

Linn

LM-1 Drum Computer

LINN ELECTRONICS, INC.

LM-1 DRUM COMPUTER
INSTRUCTION MANUAL

Contents

	Page
GETTING STARTED	
Hook Up.....	1
Playing Drum Buttons.....	1
Playing Rhythm Patterns.....	1
CREATING YOUR OWN RHYTHM PATTERNS.....	2
Erasing Rhythm Pattern Data.....	3
Copying One Pattern Into Another.....	3
Altering the Length of Rhythm Patterns.....	3
Doubling the Length of Rhythm Patterns.....	4
Available Memory Function.....	4
Out of Memory Error.....	4
AUTO-CORRECT FUNCTION.....	5
Shuffle Settings.....	6
CHAIN SECTION.....	7
Building a Chain.....	7
Editing the Chain.....	8
Changing the Contents of a Link.....	8
Inserting a Link Between Two Existing Links.....	8
Deleting A Link.....	9
Changing the Chain #.....	9
Playing the Chain at a Specified Link #.....	9
TAPE STORAGE.....	10
Hooking Up the Cassette Recorder.....	10
Tape Storage Procedure.....	10
Loading From Tape.....	12
SYNCING THE LM-1 TO TAPE.....	13
To Record Original Part and Sync Track.....	13
To Overdub the LM-1 to Original Recording.....	13
REAR PANEL CONTROLS AND CONNECTIONS.....	14
WHAT TO DO IF THE LM-1 STARTS BLINKING.....	14
ALTERNATE DRUM SOUNDS IN THE LM-1 DRUM COMPUTER.....	15
LIMITED WARRANTY.....	16

TIM FINNROGAN



HOOK-UP

- 1) Plug power cord into wall outlet or quality outlet box.
- 2) Connect **LEFT** and **RIGHT** outputs to amplifier.
- 3) Turn power switch (rear panel) to up position; all lights should be off, except pattern # display, which should show **00**.
- 4) Turn up **VOLUME** knob (master volume).
- 5) **STEREO MIXER:** Volume sliders and pan switches (left, center, or right) are provided for each of the 12 drums and the recording click. If a mono only signal is desired, place all switches to one position. To get started, turn all drums up.

PLAYING DRUM BUTTONS:

The 18 drum buttons in the section labeled **DRUMS** may be played at any time (while playing or stopped).

NOTE: There are two volume levels (loud and soft) for the bass, snare, hihat, cabasa, and tambourine that permit limited programming of dynamics and accents. The softer volumes are played on the upper row, indicated by lower case type.

NOTE[2]: In addition to loud and soft hihat buttons, there is an "open" hihat button (hihat ). Hitting one of the "closed" hihat buttons immediately after the "open" button (hihat ) will close the "open" hihat.

PLAYING RHYTHM PATTERNS:

The LM-1 can hold up to 100 distinct rhythm patterns, numbered **00 to 99**. The first 25 (**00-24**) are factory programmed. To play the pre-sets:

- 1) Select a pattern by pressing two digits from the **SELECT RHYTHM PATTERN** section (e.g., to select pattern #16, type **1, 6**).

NOTE: Patterns 0 through 9 require a leading 0 (e.g., to select pattern #8, type **0, 8**).

- 2) Press **PLAY/STOP**. The light above the button will go on and drums will play. If not, check everything above.
- 3) To stop, press **PLAY/STOP** again. The light will go out.

NOTE: Another pattern may be selected while in play mode. However, it will not begin playing until the previous pattern has finished.

CREATING YOUR OWN RHYTHM PATTERNS

Unless you feel at the outset that you will not be using the pre-sets, for now select patterns numbered 25-99 only.

