This allows users to create and manipulate patterns live in a very easy manner.

With the Mobius you can control both MIDI and CV/GATE type synthesizers and sound modules, but that's not all. The Mobius also acts as an interface allowing most of today's and yesterday's instruments to be used together without the need for special converters. These additional features include the ability to convert MIDI messages to CV/GATE, DIN SYNC, and analog clock.

Structure

There are 16 song locations, and each song is broken down into 1 measure parts called patterns. Each pattern is then divided into 12 or 16 steps depending on its time signature. There are 256 programmable patterns in all that can be combined in any fashion to create a song, or be selected and manipulated in real-time. Each pattern contains the time signature, notes, pitches, accents, glides, and loop point. Once patterns have been created they can be arranged and transposed in any way for each of the 16 song locations. Each song is then capable of arranging up to 3580 measures or patterns.

Power

Use only a 12 volt AC/AC 1Amp output power adapter, which is supplied with the Mobius.

Care

Avoid exposing the Mobius to smoke, damp, dusty, or extreme hot and cold environments.
To clean the unit use a soft damp cloth. Do not use any abrasive cleaners!

Memory Backup

The Mobius contains an internal 3 volt backup battery for the sequencer's RAM. The battery should last for years. If the memory begins to fail you will want to replace the battery. To replace the battery, remove the 4 screws on the front panel. Remove the front panel and locate the battery and its holder on the main sequencer board. Remove the old battery and replace with a 3 volt coin type lithium battery. Once finished, place the front panel on the chassis and tighten the 4 screws.

Fuse

Should the fuse in the Mobius need replacing, use the following procedure to change the fuse. Remove the 2 screws on the right side of the front panel. Next remove the 4 screws on the right end panel. Remove the right end panel, and locate the fuse which will be next to the power switch on the jack board. Remove the old fuse and replace with a 1 Amp fast acting fuse. Once the new fuse is installed, replace the right end panel on the chassis and tighten the screws.

Product warranty

The Mobius comes with a 1 year limited warranty covering any mechanical or electrical defects. This warranty does not cover damage due to misuse or neglect of this product. To validate your warranty, fill out the warranty card included with your unit and return it within one month of the original purchase date. Should you experience problems with your machine please contact us by phone or email. You must have an authorization to return a unit for repair.

Our office is open Monday through Friday, 10am to 6pm central time.

Phone: 785-827-9278

Email: support@future-retro.com

Product support

Product support can be found on the world wide web at www.future-retro.com.

SONG
enters the song mode

CLEAR
used to clear and reset parameters also activates pattern shifting

BANK
used to select a pattern's bank

UP/DOWN
used to change values shown in the display

DISPLAY
shows various information

XPOSE
sets the transposition for a pattern
PASTE
used to paste patterns

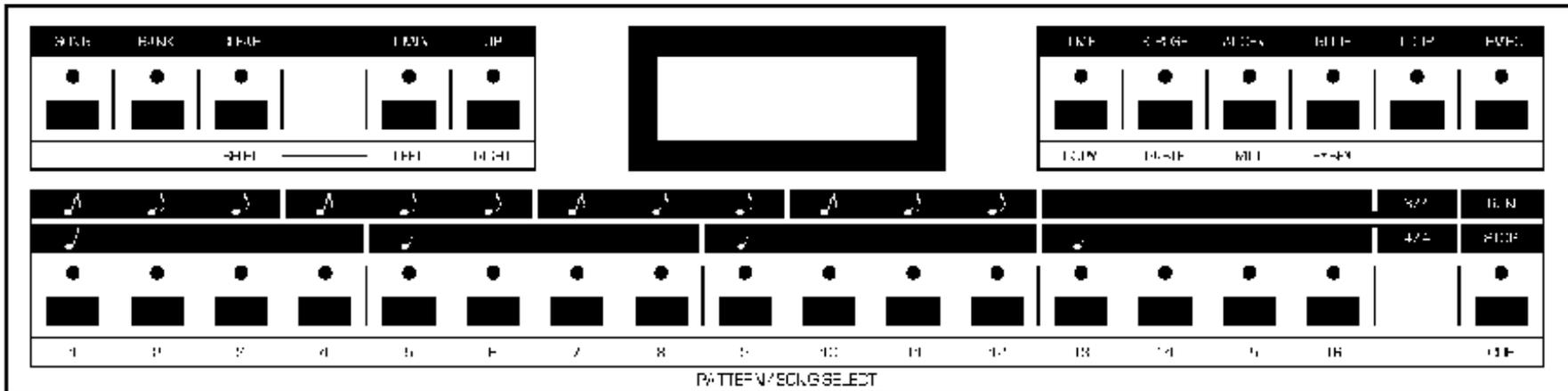
GLIDE
used to place glides on notes
SYSEX
used for dumping patterns and

TEMPO
sets the tempo for patterns and songs

TIME
used to select a time signature
COPY
used to copy patterns

ACCENT
used to place accents on notes
MIDI
accesses the MIDI pages

LOOP
sets the loop point for patterns and songs



STEP KEYS 1-16

**RUN/STOP
CUE SYNC**
used to start/stop sequencer playback, and set cue for midi

SEQUENCER CONTROLS

OPERATIONS

Using the sequencer

When using the sequencer there are two main modes for selecting, editing, and playing. The SONG key's indicator determines which of two modes are selected. When the SONG key's indicator is on, you are in the song mode. When the SONG key's indicator is off, you are in the pattern mode. To change from one mode to the other, the sequencer must first be stopped, then by pressing the SONG key you will change modes.

In the song mode you can do the following:

- Select a song
- Edit a song
- Play a song
- Change a song's tempo
- Change the midi parameters

In the pattern mode you can do the following:

- Select a pattern
- Edit a pattern
- Play a pattern
- Adjust the global tempo setting for patterns
- Set the global transposition amount to affect all patterns.

Playing patterns

The RUN/STOP key is used to start and stop the playback of patterns and songs. To start the sequencer press the RUN/STOP key. This key's indicator will come on and be flashing at the tempo the sequencer is playing at. To stop the sequencer press the RUN/STOP key again. The key's indicator will now be off showing that the sequencer is stopped.

Selecting patterns

Patterns are arranged in 16 banks of 16 patterns for a total of 256 patterns in all.

Before selecting a pattern, you must first make sure you are in the pattern mode. This is shown by the SONG key's indicator being off. To enter pattern select mode, press the BANK key so that it's indicator is on. The display will now show the bank number (1-16) and one of the 16 selector key indicators will be on to show which pattern in that bank is currently selected. If none of the 16 selector key indicators are on, the current pattern selected is in another bank. If this is the case, use the UP/DOWN keys to go through the other banks and see what pattern is currently selected. To select a different pattern, use the UP/DOWN keys to select the bank and then press one of the 16 pattern locations for that bank.

