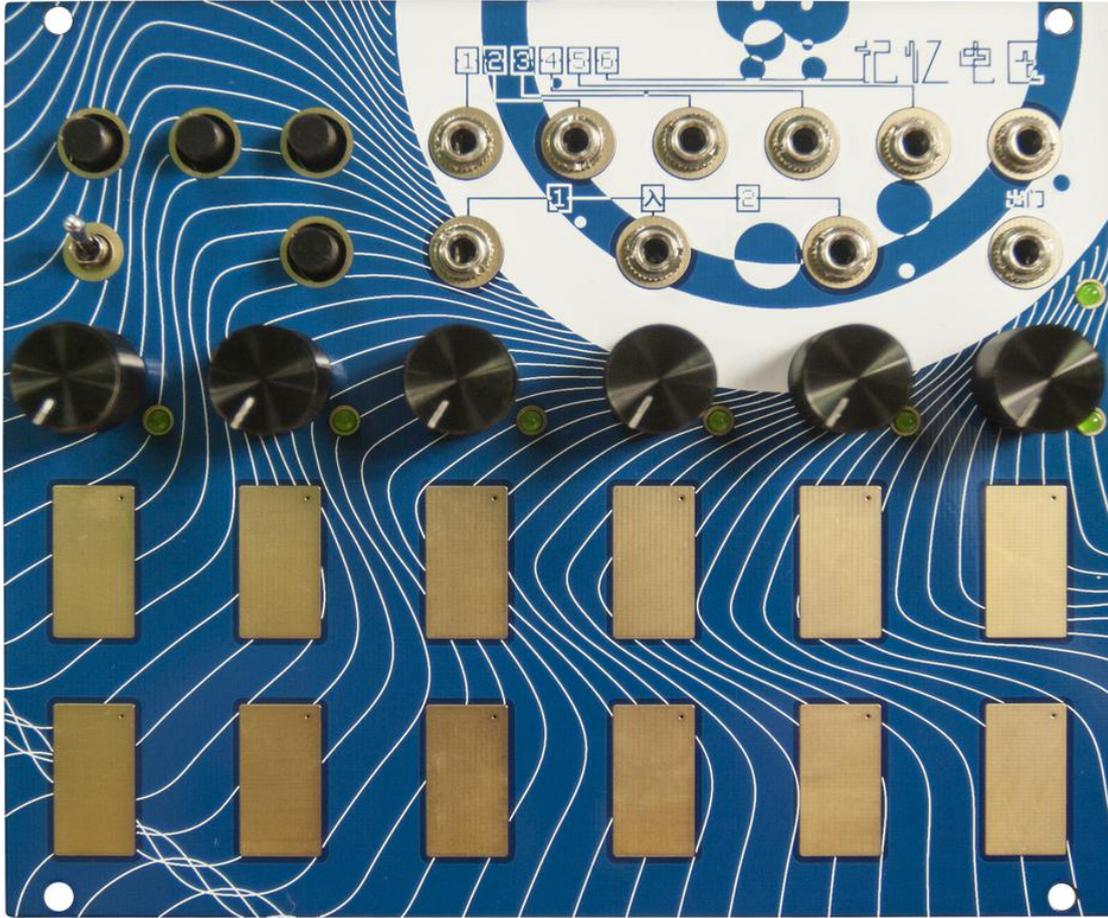


# Voltage Memory - 记忆电压

Thank you for choosing MengQiMusic Voltage Memory (VM for short). It's a multimode digital 84x6 programmer that packs LOTS of features, yet easy to play and intuitive to navigate. You also own a piece of synthesizer history since VM is the first synth module ever coming from China. Enjoy!



Buttons on the top row are BANK BUTTON 4 / 2 / 1;  
Switch on the bottom row is MODE SWITCH;  
The button to the right is SAVE BUTTON;

Jacks on the top row are OUTPUT 1-6;  
Jacks on the bottom row are INPUT 1-3 and GATE OUTPUT.

---

## Structure :

There are 84 pages on VM, arranged in 7 banks – so there are 12 pages per bank. On each page there are 6 voltage values, available from output 1-6;

- BANK SELECTION - BANK BUTTONS are layered out in a 3-bit binary fashion – 4/2/1. e.g : pressing 4 and 1 at the same time, then bank 5 is selected. Thus with different button combinations you can select bank 1-7;

## [Manual Mode]

When MODE SWITCH is at down position, VM is in Manual Mode. This is where you manually select page, and page editing is also achieved in this mode.

