

AM Music Technology

VL 122

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2. Overview

The *AM Music Technology VL-122* VST instrument virtually reproduces the old electro-mechanic spinet organ model *L-122* produced from 1961–1972 by *Hammond™*.

The sound engine of the VL-122 is a physical modeling emulation of the real electro-mechanic generators (tone-wheels), drawbars, filters and effects (vibrato and reverb) that compose the original instrument. Moreover, some new effects have been added to recreate the complete set of timbres that characterize all the Hammond spinet organ sounds, from classic and church to rock and progressive.



The VL-122 is not one more Hammond B3 or C3 console organ emulation, like those you can find both commercial and freeware. The VL-122 is the emulation of the so called “spinet” organ L-122 (or L-1xx series, where xx is related to the mechanic design only).

The spinet organ has a quite different sound. The timbre is less aggressive and more rounded, and it has been used in very different arrangements than the bigger brothers B3 or C3. So it is not one alternative choice, but one more VST to have on our own virtual instrument setups.

The VL-122 VST instrument has been designed having in mind the new generation of dedicated hardware platforms, like virtual machines. In this direction lot of care has been taken to:

- **High level of compatibility** to different hosts or HW platforms.
- **Very lightweight algorithms**, so that simple and cheap virtual machines don't suffer overloads of the CPU.
- **Easy installation procedure**, there is no need of any installers, simply copy the vl122.dll file in the right folder.
- **High degree of MIDI configuration** capability, very useful when using simple and poor VST hosts.

The VL-122 implements the same user controls that you can find in the real instrument, like drawbars, tabs and expression pedal. Furthermore there is also a set of controls, added to handle the new features not present in the original instrument, like wave-shaping, key-click, tube saturation, leslie effect and sustain pedal..

Any configuration of the VL-122 is storable in up to 128 programs and can be reloaded through midi program change.

All the controls can be handled through midi control change messages (see midi implementation chart par. 6).

3. How to install

The VL-122 is a virtual instrument compatible with the VST platform by Steinberg™. This means that must be a VST host installed on your computer.

The installation procedure is quite simple. First of all extract the dll file from the zip file to the VST plug-in folder on your PC.

For instance, if you use Steinberg Cubase, the standard plug-in folder is:

C:\Program Files\Steinberg\VstPlugins

Anyhow, refer to the VST host documentation to know about the VST plug-in folder.