Selecting a pattern can be done while the sequencer is playing. If one pattern is currently playing and you select another, the new pattern's key indicator be on at half the brightness as when usually selected. This shows that the pattern is waiting until the previous pattern has reached it's loop point before it is to begin playing. You can change the pattern that is to play next at any time until the previous pattern reaches it's loop point, at that time the new pattern will begin playing. Each pattern will continuously play until either a new pattern is selected or the sequencer is stopped.

Multiple pattern cueing

It is possible to chain up to 16 patterns in a bank to create longer looping arrangements while playing patterns in pattern mode. Enter the pattern select mode as you normally do when selecting patterns. Press and hold the first pattern you wish to play and then press the last pattern that is to be included in the loop. All the patterns between these two will then sequentially play from left to right. Once multiple patterns have been cued and are playing, you can select another group of patterns to play when the first group reaches it's last step. When cueing up a second group you can select patterns in any bank and even partially overlapping those currently playing.

OPERATIONS

Editing patterns

Pattern edit mode is where 1 measure of music can be recorded or edited for each pattern, to later be arranged into a song. Each pattern records the notes and their pitches, accents, glides, the time signature, and loop point for that pattern. Every time a pattern is edited, the changes are automatically saved by the sequencer. *You must make sure not to change a pattern you wish to keep, by doing so you will overwrite the old pattern with new data. This can be avoided by using the copy/paste functions described later in the manual.*

To edit patterns you must first be in the pattern mode (SONG key indicator is off). To edit a pattern, select the desired pattern then press the BANK key until it's indicator is off, indicating you are now in pattern edit mode. All pattern editing can be done while the sequencer is stopped or playing, which allows you to actually hear the changes you are making, while you make them. In this way you can select a pattern, edit it, and then select another pattern to play or edit while the sequencer continues to play. Instant live improv! Since the sequencer automatically saves all changes made there is no need to stop the music.

When multiple patterns have been cued and are playing you can enter the pattern edit mode to edit individual patterns. To edit a cued pattern, wait until the desired pattern is playing and then enter the pattern edit mode. The current pattern will loop by itself so you can hear all the changes you are making. Once the pattern has been changed as desired, you may exit the pattern edit mode. Now the cued patterns will continue playing sequentially as before.

When the sequencer is playing and a pattern is being edited, you will notice that the 16 step key indicators will blink to show the current step being played. You can use this as a quick way to pin point steps you wish to edit. It can also be useful to serve as a visual indication of where the loop point is set for that pattern.

Entering notes

When in the pattern edit mode the 16 step key indicators will be used to display where notes are placed in that pattern. The brightness of the indicators will determine where notes start, their duration, and rests.

1. A note on (or where a note begins) will be shown by the key's indicator being on.
2. The sustained portion for a note will be shown by the key's indicator being on, but only half as bright as a note on.
3. A rest is shown by the key's indicator being off.

To enter notes you must be in pattern edit mode. Placing 16th or 12th notes (depending on which time signature is selected) is done in the same way. By using the 16 step keys, simply press the keys one at a time where you wish notes to be. The indicators for the notes you enter will now be on in their brightest state.

To place sustained notes, press and hold the step key where the note is to start and while doing so press the step key (to the right of the one you are holding) that represents the last step you want that note to sustain to. The first step indicator of a sustained note will be on and brightest, while the sustained portion of the notes indicators will be on at half brightness. For example, place and hold a 16th note and press the first step key to the right of the one being held. Doing this you just wrote an 8th note. Use this method to create notes of various durations.

Placing rests is actually done by just leaving notes off, or clearing notes that appear in the position you want a rest. Rests will be visually seen as a steps indicator being off.

There is a way to write new notes without having to clear previous notes. For instance, if you place a new note in the sustained portion of a note, the new note will now be in the position you selected. This now shortens the previous sustained note, and it will sustain until the step the new note was written. The step key indicators for these positions will also change to show how the previous sustained note was shortened. By writing a sustained note over previous notes, the previous notes will no longer be heard. You can use this method to change a sustained note's duration. Any new notes written over a sustained note's note-on will override the entire sustained note, with the exception that you can't write a 16th note over a sustained note's note-on. To do this, you must first clear the sustained note and then write the 16th note.

OPERATIONS

Clearing notes

There are two ways to clear previous note data that may exist from a previous pattern. You can either clear all the notes at once or individual notes one at a time.

To clear all the notes for a pattern, press the BANK key and select the pattern you want to clear all the notes from. While holding that pattern's step key, press the CLEAR key. Now by pressing the BANK key and entering pattern edit mode, you will see all the step key indicators are off, showing no notes exist in that pattern.

To clear individual notes, press and hold the CLEAR key, then press the step key that represents the note-on for the note you want to clear. you can clear as many notes as you want while holding the CLEAR key. Once clearing is done you may release the CLEAR key. All the notes step key indicators you cleared should now be off.

Changing a note's pitch

Once notes exist in a pattern, you can change the pitch each one is to play. Select a pattern you would like to edit, and enter the pattern edit mode. When in the pattern edit mode, one of the 16 step key indicators will be on or flashing showing it is the current note being edited. You can change which note is to be edited by pressing the step key where that note starts. *Notice that by pressing any keys other than where a note starts will write a new note as described in the previous section.* Once a note is selected, the display will show the pitch of that note, ranging from C1 to D#6. *Notice that the display will show an = sign for sharp notes.* Using the UP/DOWN keys select the desired pitch that the note is to play at.

When the sequencer is playing and you change a notes pitch in this way, each time the pattern reaches this step the new notes pitch will be played. If you hold a note's step key while you change the note's pitch the new pitch will not take affect until you release that notes step key. You can use this method to ensure that only the desired pitches will be heard while the sequencer is running.

Recording accents

To record or place accents for notes, first select the pattern you want to edit and enter the pattern edit mode. One of the step key indicators will be flashing to show the current note to be edited. Select any note by pressing the step key where that note starts. When a note is selected the ACCENT key will be on when a note is to be accented, and off when no accent is to occur. By pressing the ACCENT key you can turn accents on or off for that step. Placing accents can be done while the sequencer is playing or stopped.

Clearing accents

To clear all the accents in a pattern, press and hold the CLEAR key and press the ACCENT key.

Recording glides

To record or place glides for notes, first select the pattern you want to edit and enter the pattern edit mode. One of the step key indicators will be flashing to show the current note to be edited. Select any note by pressing the step key where that note starts. When a note is selected the GLIDE key will be on when a note is to glide, and off when no glide occurs for that note. By pressing the GLIDE key you can turn glides on or off for that step. Placing glides can be done while the sequencer is playing or stopped.

Clearing glides

To clear all the glides in a pattern, press and hold the CLEAR key and press the GLIDE key.

