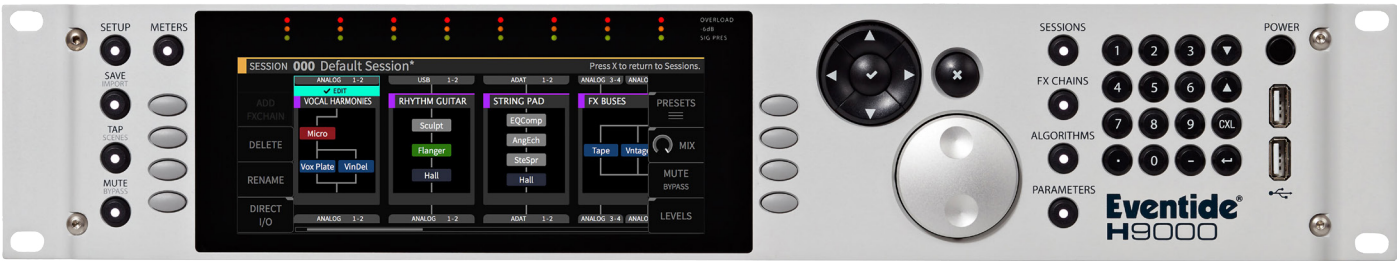
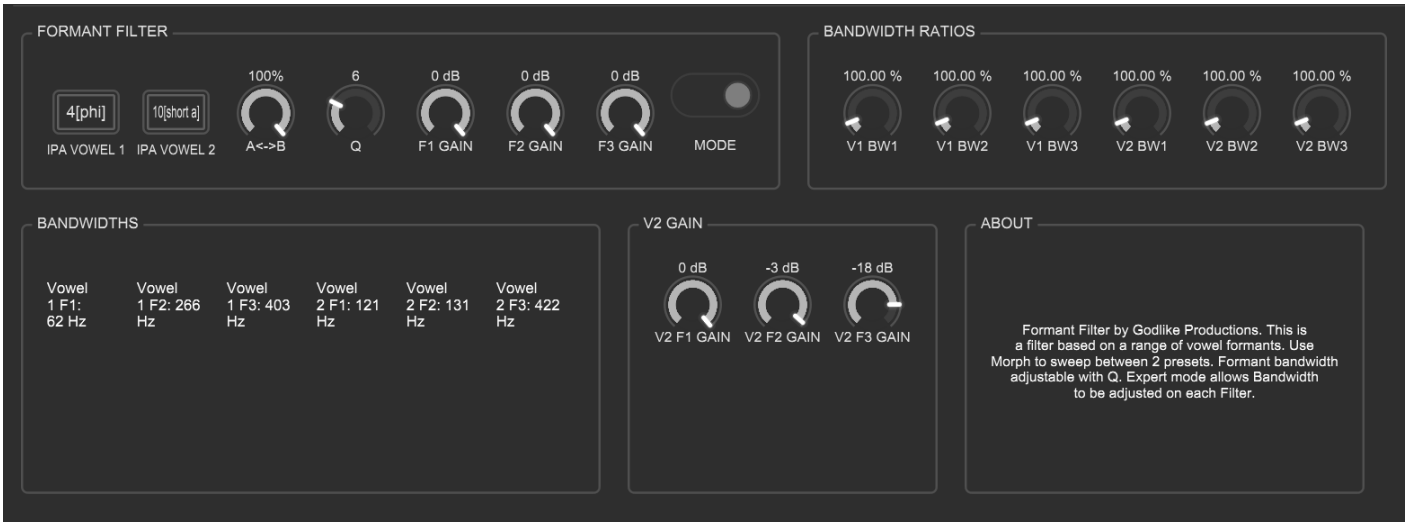


Instruction Manual

Morphing Formant Filter



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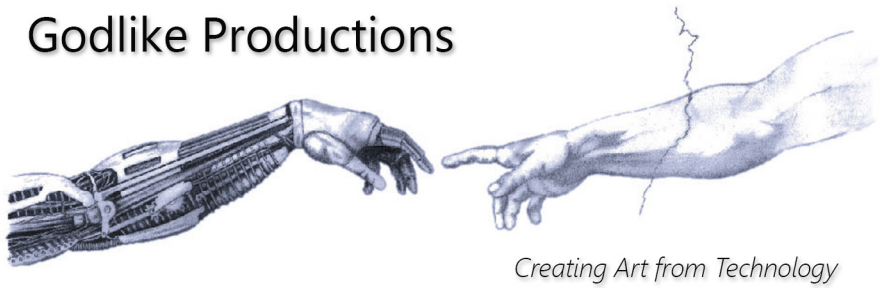

Revision 1.00

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Caution

Ensure you have backed up all algorithms and other data of your H9000 prior to use of this product. You use these algorithms, chains, presets, sessions and/or other content entirely at your own risk and to all extents allowable under the law of Western Australia, Godlike Productions is not liable for loss of damage, direct, consequential or otherwise.