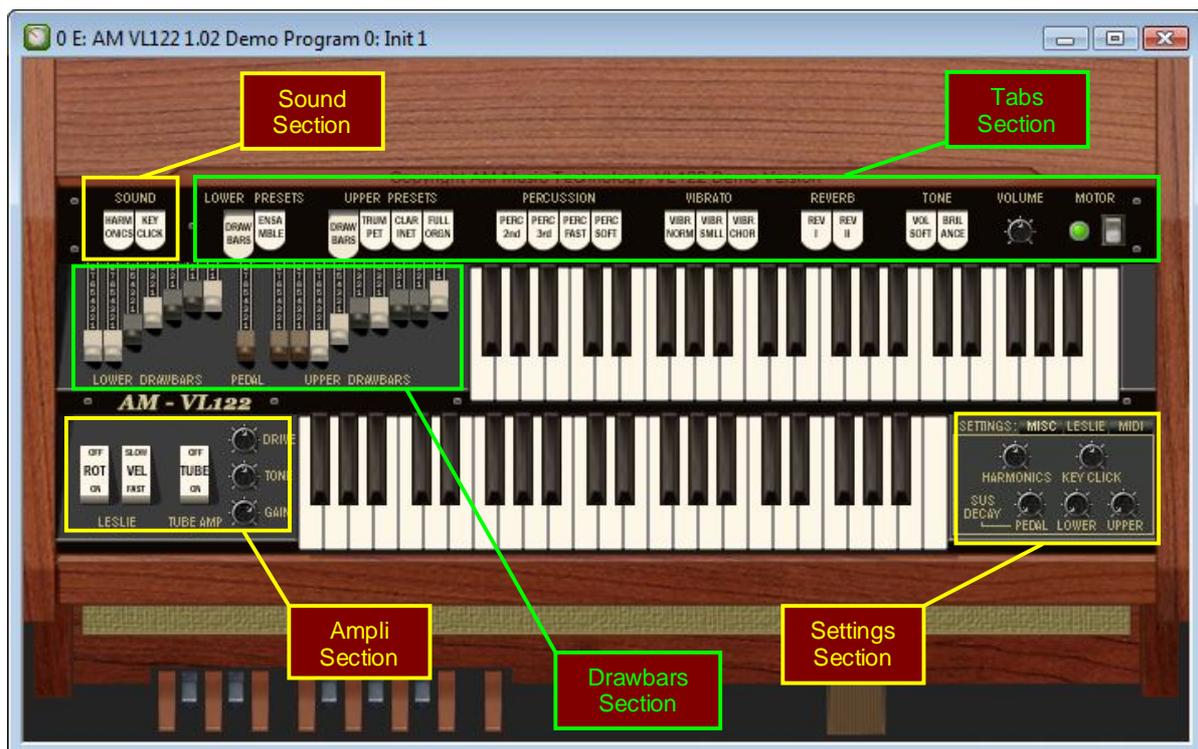
At this point you can launch the VST host application and start a “plug-in rescan” procedure. This procedure should be described in the VST host documentation.

The VL-122 is now installed and ready to be played.

Once again, refer to the VST host documentation to understand how to open it and make it work.

4. Going into the instrument

The following picture shows the five sections the instrument is made up. The green boarded sections are the same present in the original instrument and the yellow are the new added in this virtual emulation.



Drawbars Section

In the Drawbars section there are seventeen tabs dedicated to the selection of the presets for upper and lower manual and internal effects, one main output level knob and a switch capable to turn off the tone-wheel engine

- **LOWER PRESETS:** Select the 'Draw-bars' or the 'Ensemble' preset for the Lower Manual.
- **UPPER PRESETS:** Select the 'Draw-bars', 'Trumpet', 'Clarinet' or 'Full Organ' preset for the Upper Manual.

- **PERCUSSION:** Select the frequency (2nd and/or 3rd harmonic), the decay time and the intensity of the percussion effect. The Percussion has effect on the Upper Manual only and is audible when the 'Draw-bars' preset is depressed.
- **VIBRATO:** Select the intensity of the vibrato and the chorus effect. Two different vibrato intensity levels can be set (Vibrato Normal and Vibrato Small) and they can be summed if depressed together. Chorus has effect if at least one Vibrato Tab is depressed. The vibrato and chorus have effect on the main output signal.
- **REVERB:** Select the intensity of the reverb effect. Two different intensity levels can be set (Rev I and Rev II) and they can be summed if depressed together. The reverb has effect on the main output signal.
- **STONE:** Select the Output Level and the Brilliance of the tone. Both the tabs have effect on the main output signal.
- **VOLUME:** Adjust the main output level.
- **MOTOR:** Switch on/off the tone-wheel engine without stopping the sound. This control acts on the frequency of the tone and not on its level.

Drawbars Section

Three groups of seven, one and nine draw-bars are available respectively for the lower manual, the pedal board and the upper manual.