- 1) Select a pattern (e.g.: #30--type 3,0).
- 2) While holding **RECORD** (LED lights will go on and link # display will change--this may be ignored for now), hit **PLAY/STOP** (play/stop light will go on). You should now hear repeating 1/8th note clicks. If not, check to see that the master volume and sliders are up and re-check previous steps. Note that after every sixteen 1/8th note clicks (two measures of 4/4 time), a louder click is heard and the **PLAY/STOP** light blinks. This indicates the downbeat of the two measure, 4/4 time repeating loop.
- 3) Use the **TEMPO** knob to achieve a comfortable pace (this can be done either in record or playback mode). You may find it convenient to obtain a reading of the tempo in "beats-per-minute." Press the **DISPLAY** button. If the tempo is less than 100 BPM, it will read-out in the **PATTERN #** display (the **LINK #** display will remain blank). If the tempo is greater than 99 BPM (thereby necessitating three digits), the first digit will appear in the **LINK #** display and the following two digits will appear in the **PATTERN #** display. "Beats-per-minute" can be displayed only when the LM-1 is stopped.
- 4) Hit any drum button, in time with the click, until you establish the repeating pattern. You may continue to "overdub" other percussion on the "loop" as long as you like--it is not necessary to play all the parts at once.
- 5) To stop recording, hit **PLAY/STOP**. Drums will stop and lights will go out. The rhythm you have entered is now permanently stored (even with power off) under the pattern # you selected.
- 6) To play the rhythm pattern, hit **PLAY/STOP**. Hit it again to stop.

If you wish to add more drums to your new pattern, simply repeat the above steps. Re-entering record mode does not erase anything from the selected pattern, but rather allows you to "overdub" on top of it. Explanation of data erasure techniques follows in the next section.

NOTE: The pattern you entered may sound neater when it plays back. This is because the LM-1's **AUTO-CORRECT** feature has corrected your errors by "moving" your entries to the nearest 1/16th note. To adjust or defeat this feature, see **AUTO-CORRECT** section of the manual.

NOTE[2]: If, after recording many patterns, the pattern # display starts blinking, this means the LM-1 has run out of memory. To stop this blinking, hit **PLAY/STOP**. See "Out of Memory" section.

ERASING RHYTHM PATTERN DATA:

Rhythm pattern data may be selectively erased in four different ways (make sure LM-1 is not in chain mode):

- 1) To erase an entire pattern:
While holding **ERASE**, type the two digit # of the pattern to be erased.
- 2) To erase a specified drum throughout a pattern:
While holding **ERASE**, hit the drum you wish to be erased.
- 3) To erase a drum from a specified portion of a pattern:
Enter record mode (while holding **RECORD**, HIT **PLAY/STOP**, then release). With the pre-recorded pattern playing, hold down **ERASE**, then press the button of the desired drum to be erased precisely at the moment(s) it should be deleted. Example: To erase a cowbell from the second measure of a two-bar pattern, enter record, then simply hold **ERASE** and **COWBELL** simultaneously during the second measure only.
- 4) To erase all 100 rhythm patterns:
While holding **ERASE**, hit **LOAD**.

(Erase modes 1,2, & 4 above will sound a "beep" to verify erasure).

COPYING ONE PATTERN INTO ANOTHER (LM-1 must not be in "chain" mode)

- 1) Type the two digit # of the pattern to be copied from.
- 2) While holding **COPY**, type the two-digit number of the pattern to be copied into. The previous contents of this rhythm pattern will be lost. A "beep" will verify a successful copy.

ALTERING LENGTH OF RHYTHM PATTERNS: (LM-1 must not be in "chain" mode)

This function allows you to change the length of the repeating loop of a specified pattern from the normal two measures to any length you desire. This is useful for odd time signatures, long non-repeating sections, etc.

- 1) Select desired pattern # (enter two digits).
- 2) While holding **RECORD**, hit **LENGTH**. You have now entered record mode, except that the pattern never repeats. (The **PLAY/STOP** light will blink continuously to indicate length function).
- 3) At the moment you wish the pattern to start repeating, hit **PLAY/STOP**. The amount of time that has elapsed between start (step 2) and stop (step 3) is the new length of the repeating loop.

Example: To change the length of pattern #30 to four measures: Type **3,0**. While holding **RECORD**, hit **LENGTH**. Count out four measures of clicks--on the downbeat of bar five, hit **PLAY/STOP**. Pattern #30 is now four measures in length.

NOTE: When an entire rhythm pattern is erased, its length returns to the normal two measure length.

DOUBLING LENGTH OF RHYTHM PATTERNS (COPY LENGTH):

(LM-1 must not be in "chain" mode)

This function: 1) Doubles the length of a specified pattern (a two measure pattern becomes four measures); and 2) copies the data which previously existed in the pattern into the newly created second half. No data is lost, but rather a mirror image of the pattern is created and added on to the end of itself.

- 1) Type the two digit # of the specified pattern.
- 2) While holding **COPY**, press **LENGTH**. A "beep" will sound.

This doubling function can be repeated any number of times (e.g. four measures can be made into eight, eight into sixteen, etc.)