OPERATIONS

Selecting a time signature

There are two time signatures to choose from when writing a pattern, and they are 3/4 and 4/4. Each time signature simply divides the measure of a pattern into either 12 equal parts (3/4) or 16 equal parts (4/4). The music bars located above the 16 step keys represent the two different time signatures. The top bar being 3/4, and the bottom 4/4.

To change the time signature for a pattern, select the pattern to be edited and enter pattern edit mode. By holding the TIME key, the display will show either 3-4 or 4-4. Using the UP/DOWN keys, select the appropriate time signature. Once the time signature is set you may release the TIME key. You can change a pattern's time signature while the sequencer is playing or stopped

Setting the loop point

Each pattern has its own loop point that is used to set the number of notes a pattern will play before it begins to repeat itself. With a 3/4 time signature there can be as many as 12 steps per pattern, while a 4/4 pattern can contain up to 16 steps per pattern.

To set the loop point, select the pattern you wish to edit and enter the pattern edit mode. Press the step key that represents the last step you wish the pattern to play. Then by pressing the LOOP key you will place a loop point on that step. This is shown by the LOOP key's indicator being on. Pressing the LOOP key repeatedly will turn the loop point on and off for that step.

A pattern may contain more than one loop point, but it will only loop at the first loop point it comes across. Changes may be made to a pattern's loop point while the sequencer is playing or stopped.

Clearing all loop points

To clear all the loop points in a pattern, press and hold the CLEAR key and press the LOOP key.

Adjusting the tempo

When in the pattern mode, the tempo setting will determine the rate at which all patterns will be played at. To adjust the tempo, press and hold the TEMPO key. The display will show the current tempo selected. Use the UP/DOWN keys to adjust the tempo from 20 to 250 beats per minute or B.P.M.. When the tempo is changed and a sequence is playing, the tempo change will have an immediate affect on rate at which it is played. This tempo setting is saved even when the power is turned off.

Transposing patterns

When playing patterns in the pattern mode, the transpose function has a global affect on all the patterns. The transpose function allows you to shift all of a patterns notes up or down 36 half steps from the pitches originally programmed into that pattern.

To change to transpose setting, first enter the pattern edit mode. Press and hold the XPOSE key, and the display will show the current value (-36 to 36) of transposition. Use the UP/DOWN keys to change the transpose setting. This transpose setting will be saved even when the power is turned off.

You can clear the transpose setting to 0. While in the pattern edit mode, hold the CLEAR key and press the XPOSE key.

The global transpose setting in pattern mode has no affect on patterns when they play in a song. The range of notes the Mobius will play is from C1-D#6. If a pattern's notes are transposed beyond this range, the notes will be interpreted as a rest.

OPERATIONS

Shifting patterns

It is possible to shift all the contents of a pattern forwards or backwards in time from where they currently are. To shift a pattern, select the desired pattern to be edited and enter the pattern edit mode. Press and hold the CLEAR key and then use the UP/DOWN keys to shift the pattern UP/right or DOWN/left. If pattern shifting is done while the sequencer is stopped you will shift the pattern one step for every key press of either the UP or DOWN key. If pattern shifting is done while the sequencer is playing, the pattern will shift one step every time a new step position is reached.

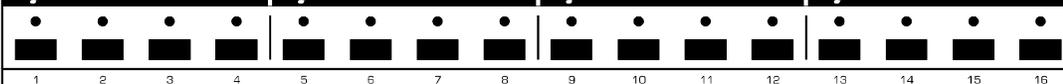
When you shift a pattern you are shifting the note duration and pitch along with glides and accents for those notes. The loop point however will not be shifted. When shifting patterns you should also be aware that all 16 notes possible are shifted even if the loop point is set to any value less than 16 steps. When a pattern has a shorter loop point set, and you shift that pattern, you will hear new notes start playing in the loop replacing those shifted beyond the loop point.

Note: By setting a patterns loop point at different steps and then continuously shifting the pattern left or right, the pattern can play it's notes in a completely different way. It may seem somewhat random at first but there is logic behind it, so we will leave it to you to figure it out. Notice how many ways you can play a pattern just by changing it's loop and continuously shifting the pattern. The way notes play for a sequence in this manner also depends on what step you start shifting on. Try setting the loop point on step 1 and continuously shifting the pattern right. The pattern will now be playing backwards. Experiment!

Copying patterns

Before editing any patterns you like, it would be wise to copy them to another location to be edited. Copying patterns can also be useful when creating several patterns with slight variations. To copy a pattern from one location to another, stop the sequencer and enter the pattern select mode. Select the pattern you wish to copy. While holding the pattern's step key, press the COPY key. This places a copy of that pattern in a temporary memory location, where it will remain until either a new pattern is selected to copy, or the power is turned off. Since a copy of the pattern is placed in temporary memory, you can now go and play other patterns to find a location to paste the pattern in. When you have found a location, stop the sequencer, hold the pattern's step key and press the PASTE key. The pattern you had copied will now be written in this location. You can continue to place the copied pattern in as many locations as you want by selecting each location individually, and pressing the PASTE key.

Below is a blank pattern sheet that you can photocopy and use to write down the contents for a pattern.

TEMPO		TIME SIG.		BANK		PATTERN										
LOOP																
GLIDE																
ACCENT																
PITCH																
NOTE																
mobius																
																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16

OPERATIONS

Selecting songs

Selecting a song is done in the same way patterns are selected, except you must be in the song mode. To select a song, press the step key indicator (1-16) to select one of the 16 song locations. If the sequencer is playing a song and another song is selected, the newly selected song key's indicator will be on at half brightness showing it is cued up and will begin playback as soon as the first song reaches its loop point.

Playing songs

You must be in the song mode to play songs. Select a song to play by pressing one of the 16 step keys. Press the RUN/STOP key to begin playback of the song. By pressing the RUN/STOP key again playback of the song stops, but the song remains in the location it was stopped. Pressing the RUN/STOP key once more begins playback from where the song was stopped. If you want to start playback from the beginning of the song, press the CLEAR key before starting playback.

You can cue a song to play after the current song has reached its loop point, by simply selecting another song while the current one is playing. The cued song's indicator will be on at half brightness to show it is the next song to play.

Editing songs

All song editing is done in the song mode. To enter the song mode, stop the sequencer, and press the SONG key until its indicator is on. All editing in the song mode will be done while the sequencer is stopped. The song edit mode is used to arrange the patterns into a song. There are 16 song locations available and each is capable of recording up to 3580 one-measure patterns. Each song step records the pattern that will play for that step, how much the pattern is to be transposed from its original pitch, and whether or not that is to be the last pattern played in the song before it starts over again or loops. Each song also records the tempo for that song to playback.

Selecting patterns for a song's step

When in the song mode, the display will show the current step being edited. You can select the desired song step by using the UP/DOWN keys. You can also reset the song to step 1 at any time by pressing the CLEAR key.