- **LOWER DRAWBAR:** The seven drawbars belonging to the group on the left allow to adjust the level of the following harmonics for the Lower Manual:

8'	fundamental
4'	1 octave above fundamental
2 2/3'	1 octave and a fifth above fundamental
2'	2 octaves above fundamental
1 3/5'	2 octaves and a major third above fundamental
1 1/3'	2 octaves and a fifth above fundamental
1'	3 octaves above fundamental

- **PEDAL DRAWBAR:** The single drawbar in the middle allows to adjust the level of the Pedal Board.
- **UPPER DRAWBAR:** The nine drawbars belonging to the group on the right allow to adjust the level of the following harmonics for the Upper Manual:

16'	1 octave below fundamental
5 1/3'	a fifth above fundamental
8'	fundamental
4'	1 octave above fundamental
2 2/3'	1 octave and a fifth above fundamental
2'	2 octaves above fundamental
1 3/5'	2 octaves and a major third above fundamental
1 1/3'	2 octaves and a fifth above fundamental
1'	3 octaves above fundamental

Sound Section

Two tabs allow you to modify the timbre characteristic of the instrument, adding some harmonics to the clean tone-wheel waves and adding the typical key click effect when depressing a key. In this way the VL-122 becomes a bit more sharp and aggressive than the original one.

The amount of both the harmonics and the key click can be adjusted acting on the knobs in the miscellaneous settings panel (see below).

The two controls have effect on the three keyboards at the same time.

- **HARMONICS:** Add some harmonics to the tone-wheel wave.
- **KEY CLICK:** Enable the key click effect.

Amplification Section

This section is related to normally external equipments, like tube amplifier and rotary speakers. All these controls have effect on the main output signal.

- **ROTATOR:** Switch on/off the rotary speaker effect (Leslie). All the parameters of this effect can be adjusted in the "Leslie" setting panel.
- **VELOCITY:** Act on the rotator speed of the rotary speaker (the speed can be modified also through the modulation wheel).
- **TUBE:** Turn on the overdrive effect recreating the typical saturation of a tube amplifier.
- **DRIVE:** Adjust the saturation amount of the overdrive effect.
- **TONE:** Cut the high frequencies of the saturated signal.
- **GAIN:** Adjust the output level of the saturated signal.

Settings Section

In this section there are three different panels that can be selected by clicking on the three buttons named: “MISC”, “LESLIE” and “MIDI”. The purpose of these panels is to configure the preferences of the instrument.

- **MISC Panel:** In the MISC panel there are five miscellaneous knobs:
 - **Harmonics:** Adjust the sharpness of the sound when the Harmonics Tab (see Sound Section) is selected.
 - **Key Click:** Adjust the key click level when the Key Click Tab (see Sound Section) is selected.
 - **Sus Decay (three knobs):** Adjust the decay time of the sustained notes respectively of the Pedal, Lower Manual or Upper Manual board. To have a sustained note a sustain footswitch should be depressed. The decay time can be set from 0 to infinite.
- **LESLIE Panel:** In this panel there are the eight knobs that adjust the Leslie parameters for both treble and bass rotary speakers.
- **MIDI Panel:** For each of the three boards, the midi channel (CHN), the semitone transpose (ST), the octave transpose (OCT), the lower key limit (LO) and the upper key limit (HI) can be set. So it is possible to create layer and split configuration even if the host has not midi advanced configuration capability.
Auto Acquire function: Clicking on either the lower key limit or the upper key limit fields, they become red. At this point it is possible to select the note by clicking in the popup list or play it on the keyboard, the played note will be auto acquired as key limit point. If the lower limit is higher than the upper limit, all the note outside the two limits will play normally and the notes inside the range will be muted.

5. Controls

Looking at the VL-122 screenshot, there are several tabs, drawbars, switches and knobs. All those are the “controls” of the instrument.

All the controls can be handled by both mouse-click and MIDI control change messages.

The VL-122 **responds to all the MIDI control messages received on the same MIDI channel set for the Upper Manual-board** (by default channel 1). Only pitch-bender and sustain footswitch respond to their own MIDI channel.

For instance, if the Upper Manual is set on the MIDI channel 1 and Lower Manual is set on the MIDI channel 2 (like the default setting), all the Upper and the Lower Drawbars and other controls will respond only to the MIDI channel 1.