AVAILABLE MEMORY FUNCTION:

(LM-1 must not be in "chain" mode)

When **RECORD** is held down, a number will appear temporarily in the **LINK #** display. This is the percentage of memory available for recording new patterns. The highest this number can be (with all rhythm patterns erased) is 99 (%).

OUT OF MEMORY ERROR:

Even though the LM-1 has a capability of 100 rhythm patterns, it is possible to run out of memory before they are all utilized. This is because the LM-1's memory use is based on the amount and complexity of drum music contained, rather than the number of patterns. The longer and more complex the patterns are, the less memory remaining there will be.

If while recording, copying, or loading data from tape, the LM-1 runs out of memory, it will stop and the **PATTERN #** display will blink, indicating "out of memory error". When this happens, you must:

- 1) Stop the blinking and beeping by hitting **PLAY/STOP**.
- 2) Erase a few unimportant patterns to provide room for more. You may want to store them on tape by following the **TAPE STORAGE** instructions (page 10).

AUTO-CORRECT FUNCTION

This function will automatically correct timing errors made while recording rhythm patterns. This is accomplished by "moving" your drum entries to the nearest, for example, 1/16th note. It is possible to specify the degree to which your entries are moved. For example, to enter a 1/16th note hihat part, you should use 1/16 note **AUTO-CORRECT** (this is also the default setting when the unit is turned on). If you attempt to enter 1/32th notes with 1/16 note **AUTO-CORRECT**, your entries will be moved to the nearest 1/16 notes. Therefore, it is sometimes necessary to analyze the pattern you are recording, and adjust to an appropriate setting.

NOTE: **AUTO-CORRECT** will not affect previous recordings, only those about to be made.

To examine the current **AUTO-CORRECT** setting, hold record (while not in chain mode): Two LEDs will light corresponding to **1/16** and **50%**. The percentage designation may be ignored for now--it will be discussed shortly. The **1/16** light indicates that if record mode is entered (by holding **RECORD** and pressing **PLAY/STOP**), all drum entries will be "moved" to the nearest 1/16th note, thereby correcting timing errors.

To change to a different **AUTO-CORRECT** setting, hold **RECORD** and type **AUTO-CORR** until the desired setting has been reached.

There are seven positions:

ENTRIES MOVED TO NEAREST:	CLICK PLAYS:
1/8 note	1/8 notes
1/8 note triplet	1/8 triplets
1/16 note	1/8 notes
1/16 note triplet	1/8 triplets
1/32 note	1/8 notes
1/32 note triplet	1/8 notes
Hi Resolution	1/8 notes

Note that if the **1/8T** or **1/16T** settings are selected, the click will play 1/8th note triplets. Otherwise, straight 1/8th note clicks will always be heard in record mode.

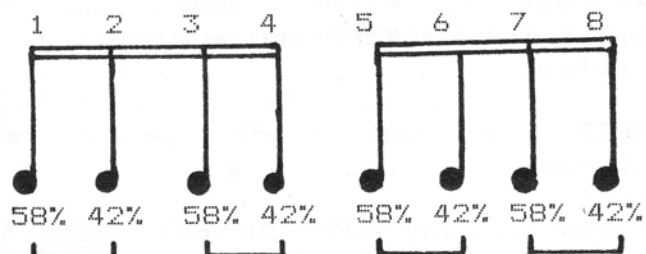
The auto correct setting may be changed any number of times between recording passes to facilitate the particular need of each "overdub". However, these setting changes may only be made while the LM-1 is not playing.

HI (high resolution) setting is used when it is necessary to record a part precisely as played in, or in other words, to defeat the auto correct. This is particularly handy in achieving flams, rolls, etc.

SHUFFLE SETTINGS:

As well as error correction, **AUTO-CORRECTION** has the added capability, if specified, to move your drum entries on to time slots that make the part "feel" more human. This is accomplished by slightly "shuffling" the 1/8th or 1/16th notes.

EX: A 1/16th note hihat pattern will lose its "stiffness" if the odd numbered 1/16th notes receive 58% of each 1/8th note, and the even numbered 1/16th notes receive 42% :



To implement this example, assuming that auto-correct is set at the default setting (1/16), while holding **RECORD**, type **ADJUST SHUFFLE** until the **58%** LED is lit. If record mode is now entered, entries will be moved to the nearest 1/16th note, except that the odd numbered 1/16th notes will receive 58% of each 1/8 note.

