



PM Foundations ER-808 v1.4  
User Guide

## 1. Introduction

This is PMF's tribute to the Roland TR-808, as a Eurorack-compatible module composed of a panel and a set of build-it-yourself PCBs.

The ER-808 is driven by a PIC microcontroller which is pre-programmed and included with the PCB set.

## 2. Touch panel vs Button panel

There are two versions of this project. One uses push buttons to program the steps and the other introduces capacitive touch pads directly on the front panel to modernize the TR-808 experience.

The touch panel "buttons" are capacitive touch pads consisting of the area surrounding the step LED and marked with a rounded square outline on the panel.

## 3. Short press and Long Press

Touching a step pad or pressing a step button toggles that step. Holding the pad or the button for an extended period results in a "long press" signal being sent for the step, resulting in specific and different actions. These actions are described further under the individual actions listed below.

## 4. Mode button. Pattern mode (LED is off):

Used to modify the currently loaded pattern. The pattern is only held locally until you save it in one of the memories. You can assign the drums when the sequence is stopped or you can do it while it is running. Long press a step to set the length of the pattern. When you long press the step, the LEDs below that step will all flash once and the pattern will loop from that position rather than from step 16.

## 5. Drum buttons

Selected drum (LED on) will be toggled on or off that step when a step button is pressed.

## 6. Setting Pattern Length

Long pressing a step while in Pattern mode sets the Pattern Length from 1 to 16 steps. While long pressing the step, all the steps below will flash once to indicate the pattern length has been set. Any drums programmed to the steps above the pattern length will be removed from those unused steps.

## **7. Mode button. Track mode (LED is ON):**

Enables selection of step buttons representing saved patterns, e.g. 1,2,2,3 to build a chain of patterns. The chain keeps on getting built as each step is pressed. The chain floats locally until saved. You can't really see what's in the chain so keep good notes!

The drum buttons are disabled.

## **8. Start/Stop**

Runs the sequence at the set tempo. In Pattern mode it will repeat at the step marked as the final step. In Track mode it will repeat at the end of the last pattern in the chain.

## **9. Save**

Flashes the Mode LED, press Save again to cancel procedure.

When in Pattern mode: Select a step number representing memory number. The current pattern will be saved to that memory, overwriting anything that is in that memory location.

When in Track mode: Select a step number representing memory number. The current chain of patterns (track) will be saved to that memory.

## **10. Load**

Flashes the Mode LED, press Load again to cancel.

When in Pattern mode: Select a step number representing memory number. The saved pattern will be recalled from that memory. Start/stop/forward/back/clear is disabled until load complete.

When in Track mode: Select a step number representing memory number. The saved track/composition will be recalled from that memory. Start/stop/forward/back/clear is disabled until load complete.

## **11. Clear button**

Flashes the Mode LED, press Clear again to cancel. Press ANY step to confirm clear operation.

When in Pattern mode: Removes all the instruments from all the current steps.

When in Track mode: Removes all the chained patterns from the local track , i.e. undo chaining and leave 0 patterns in the chain

## 12. External Start, Internal Clock and External Clock

With the External Clock disconnected, when the ER-808 receives an External Start pulse it primes the sequencer at step 1 and starts the Internal Clock. When the External Clock is connected, the Start button or the External Clock signal primes the sequencer at step 1 and the first clock pulse starts the sequence running.

## 13. Clock Out

The Clock Out has a 1ms pulse width (1ms high and remainder of step low). The clock level is +10v approximately.

## 14. Accent and Trigger

The loudness and length of each beat is dependent on the trigger level at each drum module. With Accent at 0, the internal trigger level is +4V. With the Accent at full clockwise, the internal trigger level is +11V. However, for clap, cowbell, cymbal, closed high hat and open high hat the internal clap levels are lower to reduce an inherent noisier oscillator in these modules. The reduced trigger levels keep the noise low when these modules are not being triggered.

## 15. Trigger Out

The Trigger Out level is a 1ms pulse of +10V. The Trigger Out from any step is 0 unless the Trigger Out "drum" is programmed to that step.

## 16. Noise reduction

Some of the oscillators used in the ER-808 are inherently noisy. At high volumes you may hear background noise from the oscillators. To reduce or eliminate noise you can connect the outputs of the ER-808 to a VCA and use the Trigger Out pulse applied to each step to open the VCA either directly or through an external Envelope Generator. This patch creates a noise-gate for the ER-808 which keeps it silent except when a drum sound is programmed on a step.

## 17. Factory patterns

The following pre-set patterns can be loaded into the pattern and track memories:

Pattern:

//0 rock a (pattern 1)

//1 rock b  
//2 bossa nova a  
//3 bossa nova b  
//4 mambo a  
//5 mambo b  
//6 samba a  
//7 samba b  
//8 bm 1 a  
//9 bm 1 b  
//10bm 2 a  
//11bm 2 b  
//12bm break  
//13bm main (pattern 14)

bm is basic Blue Monday drum parts .

In Track Mode there is a preloaded Blue Monday drum track at track 16.

To load the pre-set patterns and tracks, press and hold the LOAD button for a few seconds until all the steps flash. They are now loaded into the memory. All 14 patterns and the track are loaded at the same time and can then be accessed individually using the standard load procedure i.e. Load Button followed by pattern number (using step buttons 1-13) or Track number (using step button 16)

## **18. Factory reset**

To clear everything and do a factory reset, press and hold the CLEAR button. This removes any user or pre-set patterns/tracks from the memories. Preset patterns/tracks can be recovered again using the load sequence described above.