# Beat707.com

Drum Machine Manual
## V1.2.0

Welcome to Beat707 Arduino Shield

This board requires an Arduino Board plugged on the bottom of the Beat707, you can also use a NetDuino or FEZ Panda, but currently there's no software design for the .NET platform. You can use an Arduino 2009, Uno or Mega boards, which features compatible software to run with.

Step 1

The first step we will take is to plug the Arduino Board and power up the device. We will not discuss any Arduino related information here, we will use another document for that. So, if you are new to the Arduino and just received your Beat707, be sure to read the Beat707 Arduino Introduction first.
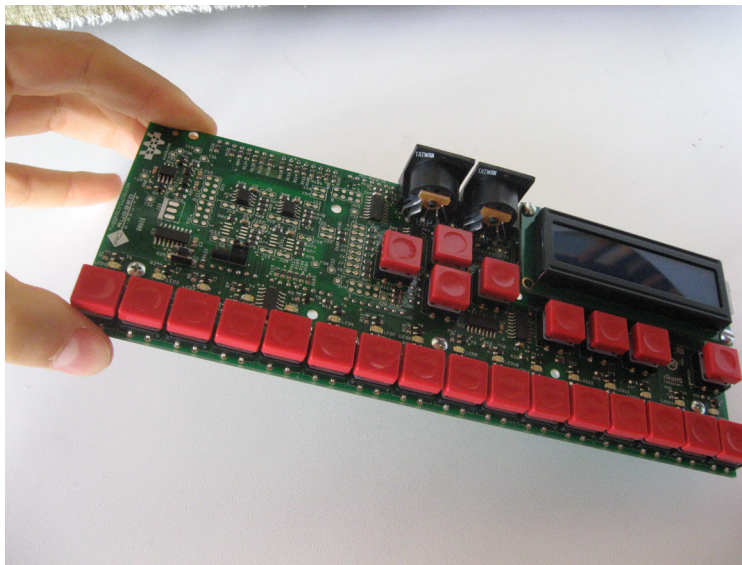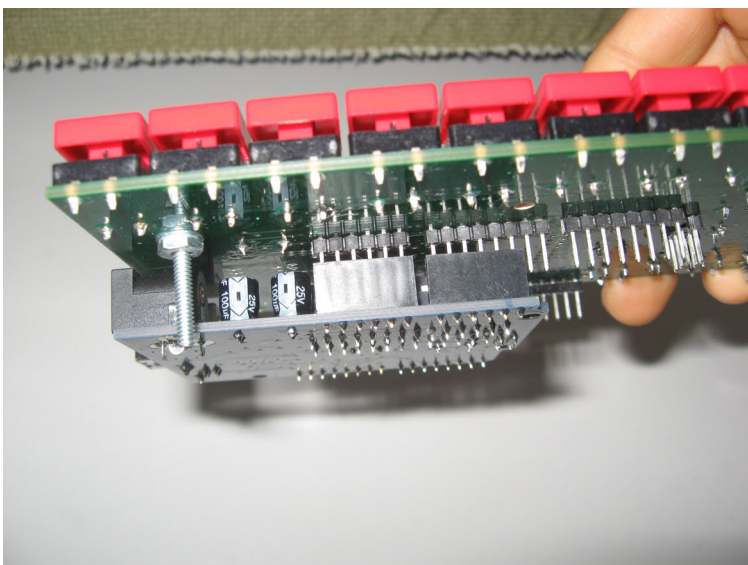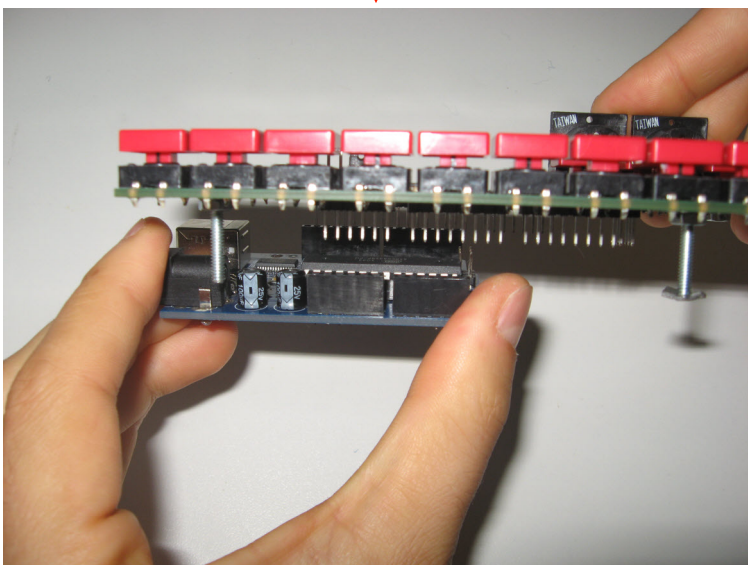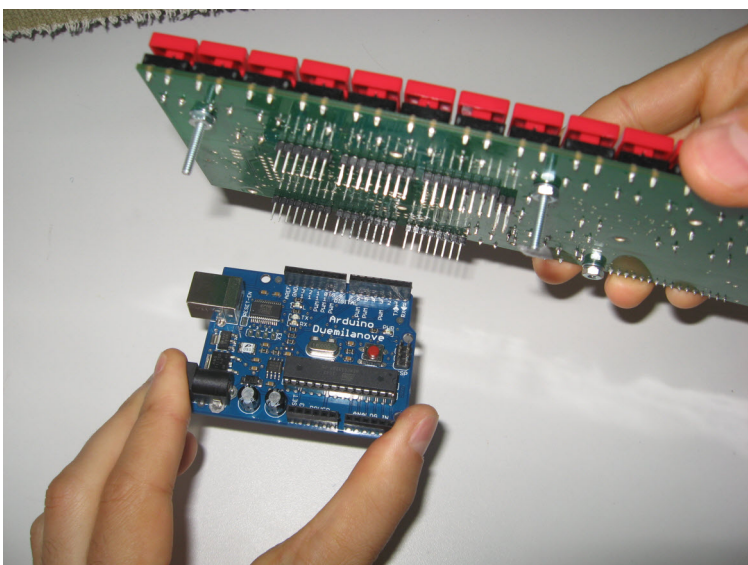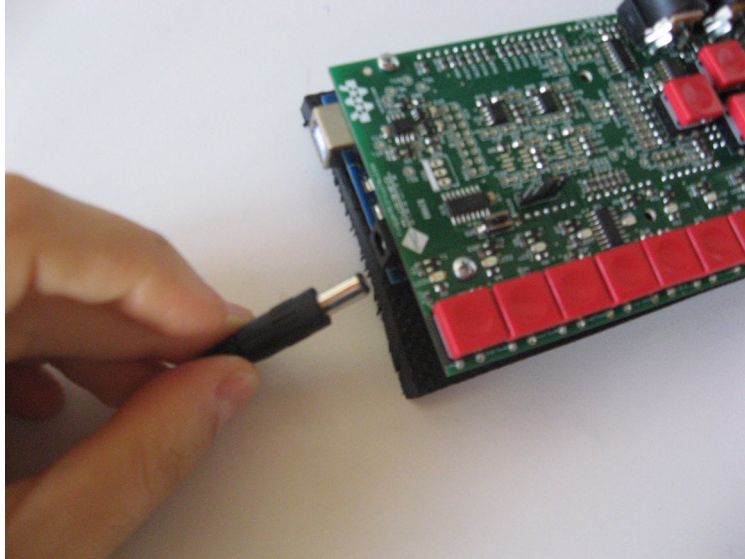