If the **1/8** LED is lit while any of the **percentage** lights are lit, the 1/8 notes will be shuffled, instead of the 1/16 notes. In this case, the **percentage** indicated would refer to the amount of each 1/4 note given to the odd numbered 1/8 notes.

CHAIN SECTION

This function enables the LM-1 to be programmed to play entire complex song formats (intro, fills, changing sections, ending, etc.) automatically by "linking" a number of patterns together to form a "chain". When played, each pattern (or link) in the chain will be played one repetition only, then the next pattern, then the next, etc.

NOTE: As with rhythm pattern data, all chain data remains intact with power off.

BUILDING A CHAIN:

1) Record a few new patterns to be used as links in the chain (e.g.: record an intro in pattern #30, a verse in #31, a bridge in #32, etc.).

NOTE: You may want to alter the length of a pattern to be more suited to its position in the song. See **ALTERING LENGTH OF RHYTHM PATTERNS** section.

2) Enter **CHAIN** mode by pressing **CHAIN ON-OFF**. All of the functions described in this section will only operate while the LM-1 is in chain mode. Chain mode is indicated by the link # display being lit (it should display 0 when chain mode is first entered).

NOTE: The **CHAIN ON-OFF** button is dual function: Pressing it once puts the LM-1 into chain mode; pressing it again takes the LM-1 out of chain mode. Chain mode may be entered or exited at any time, playing or stopped.

3) Write on a piece of paper the list of patterns to be entered, in the order you wish them to be played.

4) Enter this list of two-digit patterns into the chain by typing the numbers into the **SELECT RHYTHM PATTERN** section. Notice that after each two-digit pattern is entered, the link # display automatically increments by one, indicating the number of the link you have just filled. Up to 99 patterns (or links) may be entered.

5) After the last pattern has been entered, press **LAST ENTRY**. A [] will appear in the pattern # display. This terminates the chain. When this "last entry" link is reached during playback of the chain, the LM-1 will immediately repeat the chain, starting at link #1. (EX: If four patterns are entered into the chain, and **LAST ENTRY** is entered into link #5, only the first four links, containing the patterns will be played, and they will be repeated in sequence until stopped).

NOTE: Chains immediately repeat from the top when the last entry is reached. To easily defeat this, pad the end of the chain by entering a few "empty" patterns.

NOTE[2]: If a **LAST ENTRY** is not entered at the end of the chain, the LM-1 will simply play the previously programmed contents of the unused remainder of the chain.

6) To play your chain, simply press **PLAY/STOP** (when in chain mode, **PLAY/STOP** will always play only the chain). Press it again to stop.

EDITING THE CHAIN:

When in chain mode, the pattern # display always shows the contents of the displayed link #. To examine a higher or lower link #, press <--- (lower) or ---> (higher). If either of these buttons is held down, they speed up considerably the access to a desired link.

CHANGING THE CONTENTS OF A LINK:

If you want to change the contents of a link from one pattern to another, or if you typed in an error:

1) Use the <--- and ---> buttons to locate the link just before the one you wish to change.

2) Type the "correct" two-digit pattern #. The link # display will increment by one, indicating that the pattern # has been placed in the proper link.

Example: To change the contents of link #15 from pattern #14 to pattern #21: Use <--- and ---> buttons to locate link #14. Type **2,1**. The link # display will increment by one, indicating that the pattern # has been entered into the proper link, link# 15.

LINK#:	12	13	14	15	16	17

BEFORE CHANGE:	11	12	13	14	15	16
AFTER CHANGE:	11	12	13	21	15	16

INSERTING A LINK BETWEEN TWO EXISTING LINKS:

This function inserts a new pattern in the middle of a chain and moves all links located above the insertion point up by one:

1) To insert a new link between two existing links, use the <--- and ---> buttons to locate the higher of the two existing links.

2) While holding **INSERT**, type the number of the pattern to be inserted. A "beep" will sound to verify insertion.

Example: To insert pattern #24 between link #8 (which contains pattern #7) and link #9 (which contains pattern #8), use the <--- and ---> buttons to find link #9. While holding **INSERT**, type **2,4**. A "beep" will sound. Link #9 now contains pattern #08, and the previous contents of link #9 (pattern #08) now resides in link #10. All higher links have also been moved up one position.