<b>Manual Mode</b>	
PAGE RECALL	Touch a pad
TIMING QUANTIZE	When a high gate signal is at INPUT1, page changing is triggered by INPUT2. e.g : after touching a pad, VM will not jump to the new page instantly, but when a trigger presents at INPUT2. This function allows page changing to be quantized to an external clock, similar to the quantizing function of Ableton Live
PAGE EDIT	Tweak a knob, the corresponding output value will be replaced by panel knob value. To save the new setting, press SAVE BUTTON to save it to memory
PAGE COPY	Hold SAVE BUTTON and touch the pads that you want the current values to copy to
BANK COPY	Hold SAVE BUTTON and choose a bank with the BANK BUTTONS would copy the contents of the current bank you are in to the bank chosen
GATE OUTPUT	Determined by internal / external clock source in seq/arp mode : touched/untouched status- external clock mode gate - internal clock mode

## [Auto Mode]

When MODE SWITCH is at up position, VM is in auto mode. There are 3 main automated modes. All Knob Settings - MODE, INTERNAL CLOCK SPEED, INT / EXT CLOCK, SEQ SUBMODE, GATE LENGTH, PRESSURE SUBMODES), as well as SEQ START / END in CLASSIC STEP SEQUENCER will retain after power off.

<b>SWITCHING MODES</b>	
MODE1 (SEQUENCER)	$\text{KNOB1} < 1/3$
MODE2 (PRESSURE)	$1/3 < \text{KNOB1} < 2/3$
MODE3 (LOOPER)	$\text{KNOB1} > 2/3$

### **Mode 1 – Sequencers**

The versatile 4 SUBMODES would almost nail all your sequencing needs.

After powering up, VM starts in CLASSIC STEP SEQ mode if the MODE SWITCH is at AUTO MODE.

<b>Sequencer - SUBMODES</b>	
CLASSIC STEP SEQ	$\text{KNOB4} < 1/4$ Runs between any 2 pages
ARP	$1/4 < \text{KNOB4} < 1/2$ Recalls the pages in the order you touch them
CUSTOM STEP SEQ	$1/2 < \text{KNOB4} < 3/4$ Freely setup sequence, with live performance friendly "PAGE HOLD"
6 TRACK GATE SEQ	$\text{KNOB4} > 3/4$ 6 track gate sequencer with track mute, perfect for drums

<b>MODE 1 SHARED CONTROLS</b>	
CLOCK SOURCE	KNOB3 < 1/2 - internal, KNOB3 > 1/2 - external
INTERNAL CLOCK SPEED	KNOB2
INTERNAL CLOCK GATE LENGTH	KNOB5 (10%-90% pulse width)
EXTERNAL CLOCK INPUT	INPUT2
STEP HOLD	INPUT1
SEQ RESET	INPUT3
CLOCK OUTPUT	in internal clock mode, the GATE OUTPUT outputs clock, in external clock mode, the GATE OUTPUT reports touched/untouched status. So you can e.g. drive a VCA with it to cut off the sound when no finger is on the pads

<b>CLASSIC STEP SEQUENCER</b>	
SEQ START	hold SAVE BUTTON and touch a pad
SEQ END	touch a pad

<b>ARP</b>	
REALTIME PLAY	The output will step through the pages that's touched on the TOUCH PADS, in the same order you touch them;
ARP LATCH	SAVE BUTTON would toggle between latch on/off. When it is on, the arp would still play after you take your fingers off.

<b>CUSTOM STEP SEQUENCER</b>	
WRITE SEQ	Hold SAVE BUTTON and enter step by touching pads, you can freely select bank, and you can enter the same page in multiple steps
CLEAR SEQ	Hold SAVE BUTTON without entering any step for 3 seconds
PAGE HOLD	Touch a pad without holding SAVE BUTTON. VM jumps instantly to that page and hold

<b>6 TRACK GATE SEQUENCER</b>	
WRITE SEQ	Hold SAVE BUTTON and touch Pads on the top row will enter the trigger to the current step, it also forward to the next step. Value would be enter after releasing the pads, you can hold multiple pads to enter triggers for multiple tracks per step
CLEAR SEQ	Hold SAVE BUTTON without entering any step for 3 seconds
TRACK MUTE	Touching pads on top row to UNMUTE the tracks, and bottom row to MUTE the tracks. Muted tracks are indicated by dimmed LED

Tip : touching pads in all seq mode would also setup pages to play in ARP mode, (touching pads in arp mode doesn't affect other seq mode) so you can touch multiple pads on any seq mode and switch back and forth between seq/arp modes for realtime playing complex sequences on the fly.