To edit a song, you simply select the patterns in the order they are to play in the song, and set a loop on the last step you wish to play in the song. *Not having a song clear function prevents any accidental erasure of an entire song.*

To change the pattern a song step will play, select the song step, press and hold the BANK key. The display will now show the bank and step key 1-16 are used to select the pattern of that bank. While holding the BANK key, use the UP/DOWN keys to select the bank and the press the patterns step key. Release the BANK key once you have made your selection. Select the pattern for each step in this way until all the patterns are in their correct order.

To see how your song sounds so far, press the CLEAR key to reset the song to step 1, and press the RUN/STOP key. To stop the song's playback, press the RUN/STOP key again. If you need to make changes to the song, use the UP/DOWN keys to select the step to edit and make the necessary changes.

All changes you make when editing the song are automatically saved by the sequencer.

Transposing a song's step

Each song step's pattern can be transposed up or down 36 half steps in pitch, from the notes originally programmed in that pattern.

To transpose a song step's pattern, select the song step and press the XPOSE key. While holding the XPOSE key the display will show the current transpose setting for that step's pattern. Use the UP/DOWN keys to change the transpose setting for that song step. Release the XPOSE key when you are done and the sequencer will automatically save your changes.

To reset the transposition to a value of 0 for all the song steps, press and hold the CLEAR key, then press the XPOSE key. This will allow all the patterns in the song to play at their original programmed pitch.

OPERATIONS

Setting the loop point for a song

A loop point is recorded into a song step to indicate this will be the last step played before the sequencer goes back to step 1 and begins to play again. If you want to find what song step is set to loop, you can use the UP/DOWN keys to step through the song and see which step is set to loop. This is indicated by the LOOP key's indicator being on.

To set a loop point for a step, press the LOOP key. In the same way if you wish to remove a loop point you may press the LOOP key turning the loop point off. You may also clear all the loop points from a song by pressing and holding the CLEAR key, press the LOOP key. This will be most useful when creating new songs rather than finding the existing loop point one at a time, and clearing them out.

All changes you make to the loop point settings are automatically saved by the sequencer.

Setting a song's tempo

Each song records the tempo it will playback. Select the song you wish to change the tempo of, and press the TEMPO key. As you hold the TEMPO key, the display will show the current tempo setting. Using the UP/DOWN keys you change the song's tempo from 20-250 beats per minute. Once the tempo is correct, release the TEMPO key and the sequencer will automatically save your changes.

Advanced song editing

It is possible to jump from the currently selected song step, to the pattern edit mode and edit the pattern used for that song step. If a song is at any point other than the first step and you exit song mode, the pattern used for the current song step will be automatically selected with all its song parameters, for editing in the pattern mode.

To clarify, let's say you are on step 3 of a song and that song step uses pattern 1 in bank 1 with a transpose value of +12. If you exit the song mode, pattern 1 of bank 1 will be the pattern currently selected. If you hold down the transpose key you will notice it is set for +12, just as it was for the song step. In addition, the tempo the pattern plays at will be the same as set for the song. This allows you to easily edit a pattern and hear what it will sound like for the song. You can now make any changes to the pattern or even select a different pattern you would like to use for that song step. You may change the transpose value for the pattern while in the pattern edit mode, which will change the transpose setting for that step in the song. If you change the tempo while in the pattern mode, it will change the entire song's tempo as well.

Once you are through editing the pattern for the current song step, return to the song mode and all changes will be accepted and saved by the sequencer. If you are in the song mode and wish to return to the pattern mode without the sequencer automatically selecting the current song step's pattern, press the CLEAR key before you exit the song mode.

Note: to access the MIDI and SYSEX modes you must enter the song mode. Once changes are made in either of these modes if the current song selected is at any location other than step 1, you will activate the advanced song editing function. In this case, it would be a good habit to hit the CLEAR key before you exit the song mode, which will return you to where you previously were in the pattern mode before making adjustments to the MIDI parameters.

A blank song sheet is provided on the following page. Photocopy it and use it to write down your song information.

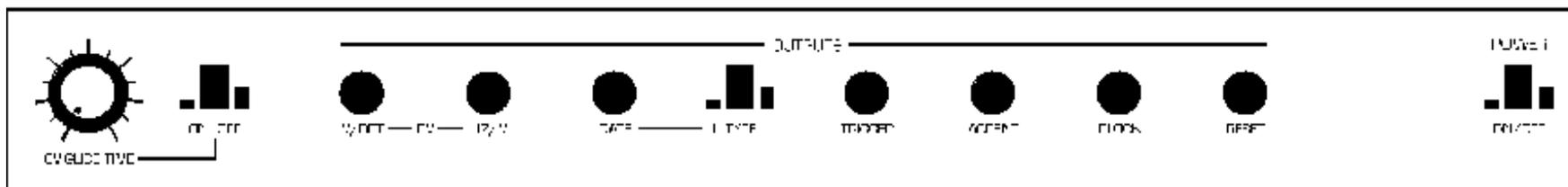
GLIDE TIME ON/OFF
controls whether glided notes will glide or not when using the CV OUTS

HZ/V
outputs a hertz per volt control voltage relative to notes programmed into the sequencer

TYPE
selects whether the gate signal will be positive or negative

ACCENT
outputs a +5v gate signal when notes with accents are played by the sequencer

RESET
outputs a +5v reset pulse whenever the sequencer reaches a loop point or playback is stopped and started



CV GLIDE TIME
adjusts the glide time for a notes pitch when using the CV OUTS

V/OCT
outputs a 1 volt per octave control voltage relative to notes programmed into the sequencer

GATE
outputs a +12v gate signal relative to a notes' duration

TRIGGER
outputs a +12v trigger signal every time a new note is played

CLOCK
outputs a +5v gated clock signal equal to 16th notes, whenever the sequencer is playing

POWER
turns power on and off

ANALOG CONNECTIONS

CONNECTIONS

Playing control voltage synthesizers and modules

Before today's Musical Instrument Digital Interface (MIDI) came out, music equipment relied on discrete voltages and logic gates to allow one machine to control another. Companies that made these early analog modules used different standards for controlling their equipment. Most used 1 Volt per Octave (V/OCT) to control the pitch their machine would play, while others used Hertz per Volt (HZ/V) as their standard. The Mobius provides a dedicated jack for each of these two types of control voltage. Just as the control voltage varied from company to company, so did the method for triggering notes. There are two main types of gate signals these machines require, they are positive and negative gates. The Mobius has one GATE output for the +12v gate signal, and a gate +TYPE- switch that allows you to select whether the gate is to be positive (+) or negative (-). Some control voltage synthesizers may also require a trigger along with the gate, in order for notes to play. This being the case, the Mobius also has a TRIGGER output, which outputs a +12v trigger pulse.