Top of the Beat707 Board
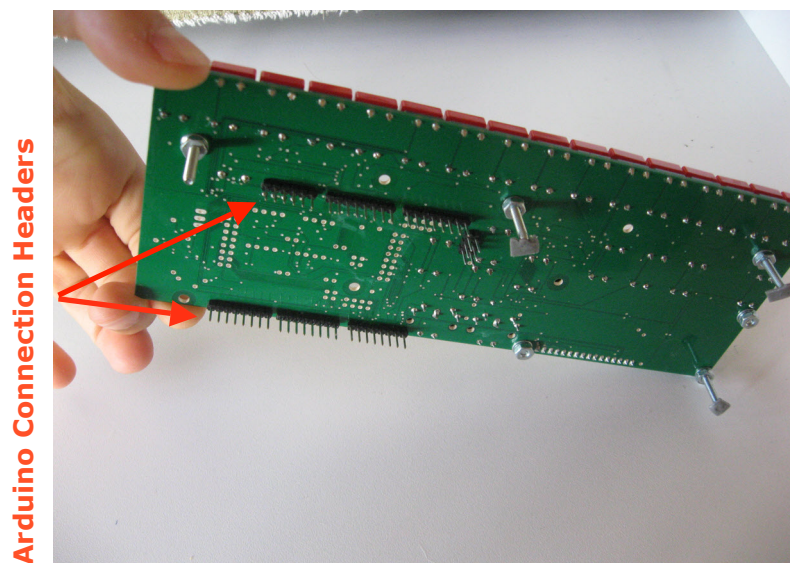
Bottom of the Beat707 Board