## MODE 2 - Pressure

This mode makes uses of the amount of touch on the pads.

Pressure - SUBMODES	
6 PRESSURE	KNOB6 < ½
PRESSURE HOLD	Toggle between hold and realtime status with SAVE BUTTON
PRESSURE STEP LENGTH	KNOB6 > ½

### 6 Pressure Output

This mode is very straightforward – the amount of touch on each column of pads (e.g. 1 & 7, 2 & 8) would affect the amount of voltage coming out of the corresponding output. There is about 30 steps resolution per pad, and VM uses 2 pads per output so the resolution is 60 steps between 0 to max.

### Pressure Step Length

An original mode where pressure affects step length. This is for the times when you want a new way to play a sequencer. It would yield in unusual and semi-controllable results.

You can think that every vertical 4 TOUCH PADS form a column, there are 3 columns - 3 step sequence length, and 4 PADS per column - 4 pages to choose from per step. And the pressure on PADS would control step length of each step.

Pressure Step Length	
DIRECTION	KNOB5 < ½ - left to right KNOB5 > ½ - right to left
GATE OUTPUT	generates a trigger when page changes

## MODE 3 - Looper :

You can record page changing in this mode. The track is always looping after recording and it can be reset by incoming trigger.

Looper	
RECORD LOOP	Hold SAVE BUTTON, then when you touch a pad the recording would start. Simply release SAVE BUTTON to end recording and start looping
RESET	INPUT2
GATE OUTPUT	generates a trigger when page changes

## Updating Firmware for VM

You need : a computer & a micro usb cable (same as cables for Android phone)

---

OSX / WINDOWS 10:

- 1) Download Arduino IDE @ <http://arduino.cc/en/Main/Software>;
  - 2) Use an USB cable to connect computer and the red board on the back of the module;
  - 3) Open Arduino IDE, Select arduino leonardo under tools -> board;
  - 4) Select the port under tools -> erial port (Usually appears like "/dev/tty.usbmodemxxxx" on OSX);
  - 5) Open the firmware (VM\_DAC\_XX);
  - 6) Press upload (the 2nd button from left with an arrow on it);
  - 7) Ignore any red messages about low memory.
- 

WINDOWS 7 (by Jumbuktu on Muffwiggler):

- 1) Download and install the Arduino IDE as per MengQi's instructions.
  - 2) Also, find and download the Seeeduino Lite driver file.
  - 3) When you plug in your Voltage Memory, Windows will look for and install the Arduino drivers, but it will show you a failed attempt at installing the Seeeduino driver. Use the file you downloaded to install this driver as well.
  - 4) If you have already installed the Arduino drivers during a previous attempt, open Device Manager. With your VM plugged in, hit the reset button on the side of the board. A new device for Seeeduino will pop up, with a yellow marker. You have a few seconds to right-click on it and update the driver using the file you downloaded.
  - 5) Once you have the drivers properly installed, open Device Manager. Get set up to upload the new frimware from the Arduino IDE. Hit the reset button on the board, and watch Device Manager. As soon as the Seeeduino device appears, hit Upload. It should work - you only have a few seconds to do it.
- Ignore any red messages about low memory.
- 

If it fails uploading, please check in your document folder of the computer : document/arduino/library/. Check if there are MCP\_4725 folder, if so, delete it and restart the Arduino IDE.

Special Thanks to : Bill Sequeira, Aidan Taylor, Seth Zahn

---

Limited WARRANTY:

MengQiMusic warrants this product to be free of defects in materials or construction for a period of two years from the date of manufacture. Malfunction resulting from wrong power supply voltages, backwards power cable connection, abuse of the product or any other causes determined by MengQiMusic to be the fault of the user are not covered by this warranty, and normal service rates will apply.

During the warranty period, any defective products will be repaired or replaced, at the option of MengQiMusic, on a return to MengQiMusic basis, with the customer paying the transit cost to MengQiMusic. Please contact MengQiMusic for Return To Manufacturer Authorization. MengQiMusic implies and accepts no responsibility for harm to person or apparatus caused through operation of this product.

Please contact with any questions, needs & comments.

<http://www.mengqimusic.com>

Updated 2016-11-08