Always turn the power off when connecting your equipment.

Use the chart to the right when connections are made between the Mobius and other equipment. If you do not see the make of the machine in the table, it more than likely will use V/OCT for CV and POSITIVE for the gate type, but just to be safe, check with that machine's owner's manual.

Connect the CV and GATE outputs of the Mobius to the other devices' respective inputs. If the other machine also requires that a trigger be used, connect the TRIGGER out of the Mobius to the other machine's trigger input. Easy enough, now you can start playback of the sequencer, and listen as the Mobius plays the external control voltage device.

MAKE	CV TYPE	GATE TYPE
ARP	V/OCT	POSITIVE
KORG	HZ/V	NEGATIVE
MOOG	V/OCT	NEGATIVE
ROLAND	V/OCT	POSITIVE
SEQUENTIAL	V/OCT	POSITIVE
YAMAHA	HZ/V	NEGATIVE

Changing the glide time

When a pattern's notes are set to glide, the CV GLIDE TIME control on the front panel can be used to adjust the time it takes, for one note to glide to another note's pitch. The ON/OFF switch, located just to the right of this knob, is used to determine whether notes programmed to glide, will (ON) or will not (OFF) actually glide. When notes are programmed to glide and this switch is off, it can make a sequence sound different than if you were just to clear all the glides in the sequence. This is due to the fact that the gate for a 16th note is normally on for 50% of that step's duration. Glided notes on the other hand are held for the entire duration of a step.

Hey, what's this accent out for?

Glad you asked. When notes are set to be accented, a +5v positive gate signal will be produced at the ACCENT output jack. This gate signal will remain at +5v for the entire duration of a note step. If two sequential notes are set to accent, this gate signal would actually stay at +5v for the length of two note steps. If you have a modular type synthesizer, you could use an AND gate to combine the Mobius' ACCENT out with its CLOCK out and create a programmable clock signal or second gate output. Or, as it was intended, to turn on an op-amp making that note louder, being accented. However you use it, you will need to connect a 1/4" cable from the ACCENT out to the input of the device you wish to control.

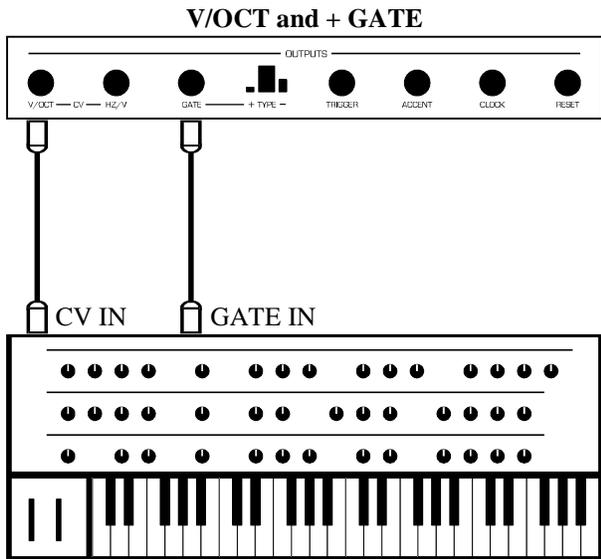
Clock output

The CLOCK output on the front panel, outputs a +5v positive gate signal that can be used to clock analog sequencers or arpeggiators. This gate signal will output a 16th note gate, whenever the sequencer is playing. It will stay at +5v for 50% of the duration of a 16th note. Now you can sync up those old analog sequencers and arpeggiators with the Mobius. Using a 1/4" cable, connect the CLOCK out to the clock in of the device you wish to control.

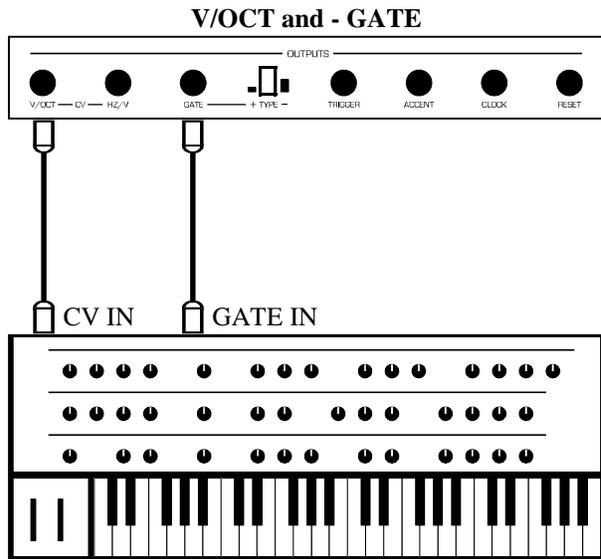
Reset output

The RESET output, produces a very short +5v gate pulse whenever the sequencer reaches a loop point, or playback is stopped and started. This reset pulse can be used to reset an analog sequencers' playback, or any other clocking

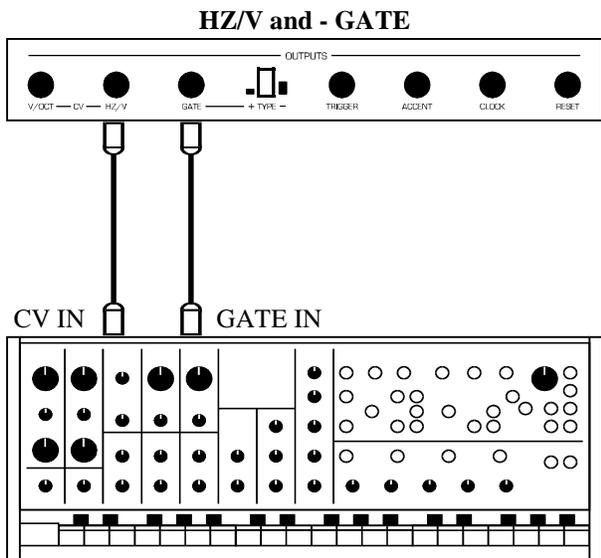
CONNECTIONS



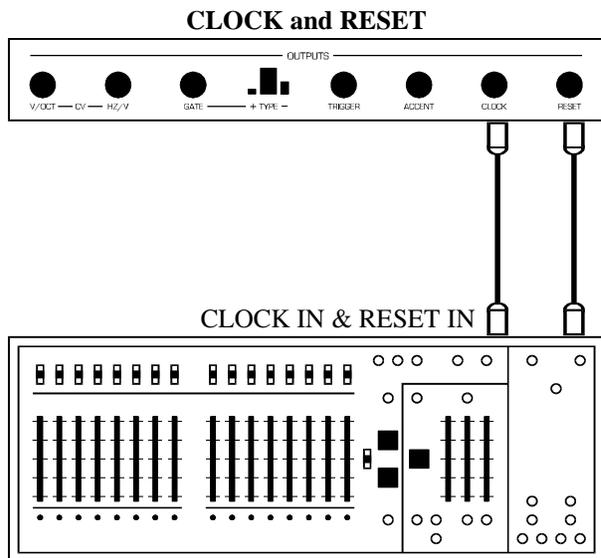
Typical connections when using ARP, Roland, Sequential, and most other brands.