Arduino Connection

Power Up and you are ready to go ...
(if you already flashed your Arduino with the Software)
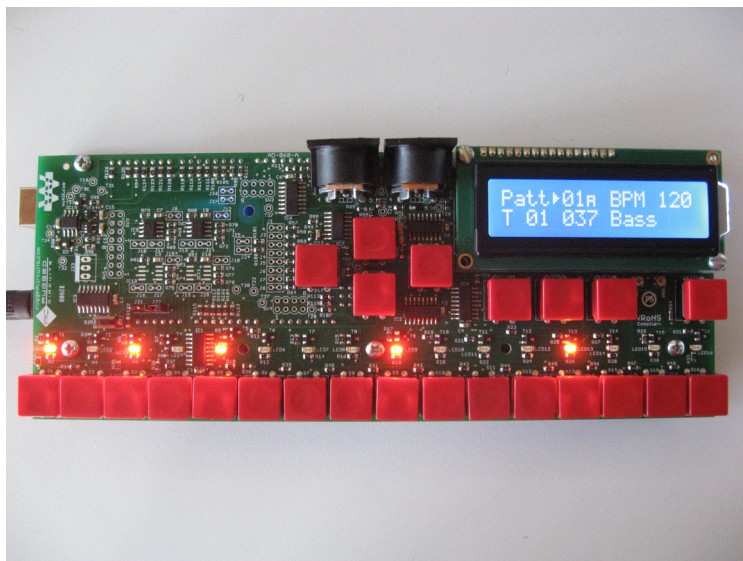
Pattern Mode Interface

When you power up the device, the first mode it enters is the Pattern Mode. Be sure to check what each navigation key does, so you can start up quickly and easy.