The list of MIDI Control Change messages is shown in the following table:

NR	CC	Name	Description
1	1	Rotator speed	rotary potentiometer
2	4	Sustain	2 position switch
3	7	Volume	rotary potentiometer
4	11	Expression pedal	rotary potentiometer
5	12	Drawbar 1 (16'), Upper-board	9 position switch
6	13	Drawbar 2 (5 1/3'), Upper-board	9 position switch
7	14	Drawbar 3 (8'), Upper-board	9 position switch
8	15	Drawbar 4 (4'), Upper-board	9 position switch
9	16	Drawbar 5 (2 2/3'), Upper-board	9 position switch
10	17	Drawbar 6 (2'), Upper-board	9 position switch
11	18	Drawbar 7 (1 3/5'), Upper-board	9 position switch
12	19	Drawbar 8 (1 1/3'), Upper-board	9 position switch
13	20	Drawbar 9 (1'), Upper-board	9 position switch
14	21	Lower preset tab	2 position switch
15	22	Upper preset tab	4 position switch
16	23	Drawbar 1 (8'), Lower-board	9 position switch
17	24	Drawbar 2 (4'), Lower-board	9 position switch
18	25	Drawbar 3 (2 2/3'), Lower-board	9 position switch
19	26	Drawbar 4 (2'), Lower-board	9 position switch
20	27	Drawbar 5 (1 3/5'), Lower-board	9 position switch
21	28	Drawbar 6 (1 1/3'), Lower-board	9 position switch
22	29	Drawbar 7 (1'), Lower-board	9 position switch
23	30	Vibrato Normal switch	2 position switch
24	31	Vibrato Small switch	2 position switch
25	32	Vibrato Chorus switch	2 position switch
26	33	Drawbar 1 (16'), Pedal-board	9 position switch
27	34	Reverb I switch	2 position switch
28	35	Reverb II switch	2 position switch
29	36	Volume soft switch	2 position switch
30	37	Brilliance switch	2 position switch
31	38	Motor switch	2 position switch
32	39	Harmonics switch	2 position switch
33	40	Harmonics volume	2 position switch
34	41	Rotator switch	2 position switch
35	42	Rotator Output	2 position switch
36	43	Rotator Crossover	2 position switch
37	44	Rotator High Width	2 position switch
38	45	Rotator High Depth	2 position switch
39	46	Rotator High Throb	2 position switch
40	47	Rotator Low Width	2 position switch
41	48	Rotator Low Throb	2 position switch
42	49	Rotator Speed adjust	2 position switch
43	50	Key click switch	2 position switch
44	51	Key click volume	2 position switch
45	52	Sustain decay time, Pedal-board	rotary potentiometer
46	53	Sustain decay time, Lower-board	rotary potentiometer
47	54	Sustain decay time, Upper-board	rotary potentiometer
48	68	Percussion Soft Volume	2 position switch

49	69	Percussion 2nd	2 position switch
50	70	Percussion 3rd	2 position switch
51	71	Percussion Fast Decay	2 position switch
52	72	Overdrive switch	2 position switch
53	73	Overdrive saturation	rotary potentiometer
54	74	Overdrive tone	rotary potentiometer
55	75	Overdrive gain	rotary potentiometer

6. Midi Implementation chart

Function	Transmitted	Recognised	Remarks
Basic Channel	No	1-16	Default midi channels: - 1: upper manual keyboard - 2: lower manual keyboard - 3: pedal keyboard
Note Number	No	0-127	
Velocity note on	No	No	
Velocity note off	No	No	
Aftertouch	No	No	
Pitch Bend	No	Yes	
Mod Wheel	No	Yes	It controls the Leslie rotator speed
Expression Pedal	No	Yes	
Sustain Pedal	No	Yes	
Control Changes	No	Yes	It receives control change messages only on midi channel set for the upper manual keyboard (see par 5 for details).
Program change	No	0-127	
All note off	No	Yes	