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Getting Started

This manual is for a custom algorithm for the Eventide H9000 available at https://godlike.com.au/index.php?id=420. The Morphing Formant Filter algorithm can be downloaded either as an algorithm that you can import from a USB drive (FAT32 formatted) onto your H9000 from the front panel, via Emote, or that can be uploaded via VSIG 3.3.3 or later.

There will also be a copy of this manual in PDF format. If you lose your copy of the files, please contact us at https://godlike.com.au/index.php?id=contact and we will be happy to send you another copy, or re download the algorithm from the link above. This manual will be available within the zip file.

Installation and Activation

Method 1 - Install from USB

- Unzip the Algorithm and any presets. Copy Morphing Formant Filter_1897874303.9ka as well as the .9kp files to your USB drive and insert into your H9000.
- Long press the front panel Save/Import button; the Load Options screen will appear.
- Use the cursor up/down buttons or the wheel to navigate to Algorithms and press the Enter Key.
- Use the cursor up/down keys or wheel to select the Morphing Formant Filter algorithm and then press the SELECT Key.
- If you do not wish to load presets, then you can use this algorithm as is. If you wish to use the presets, you will need to repeat this proceedure until this algorithm appears as algorithm 10146, or you can install it and use our H9000 Preset Tool to renumber your Presets to the location where you have installed this algorithms. If you have installed to 10146, copies at lower numbers can be safely deleted using Emote (see below).
- After you have used the Preset Tool, open the .9kp files from your USB drive using the same procedure.

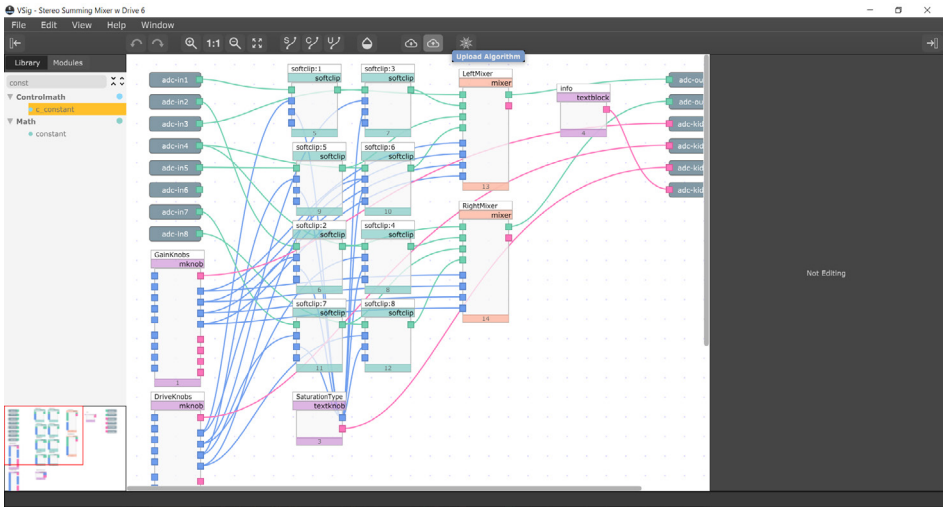
Method 2 - Install from Emote

- Unzip the Algorithm and any Presets.
- In Emote, select Algorithm -> Import
- Navigate to the unzipped Morphing Formant Filter_1897874303.9ka file and press open.
- If you do not wish to load presets, then you can use this algorithm as is. If you wish to use the presets, you will need to repeat this proceedure until this algorithm appears as algorithm 10146, or install it, and then use our H9000 Preset Tool.
- You can safely delete lower numbered algorithms used to bump this to 10146 by right clicking on the lower numbered algorithm and selecting Delete. Continue doing this until the only copy of Morphing Formant Filter is the one loaded into slot 10146.
- To load the presets select Preset and then Open. Navigate to the .9kp preset files and press Open.