Cursor Indicator

Play   Stop   Record   Shift / OK
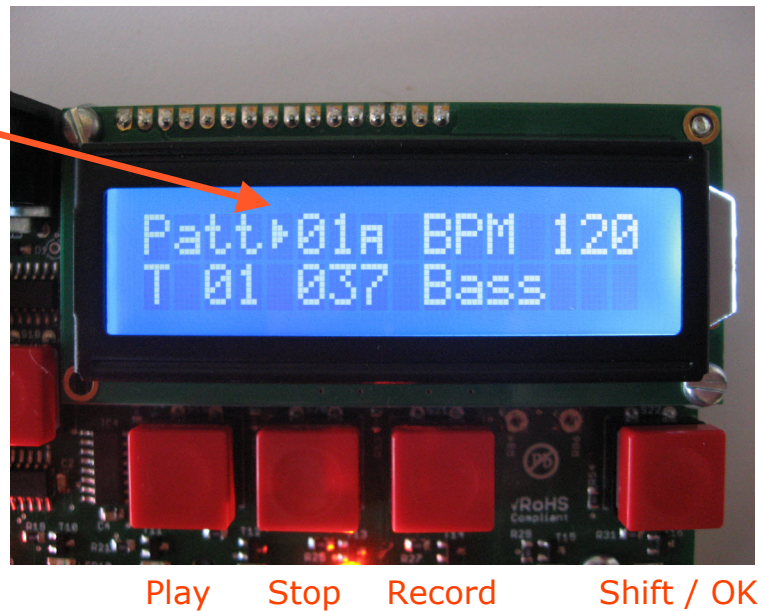
Up / Down / Left / Right
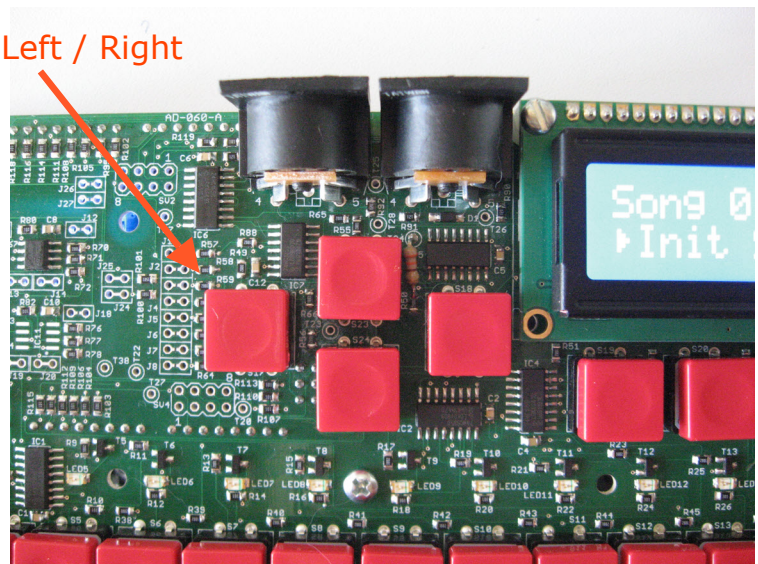
The Cursor Indicator tells you where you are, we call it a Zone. In Pattern Mode we have several zones to edit. The Next / Right keys will navigate between zones. The Up / Down will change a Zone selection value, or when required, a Shift will act as OK.

List of Zones while in Pattern Mode:

1. Pattern Selector - Up / Down will select the next playing pattern while the Clock is running. Otherwise the change is instant. Here you also select patterns A and B when AutoStepsEdit is Off or the Clock is not running.

2. BPM (Tempo) Selector (Beats Per Minute)

3. Track Selector: T 01 to 14 + Synth Track 1, 2 (S1/S2) and Accents Tracks 1 and 2. (A1/A2) - Note that by default you can hit Shift + Step buttons to go directly to any track.

4. Midi Note Number - When in a regular Track (01 to 14) you get the select which note number is output when this track Step is played. A1/A2 tracks has no option here, S1/S2 tracks let you chose the current editing step note.

5. Track Selector again, just like Zone #3.

6. Midi Channel selector for the current selected Track. By default all Drum tracks are set to Midi Channel 10 and Synth Tracks to Channels 1 and 2. But this can be changed and saved in the Setup/Song. (anytime you hit Play, Stop or change a pattern, the system checks what was changed and saves to the internal EEPROM memory, which is retained even if power is lost)

7. Speed Mode: 1/16 or 1/32.

8. Midi Clock Sync Mode: None, Slave or Master.

9. Auto Steps Editing: On / Off. When On, the system will always let you edit the current A / B playing pattern. When Off, you get to select if you want to edit A or B by using the Up / Down keys in the Pattern Selector. (Zone #1)

10. Mirror Editing Mode: On / Off. When you select this mode, any changes done in the Steps will effect both A and B patterns in a flip-flop mode. For example, if Pattern A Step #1 has a Step, but Pattern B Step #1 has no Step, and you hit Step Button #1, it will flip the result of each Patterns A and B Step #1. In normal situations you would just use this to quickly create a pattern, turn Off this feature and add changes to Pattern B, getting a 32 step pattern done very quickly. A shortcut for this feature is to slowly click twice the Shift key. The cursor will change to a X instead of the regular > indication that this feature is currently On.