LINK#:	7	8	9	10	11	12	13
BEFORE INSERT:	06	07	08	09	10	11	12
AFTER INSERTING				↙	↙	↙	↙
NEW PATTERN # :	06	07	24	08	09	10	11

DELETING A LINK:

In deleting a link from a chain, the gap left by the deletion is automatically closed by moving all higher links down by one:

- 1) Use <--- and ---> buttons to locate the link # to be deleted.
- 2) Press **DELETE**. A "beep" will sound, indicating that the contents of the displayed link # have been deleted, and all higher numbered links been moved down by one to close the gap.

Example: To delete the contents of link # 3, use the <--- and ---> buttons to locate # 3. Press **DELETE** (a "beep" will sound). Notice that the pattern # display now reads **03** which has been moved down from link # 4. All higher links have also been moved down by one.

LINK #:	1	2	3	4	5	6	7
BEFORE DELETE:	00	01	02	03	04	05	06
AFTER DELETE:	00	↙	↙	↙	↙	06	07

CHANGING CHAIN #:

So far, we have described building and editing one chain. There are eight chains, each containing its own set of 99 links. The chains are numbered 1 through 8. To see which chain is currently being used, press **CHAIN #**. While it is held down, the link # display will show **C 1**. This means chain # 1. To change to a different chain #: While holding **CHAIN #**, type the # of the desired chain (1-8; enter one digit only). The chain number you enter will remain current until changed or until power is turned off and on again (chain # 1 is the default setting on power-up).

PLAYING CHAIN STARTING AT SPECIFIED LINK #:

Normally, when **PLAY/STOP** is pressed, the chain will start playing at link # 1. It is possible to play the chain starting at a specified link #:

- 1) Use <--- and ---> to locate the desired starting link #.
- 2) Exit chain mode by pressing **CHAIN ON-OFF**.
- 3) Start play by pressing **PLAY/STOP** (the desired starting link # is now playing).
- 4) Quickly re-enter chain mode by pressing **CHAIN ON-OFF**.

TAPE STORAGE

This feature allows one to save rhythm patterns and chain data on ordinary cassette tape to be re-loaded in later, or loaded into another LM-1. Using this feature, you may permanently store thousands of patterns or chains, building a library far greater than the LM-1's internal memory can hold.

To use this feature, you should use a medium quality cassette recorder (preferably portable and compact) with these features:

- 1) Auxiliary input (if only a mike input is available, the level to the mike input must be reduced by a resistive patchcord).
- 2) Built-in speaker (so that data on the cassette may be easily found).
- 3) Monitor or external speaker output (preferred to line level output).
- 4) Built-in microphone (so that data may be verbally identified).
- 5) Tape counter (so that data on the cassette may be indexed and therefore more easily found).

A recorder with these features can usually be found in the \$50-\$100 range. We strongly recommend that you purchase one dedicated to this purpose and keep it with your LM-1.

HOOKING UP THE CASSETTE RECORDER:

- 1) Connect a patchcord from the tape recorder's **MONITOR OUT** or **EXTERNAL SPEAKER OUT** or **LINE OUTPUT** jack (the first two are preferred) to the LM-1's **TAPE STORAGE FROM** jack.
- 2) Connect a patchcord from the LM-1's **TAPE STORAGE TO** to the cassette recorder's **AUXILIARY INPUT** jack. If no auxiliary input is available, the mike input may be used if the level is attenuated by a resistive patchcord.
- 3) Set playback level on the cassette at approximately midway. If line output is used, set the playback level to full.
- 4) If recorder has input level control, set it so that meter reads approximately -3 DB (just below distortion) when recording.

TAPE STORAGE PROCEDURE:

- 1) Select one of the modes of storage described below:
 - A) STORE PATTERN: This mode is used to store one displayed pattern only (the LM-1 must not be in chain mode). Select the pattern you wish to store by entering the two-digit number.
 - B) STORE CHAIN: This mode is used to store an entire chain (all patterns in order before the last entry symbol []). Be sure the desired chain has been selected (see "Changing

Chain #" section) and that the LM-1 is in chain mode during store.

C) STORE EVERYTHING: This mode is used to store all eight chains and all 100 patterns. This is the mode of the pre-set tape supplied with the LM-1. LM-1 must be in chain mode (link # display lit).

2) Insert a blank cassette into recorder and rewind.

NOTE: It is a good idea, using the cassette's microphone, to record a short verbal identification of the data which is about to be recorded.

3) Put cassette machine into record mode. Wait six seconds for tape to pass leader and for transport to settle.