Typical connections when using Moog synthesizers.



Typical connections when using Korg and Yamaha synthesizers.



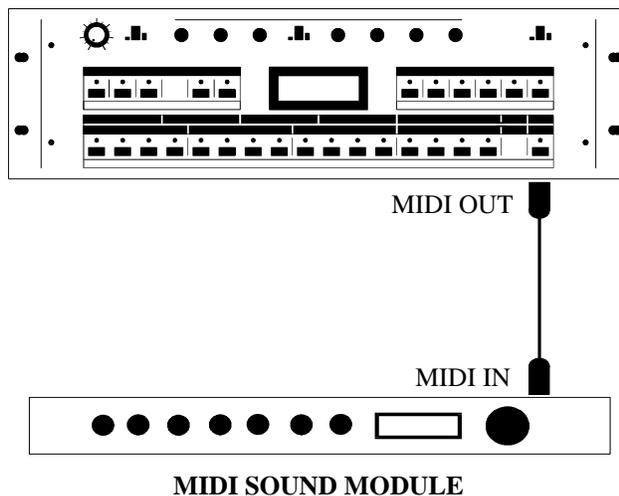
Typical connections when controlling arpeggiators and analog sequencers.

CONNECTIONS

Playing an external MIDI module

To set the Mobius up to play an external MIDI module, **turn the power off on both devices**, and using a MIDI cable connect the MIDI OUT on the back panel of the Mobius to the MIDI IN of the module you want to play. Once connections are made you may turn both units on.

To setup the MIDI parameters in the Mobius, while the sequencer is stopped, enter the song mode. Once in song mode, pressing the MIDI key will enter the MIDI mode. The display will now show ON or OFF, which indicates whether the Mobius will respond to incoming MIDI messages. Using the UP/DOWN keys, set the display to read OFF. This allows the Mobius to play by it's own internal clock. Press the MIDI key again to enter the MIDI CHANNEL page. The display now shows the MIDI channel (1-16) that the Mobius will send and receive MIDI information on. Use the UP/DOWN keys to select the desired MIDI channel. Press the MIDI key again to exit the MIDI mode when you are through making changes. Make sure the external MIDI module is set up to play the sound you want on the same MIDI channel the Mobius is set to send information on. Now you can select and play both songs and patterns to control the external module.

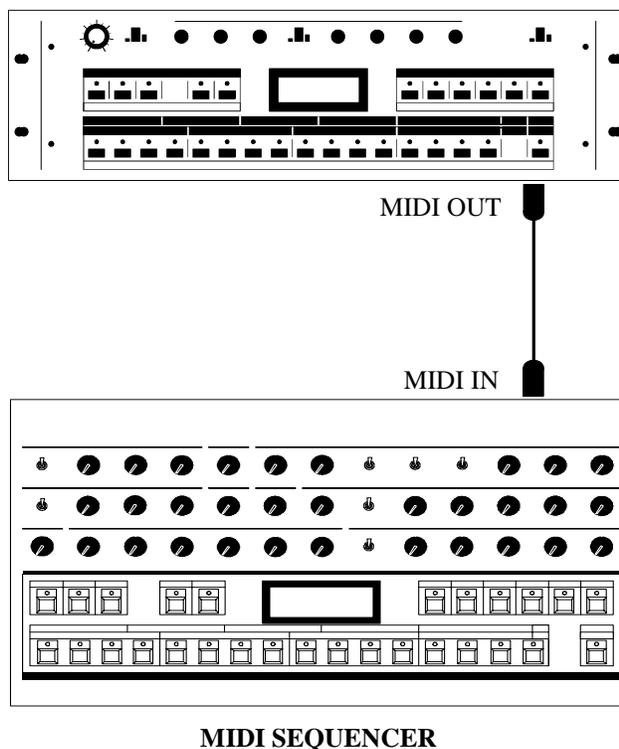


Syncing an external MIDI module

The Mobius can be used to control the playback of any MIDI sequencer. The Mobius will act as a master, allowing it to start, stop, and control the tempo of the sequencer being synced.

When making connections, turn the power off on both devices. Using a MIDI cable, connect the MIDI OUT on the back panel of the Mobius to the MIDI IN of the sequencer you want to sync. Once connections are made, you may turn both units on.

To set up the MIDI parameters in the Mobius, stop playback and enter the song mode. Once in song mode, pressing the MIDI key will enter the MIDI mode. The display will now show ON or OFF, which indicates whether the Mobius will respond to incoming MIDI messages. Using the UP/DOWN keys, set the display to read OFF. This allows the Mobius to play by it's own internal clock. Press the MIDI key again to enter the MIDI CHANNEL page. *The Mobius will send MIDI start, stop, and tempo messages no matter what channel is selected.* You may want to set the MIDI channel of the Mobius, to a MIDI channel the device being synchronized will not respond to. Otherwise, the external device may try playing what is programmed into the Mobius' sequencer while it is playing it's own programmed sequences. Press the MIDI key again to exit the MIDI mode when you are through making changes. Make sure the external MIDI sequencer is set up to respond to an external clock and in a ready-to-play mode. Now when playback in the Mobius is started and stopped, the external sequencer will start and stop it's playback as well as play at the tempo set in the Mobius.



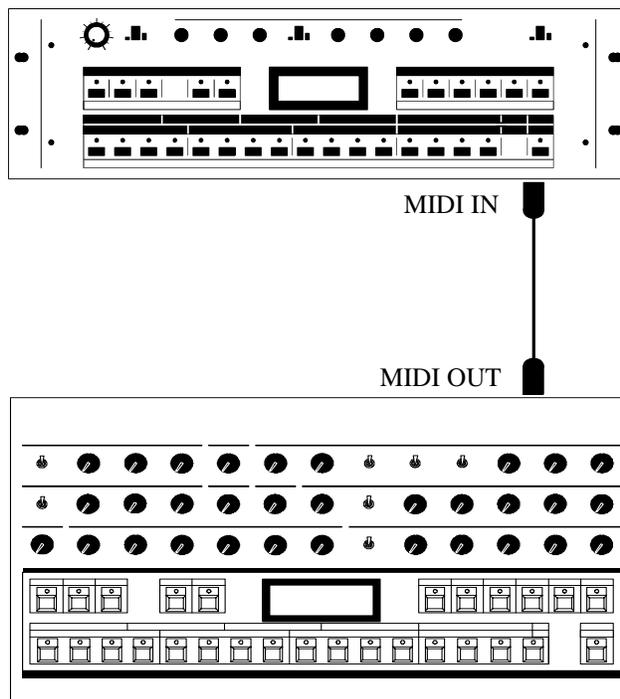
CONNECTIONS

Syncing to an external MIDI clock

The Mobius can synchronize its playback to any MIDI sequencer. The Mobius will act as a slave, where its start, stop, and tempo will be controlled by an external sequencer.