11. Midi Clock Shuffle: 00 = Off, anything above 0 will start shuffling the Midi Clock, which produces a Swing Type Effect to the notes.

12. GoTo: another mode, just select with Up / Down and click Shift / Ok to change the mode. A shorcut is to press Left + Right at the same time, this will change to the next mode which would be the Song Mode in this case.

Shift Function while in Pattern Mode:

- Quick Shift: (when Record is Not On) turns On / Off the extra hidden 1/32 (or 1/64, depending on the selected speed mode) steps editing. The A / B pattern indicator will show a small dot at the top of the A / B letter. This indicates that you are now editing the in-between 1/32 (or 1/64) extra steps. Just do a quick test to understand what this does: start with a blank pattern, add all closed hihat steps, now hit shift and release quickly, the A / B pattern will show a small dot, now add, for example, steps 13, 14, 15 and 16 and hear the result. In total a pattern holds 64 steps, 32 for A and 32 for B, while 16 is the regular steps and 16 are the hidden 1/32 (or 1/64) in-between steps. When you have Record On, Quick Shift will just Show/Hide the Beat Indicator.

- Hold Shift: when you hold the Shift Key, you can use Up / Down to select different options. If you hit Record while holding the Shift Key, you can release and it will "stick". When you want to "un-stick", just press Record again. Below are the multi options for when you hold the Shift Key. While holding Shift, press any of the 16 Steps Buttons.

    ✓ Direct Track Selector - The last 2 Step Buttons: #15 and #16 allows you to select a Synth or Accent Track. Just press twice for Accent Tracks or once for Synth Tracks.

    ✓ Mute Tracks - Steps #15 and #16 are the Synth Tracks 1 and 2.

    ✓ Solo Tracks - Same for the Mute Tracks option. Clicking twice will turn Solo Off.

    ✓ Init Pattern - when you release Shift its going to ask to press Shift again to confirm. If you want to cancel, just wait 12 seconds to abort.

    ✓ Copy Pattern - this will copy the current pattern to a special area of the EEPROM, so you copy a pattern from a Song, load a different Song, and paste the Pattern. Just release Shift to confirm.

    ✓ Copy Pattern Accents - same as above, but will copy only the accent-steps of a pattern.

    ✓ Paste Pattern - this will copy back any pattern stored in the EEPROM special Copy/Paste area. You will need to hit Shift again to confirm, or wait 12 seconds to abort.

    ✓ Paste and Merge Pattern - this will merge the current pattern with a copy you stored previously in the EEPROM memory. (with the Copy Pattern function)

- Slow Double Shift Click: toggles Pattern Mirror Editing On/Off.

- Shift + Left: goes directly to Zone #1

- Shift + Right: goes directly to Zone #12

List of Key Shortcuts:

- Left + Right = Go to the Next Mode: Pattern -> Song -> File -> Pattern -> ...

- Stop while Midi Clock not running = flips patterns A and B editing.

Record Mode:

When Record is selected you can use the Step Buttons to play Notes and Record in the Pattern while the Midi Clock is Playing. Quick Shift will hide / display the Beat Indicator. Keep in mind that there's no Undo function, so be sure to make a copy of your pattern before recording. In the future we may introduce an Undo feature for the Record option.

Synth Tracks: (S1/S2)

When editing a Synth Track, the Step Buttons will select which Step will be edited. Pressing a Step more than once will rotate from: No-Note, (None) Previously Edited Note Number, Current Note-Number Slide. By pressing Up/Down while in Zone #4 you get to change the note number. When a step has No-Note (None) you can press Up to select Note-Off, which will stop the previously playing note. If you keep pressing Up it will start going up in the note numbers. Any note number set will be used for the next steps double-click. (if a step is not set) Keep in mind that unless you set a Note-Off in a step, the previous note will keep playing until a new note is set or Stop is hit. Velocity is set by the Accent tracks, just like with regular Drum Steps. (Tracks 01 to 14)

Accent Tracks: (A1/A2)

Beat707 has 2 Accent Tracks, getting you a total of 4 different velocity values for each step. None, A1, A2 and A1+A2, which results into the following velocities: 87, 107, 107, 127. (you can tweak the code to get different results)