4) Select one:

- A) If "storing pattern" or "storing chain", press **STORE**; the corresponding light will go on.
- B) If "storing everything," the LM-1 must be in chain mode. Hold record and press **STORE**; the corresponding light will go on.

5) Wait for store light to go off. (In "storing chain" or "storing everything" modes, displays will change indicating data is being stored). When the light goes off, a "beep" will be heard (if click fader is up). Storage is now complete. Recording must now be verified to insure that the data recorded properly.

6) Rewind cassette to the start of the recording. Put the cassette into play and press **VERIFY** button on the LM-1 (the corresponding light will go on). If the tape is a "store chain" or "store everything" one, the displays should change exactly as they did during store. If verify is "OK," verify light will go off and a single "beep" will sound (if click fader is up). If the verify light blinks and the "beep" repeats, a tape error has occurred. You must now:

- A) Stop the blinking by pressing **PLAY/STOP**.
- B) Repeat Step #6 (try adjusting cassette playback level).
- C) If tape still will not verify, check cassette hook-up, level settings and review storing procedure from the top.
- D) If tape still will not verify, try a different cassette or different cassette recorder.

7) If verify was OK, label the cassette so that it can be easily found later.

LOADING FROM TAPE:

- 1) Insert previously recorded data cassette in recorded data cassette in recorder.
- 2) Rewind to start of recording.
- 3) Select one:
 - A) If the tape is a "store pattern" one: LM-1 should not be in chain mode (link # display should be blank). Select the two-digit number of the pattern you want the tape to be loaded into.
 - B) If the tape is a "store chain" one: LM-1 should be in chain mode (link # display is lit). Be sure that the desired chain is selected.
 - C) If tape is a "store everything" one, no preparation is necessary. After a successful load, the LM-1 will assume power-up status.
- 4) Press load (corresponding light will go on), and immediately play tape. Wait for tape to load. If tape is a "store chain" or "store everything" one, the displays should change as they did during store and verify.
- 5) If the load is successful, the load light will go out and single "beep" will be heard (if click fader is up). This indicates the data has successfully loaded into the LM-1. You're finished. However, if load light blinks and "beep" repeats, this indicates tape error. If this happens:
 - A) Stop the blinking by pressing **PLAY/STOP**.
 - B) Check the cassette hook-up and levels and review entire load procedure from Step #1 (try adjusting cassette playback level).
 - C) If tape still will not load, try a different cassette recorder.

NOTE: Any tape function may be stopped by pressing **PLAY/STOP**.

SYNCING THE LM-1 TO TAPE

It is possible to overdub the LM-1 in sync to tape provided that the LM-1's sync signal was recorded on its own track during the original recording.

To record original part and sync track:

- 1) Prepare drum parts for original recording.
- 2) Connect **TAPE SYNC TO** on rear of LM-1 to line input of console, assigned to its own track, bypassing noise reduction.
- 3) Set sync track record level to approximately -3 DB.
- 4) Put multi-track machine into record.
- 5) Wait 10 seconds.
- 6) Play the LM-1.

To overdub the LM-1 to original recording:

- 1) Prepare drum parts to be overdubbed.
- 2) Connect output of sync track to **TAPE SYNC FROM** on rear of LM-1 (this will defeat the LM-1's internal clock).
- 3) Rewind multi-track machine to start of 10-second leader which was recorded on original pass. Play multi-track.
- 4) Press **PLAY/STOP** on LM-1. Play/stop light will go on, but LM-1 will not play until original drum part on tape starts.
- 5) When finished, remove jack from **TAPE SYNC FROM** jack on rear of LM-1. LM-1 will not play by itself until jack is removed.

NOTE: Using the LM-1's sync function in this way will cause the overdubbed drums to be delayed from the original part by approximately five milliseconds. If this is unsatisfactory, it can be eliminated by recording only the sync tone on the first pass, and overdubbing all drum parts. In this way, all drum parts will be delayed equally.

NOTE[2]: The LM-1 is limited to overdubbing at tempos less than approximately 170 beats-per-minute. To overdub at higher tempos, the part to overdubbed should be recorded into the LM-1 in double time (use the LM-1's click as 1/4 notes).

NOTE[3]: Pressing any of the LM-1's front panel buttons while it is overdubbing may cause it to go out of sync, especially at tempos greater than approximately 150 beats-per-minute.

REAR PANEL CONTROLS AND CONNECTIONS

PITCH ADJUST:

The pitch of each drum may be individually adjusted within approximately a one octave range.