When making connections, turn the power off on both devices. Using a MIDI cable connect the MIDI IN, on the back panel of the Mobius, to the MIDI OUT of the sequencer you want to act as the master. Once connections are made you may turn both units on.

To setup the MIDI parameters in the Mobius, stop playback and enter the song mode. Once in song mode, pressing the MIDI key will enter the MIDI mode. The display will now show ON or OFF. Using the UP/DOWN keys, set the display to read ON. This allows the Mobius to respond to incoming MIDI messages. Press the MIDI key again to enter the MIDI CHANNEL page. *The Mobius will receive MIDI start, stop, and tempo messages no matter what channel is selected.* Press the MIDI key again to exit the MIDI mode when you are done making changes. Select the song or pattern you want the Mobius to play and press the RUN/STOP key. Its key indicator will turn on, showing the sequencer is cued and ready to be controlled by the external sequencer. The external device will now control the playback of the Mobius, while songs and patterns can be selected as usual. To exit the cued mode, press the RUN/STOP key until its indicator is off.



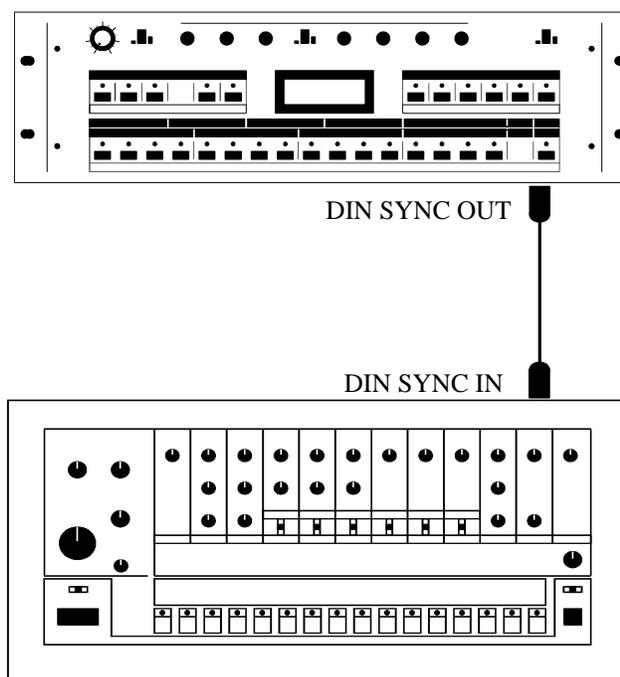
MIDI SEQUENCER

Using DIN SYNC

DIN sync is a pre-MIDI standard that sends both clock and start/stop messages, to control early Roland devices. This clock signal is equal to 24 pulses per quarter note or PPQ. With the DIN sync feature, the Mobius will be able to start and stop the playback, as well as control the tempo of a DIN sync device. These DIN sync messages are sent whenever the Mobius is playing.

While the power is off, connect a 5 pin DIN cable from the DIN SYNC OUT, located on the back panel, to the DIN sync in of the external device you wish to control. When you are through making connections, turn the power on. Now as you start and stop the Mobius, the external device will start and stop its playback as well as play at the tempo set by the Mobius.

DIN sync messages will be sent even when the Mobius is syncing to an external MIDI clock. This allows you to use any external midi clock to control your DIN sync devices.



ROLAND TR-808

CONNECTIONS

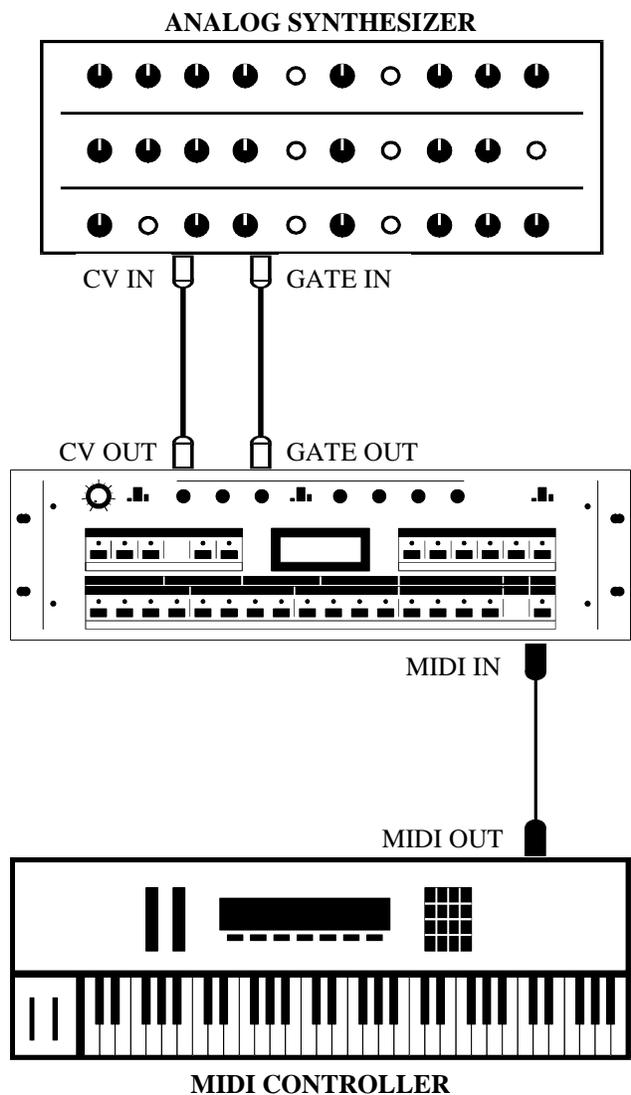
MIDI to control voltage converter

The Mobius can be used as a MIDI to CV converter, allowing MIDI note messages to be converted to the equivalent control voltage and gate signal required to play an analog synthesizer.

When making connections, turn the power off on all devices. Using a MIDI cable, connect the MIDI IN on the back panel of the Mobius, to the MIDI OUT of the MIDI controller or sequencer that notes will be received from. Using 1/4" cables, connect the CV and GATE out of the Mobius, into the respective CV and GATE input on the analog synthesizer to be controlled. Once connections are made you may turn the power on.