Song Mode Interface

This is the next Mode, where you can arrange Patterns in any playing order you want. You also have the option to Repeat a pattern N number of times and also Loop the entire Song.
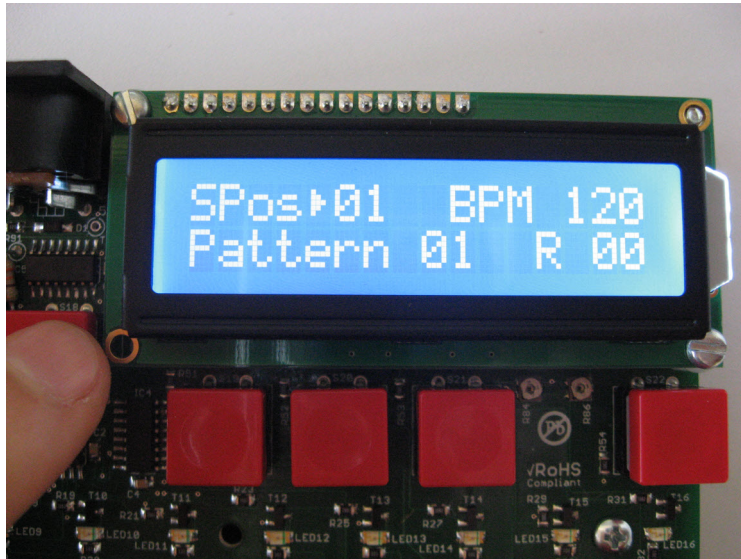
List of Zones while in Song Mode:

1. Song Pattern Position: you have up to 99 positions, each position is a pattern # and repeat value.

2. BPM (Tempo) Selector: (Beats Per Minute) this is global and also used by the Pattern Mode.

3. Pattern Selector: just use Up / Down to select patterns. Selecting End will stop the song and Lop will Loop the entire Song.

4. Repeat Selector: just use Up / Down to set the number of times this pattern will repeat itself before going to the next Song Pattern Position.

5. GoTo Next Mode Selector. (See Pattern Mode Zone #12)

List of Key Shortcuts:

- Left + Right = Go to the Next Mode: Song -> File -> Pattern -> ...

- Stop while Midi Clock not running = returns Song Position to Start (01) and Zone Editing to Zone #1.

- Record = Edits the current playing Pattern. Just hit Left + Right to go back to Song Mode in the current Song Pattern Position. (where you left)

- Shift + Left = Previous Song Position / Shift + Right = Next Song Position

File Mode Interface

This is the next Mode, where you can work with the internal Songs Memory, which are saved in a special Flash Chip. Currently V1.2.0 holds up to 21 Songs in the Flash Memory. Here you can do the following tasks with each Song: Load, Save, Dump to Midi and Erase.

List of Zones while in File Mode:

1. Song # Selector: you have up to 21 Song Memory Locations in the internal Flash Memory.

2. Task Selector: Load, Save, Dump to Midi, Erase. Hit Shift / Ok to execute the task.

3. Song Name Editor: click Shift / Ok to edit. To exit, scroll at the edges of the name with the Left or Right navigation keys until it exits editing mode. (the > cursor will be back) Shift will toggle Uppercase or Lowercase; if in an empty space or with anything lower than a letter A, it will turn the character into a letter A. Holding Shift will clear the space.

4. System Exclusive Midi ID Selector. (SysEx ID) This is the number used while sending a Midi SysEx Dump. (in case you have more than one Beat707 units connected via Midi to a SysEx device, such as a Computer or Midi Storage unit)

5. System Initiation: this will erase everything in the unit and put back the factory memory. You will need to confirm twice with the Shift key before proceeding. This usually takes less than 1 minute to complete. By default an Empty Song will be stored in the Song Flash Memory and any other stored Song will be erased.

6. GoTo Next Mode Selector. (See Pattern Mode Zone #12)

List of Key Shortcuts:

- Left + Right = Go to the Next Mode: Song -> File -> Pattern -> ...