INDIVIDUAL OUTPUTS:

Each drum has its own direct output independent of the mixer. Impedance is 1000 OHMS and level is 10V P-P.

INTERNAL CLOCK OUT:

This output provides pulses to sync directly to a sequencer or synthesizer. The note timing value of the pulse follows the auto-correct setting. For example, if auto-correct is set to 1/16th notes, the internal clock out jack will provide a pulse every 1/16 note. If auto-correct is set to **HI**, a high frequency pulse wave will be outputted with 48 pulses for every 1/4 note of music. "On" pulse = +15V; "off" = 0V.

REMOTE PLAY/STOP:

Shorting the tip of this jack to ground performs the same function as pressing the play/stop switch. Ideal for normally open foot switch. May be driven by inverted logic (HI = switch not pressed; LO = switch pressed--threshold is approximately .5V, internally pulled up to +5V).

FUSE:

Use 1/2 amp 3AG fuse at 110 volts; 1 amp at 220V.

POWER REQUIREMENTS:

105-130 VAC 50-60 hz. May be internally rewired for 220 VAC 50-60 hz.

WHAT TO DO IF THE LM-1 STARTS BLINKING:

If the **Pattern # Display** is blinking, refer to the "Out of Memory" section (page 4).

If **Verify or Load** lights begin blinking, review "Tape Storage" section (page 10).

ALTERNATE DRUM SOUNDS IN THE LM-1 DRUM COMPUTER

Each of the LM-1's drum generators are optimised for the decay and frequency range characteristics of that particular drum. Therefore, an existing drum may be replaced with a different recording of the same type of drum or a different drum with the same general characteristics.

SPECIFICS:

SNARE: The two buttons permit two playback volumes of the same drum recording. These may be replaced with an alternate snare or other drum containing high frequencies (i.e. snare, rimshot, cowbell, etc.) Lower frequency drums should use tom, conga, or bass generators.

TAMBOURINE: Same as snare generator.

COWBELL: Same as snare, except half the recording time and only one volume level.

RIMSHOT: Same as cowbell.

CLAPS: Same as snare, except only one volume level.

CABASA: Same as snare, except half the recording time.

BASS: Same as snare, except sweeping 24 db/oct filter attenuates highs after strike.

TOMS: The hi and low tom buttons permit two playback pitches of the same recording--you cannot change one without changing the other. As with the bass drum, a 24 db/oct sweeping filter attenuates the highs after the strike.

CONGAS: Same as toms. These may be replaced with two more toms. Note: Only one tom OR one conga may sound on any one note.

HI-HAT: May not be changed.

We have in our library a harder "rock" snare, and a "splash" snare (with very little midrange), as well as other drums. If you have a special drum you would like put into your LM-1, please call us so that we may help with your particular application. In general, we will need a recording of the drum (15 ips, 1/4 inch-1/2 track, no noise reduction, cut very hot, no ambience, short decay, and noise-gated if possible). Send us the tape, and we will return the encoded memory chips to your dealer so that he may install them without voiding your warranty. All tapes received become the sole property of LINN ELECTRONICS, and may be used in other customers' units on request.

There is a standard charge of \$100 for each alteration.

LIMITED WARRANTY

Linn Electronics, Inc. will repair, free of charge, any LM-1 Drum Computer that, in our opinion, is defective in materials and/or workmanship, and has not been subjected to abuse, for a period of **one year** from date of purchase. This warranty is issued to the original purchaser only, is non-transferable, and is subject to the following conditions:

1) The customer must call his dealer to establish that the LM-1 is definitely malfunctioning. If the dealer cannot determine this, the customer must call Linn Electronics (10 a.m. to 5:30 p.m./Pacific time, Monday through Friday) for the same reason.

2) The customer must return the defective LM-1 in the original shipping carton (or sturdy road case), **prepaid**, to:

3) The customer must include proof of purchase (with date of purchase) as well as a detailed description of the problem(s). Include a return street address (no post office boxes).

This warranty is **VOID** if, in the opinion of Linn Electronics:

A) The product is modified in any manner.

B) The product has been repaired or serviced by anyone other than authorized dealers or repair stations licensed by the manufacturer.

C) The product is damaged because not properly installed, maintained or operated in accordance with the instructions contained in this booklet.

NOTE: Under no circumstances shall manufacturer be liable for any loss or damage, direct or consequential, arising out of the use of, or inability to use, this product.