To setup the MIDI parameters in the Mobius, stop playback and enter the song mode. Once in song mode, press the MIDI key to enter the MIDI mode. The display will now show ON or OFF. Using the UP/DOWN keys, set the display to read ON. This allows the Mobius to respond to incoming MIDI messages. Press the MIDI key again to enter the MIDI CHANNEL page. Use the UP/DOWN keys to select the MIDI channel note messages will be received on to be converted. Press the MIDI key again to exit the MIDI mode when you are through making changes. Make sure the MIDI controller is set to the same MIDI channel as the Mobius.

When notes are played on the MIDI controller, the pitch of the current note will be converted to the appropriate control voltage, and the gate will be held as long as a note is played. When more than one note is played at a time by the MIDI controller, the control voltage the Mobius produces, will glide smoothly from that of the previous note to the most recent note being played. The ACCENT out signal can be triggered whenever the MIDI controller sends a velocity value higher than 64.



Note: The Mobius can not play it's internal patterns while it is to act as a MIDI to CV converter.

MIDI THRU

The MIDI THRU jack will output only the MIDI messages that are present at the MIDI IN jack of the Mobius. Use the MIDI THRU jack when you wish to daisy-chain multiple MIDI modules to a single master device.

SYSTEM EXCLUSIVE

Using system exclusive to save patterns and songs

The Mobius does support MIDI system exclusive messages (SYSEX), for saving and loading your songs and patterns to other MIDI sequencers or computer programs. Songs and patterns created in the Mobius can also be directly dumped to or from the Future Retro 777 synthesizer.

To do a SYSEX dump, you will need to connect the MIDI OUT of the Mobius to the MIDI IN of the computer you are using, and the MIDI IN of the Mobius to the MIDI OUT of the computer.

NOTE: Only one MIDI cable is needed to load or save information, as the Mobius does not require a hand shake with the other device. By using two MIDI cables as mentioned, loading or saving operations can be done from either machine.

Make sure the Mobius is stopped, enter the song mode, and press the SYSEX key. The SYSEX key indicator will light to show you are in the SYSEX mode. The display will show either "save" or "load". Using the UP/DOWN keys, you can specify whether the Mobius will save or load SYSEX data. Once you have made your selection, press the SYSEX key again. The display will show either "bank" or "song". Use the UP/DOWN keys to select whether the type of transfer will be banks of patterns, or entire songs. Press the SYSEX key again and the display will show which bank or song will be transferred. Use the UP/DOWN keys to select 1-16 or "ALL". When 1-16 is selected that song or bank of patterns will be transferred. If all is selected, you can transfer all the patterns or songs in one process.

You are now ready to load or save SYSEX data with the other machine. If you are saving the SYSEX data from the Mobius to another device, you will first need to set that other device to a ready-to-receive mode. Once this has been done, press the RUN/STOP key on the Mobius to start the SYSEX dump. The RUN/STOP key indicator will turn on and the display will show the packet number being saved, during the SYSEX transfer. When the transfer is complete, the RUN/STOP key indicator will turn off. Consecutive saves may be made without entering and exiting the SYSEX mode, by simply selecting the song or patterns and pressing the RUN/STOP key. The receiving device must always be setup and armed before the transfer is started.

If you are loading SYSEX data into the Mobius, press the RUN/STOP key to initiate the ready-to-receive mode. The Mobius will then be armed and waiting for the SYSEX information to be sent. You may now start sending SYSEX information from the other device. The RUN/STOP key indicator will be on during the transfer, and the display will show the packet number it is receiving. The RUN/STOP key indicator will turn off when the transfer is complete. If a check sum error is encountered during the transfer, the SYSEX key indicator will blink. If an error does occur, repeat the load again or exit the SYSEX mode to clear the error.

When banks or songs are loaded using SYSEX, they are normally placed in the location they were saved. You may change a bank or song's location by editing the sixth byte of the general header, remembering that 0=1, 4=5, 15=16 ect.. The song or bank can then be loaded to the new location in the Mobius.

To exit the SYSEX mode, press the SYSEX key until it's indicator turns off, returning you to the SONG mode.

SYSTEM EXCLUSIVE

SYSEX INFORMATION

MFG ID=07
CHANNEL#=01
MODEL#=77
RAW DATA TRANSFER/PACKET=512 BYTES
PACKET SIZE ENCODED=604 BYTES

GENERAL HEADER INFORMATION

SIZE=11 BYTES
General header is sent once to identify packets to follow.

CONTENTS

F0=SYSEX START
07=MFG ID
01=CHANNEL #
77=MODEL ID
XX=BANK/SONG, 0=BANK, 1=SONG
XX=BANK/SONG #, 0-15, 16=ALL
XX=LSB
XX= *not used*
XX=MSB
F7=SYSEX STOP

PACKET INFORMATION

SIZE=604 BYTES
Packet is sent for every 512 bytes of raw data.

CONTENTS

F0=SYSEX START
07=MFG ID
01=RECEIVE ID
77=MODEL ID
XX=PACKET COUNT (00-7F)
XX=597 BYTES OF ENCODED DATA
XX=CHECKSUM
F7=SYSEX STOP

PACKET SIZE INFORMATION

1 BANK	1 PACKET	604 BYTES
ALL BANKS	16 PACKETS	9,499 BYTES
1 SONG	14 PACKETS	8,313 BYTES
ALL SONGS	224 PACKETS	132,843 BYTES

When transferring SYSEX data to another device, make sure the receiving device has the available buffer size before attempting downloading or saving of the files.

SPECIFICATIONS

NUMBER OF PATTERNS: 256 pattern (16 banks x 16 patterns)

RECORDED PATTERN CONTENT: note duration, pitch, accent, glide, loop point, time signature

NUMBER OF STEPS PER PATTERN: 3/4 time = 12 steps max, 4/4 time = 16 steps max

NOTE RANGE: C1-D#6

LOOP POINT: 1-16 notes per pattern

PATTERN TRANSPOSE: -36 to +36 half steps

OTHER PATTERN FEATURES: copy/paste patterns, pattern shifting, multiple pattern cueing, real-time editing of pattern information, sequencer automatically saves all changes made

NUMBER OF SONGS: 16

NUMBER OF STEPS PER SONG: 3580

RECORDED SONG CONTENT: tempo, bank/pattern per step, pattern transpose per step, song loop point

TEMPO RANGE: 20 - 250 BPM

SONG PATTERN TRANSPOSE: -36 to +36 half steps per pattern

MIDI FUNCTIONS: on/off, channels 1-16

MIDI SYNC: internal, external

NOTE DATA: transmit, receive

SYSEX: sysex transfer of patterns and songs

MIDI CONNECTIONS: in, out, through

DIN SYNC: out

1/4" OUTPUTS:

V/Oct 0 - +5.33 volts range

Hz/V .25 - +9.5 volts range

Gate 0 - +12 volts

Trigger 0 - +12 volts

Accent 0 - +5 volts

Clock 0 - +5 volts

Reset 0 - +5 volts

POWER: 12v AC, 1 Amp