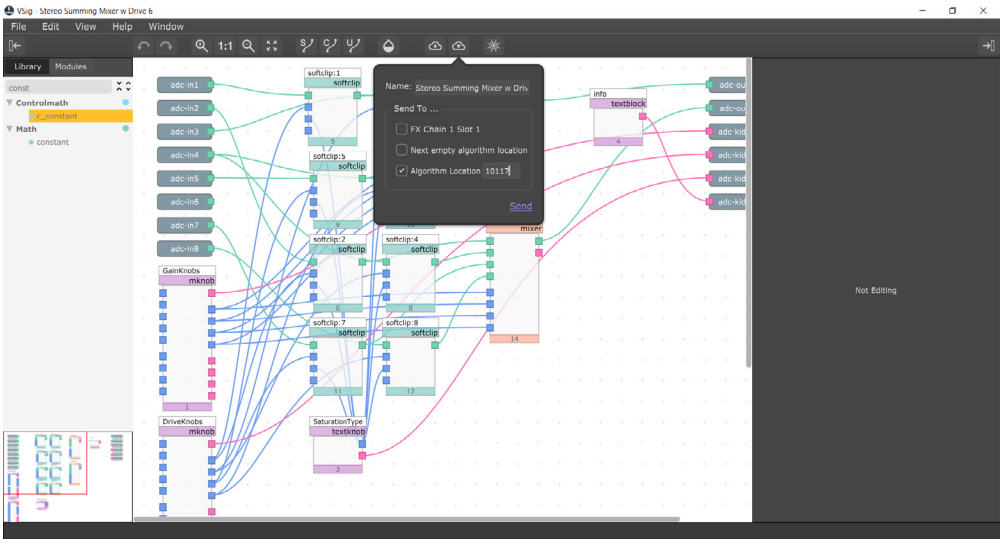
Method 3 - Install using VSIG

Note that not all algorithms are available as VSIG files. If this algorithms is available as a VSIG it's file name will appear below.

- File: not available for this algorithm
- Unzip the .sig2 file.
- Open this file within VSIG
- Ensure that VSIG is connected to your H9000
- Select the Upload Button



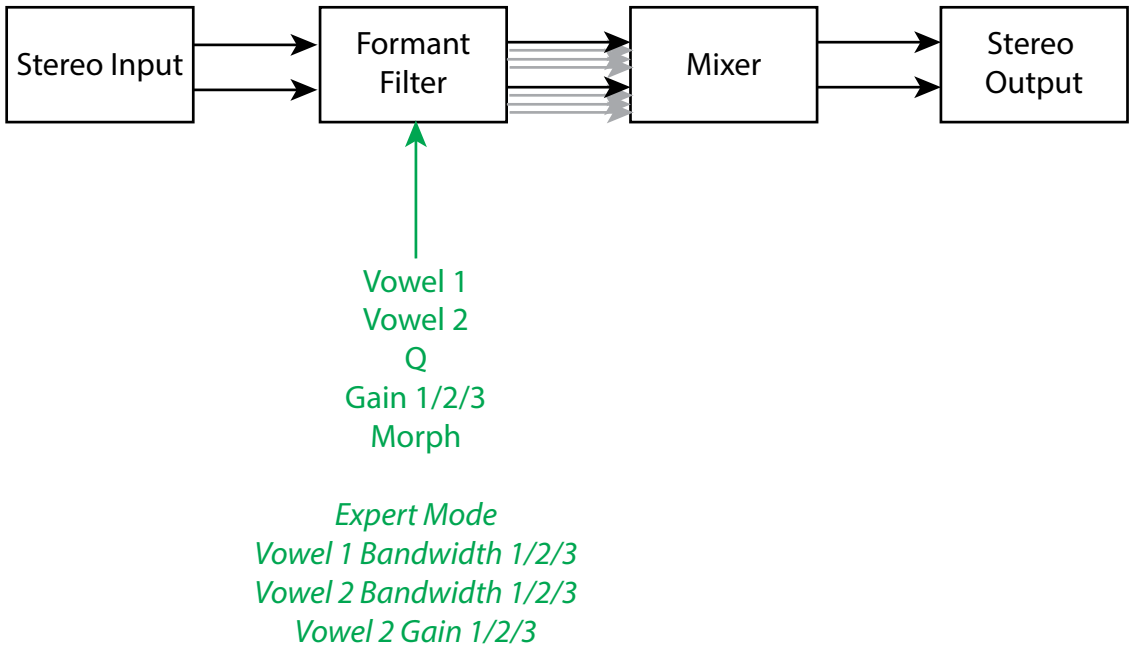
- Select Algorithm Location and type “10146” into the text box. Press Send.



- If you prefer, you can load it to any location, and take note of the location and then use our H9000 Preset Tools.
- Presets cannot be loaded via VSIG. Install these either from Emote or from the front panel via USB.

Setting Things Up

The diagram below shows the signal flow of this algorithm.



Parameters

Parameter	Description	Range
Vowel 1/2	Formant frequencies are selected by vowel shapes. according to IPA Vowel 1 is the sound when Morph is at 0%, Vowel 2 is the sound when Morph is at 100%. The formant frequencies morph smoothly between these two endpoints.	i, y, e, ø, ɛ, œ, a, ɶ, ɑ, ɒ, ʌ, ɔ, ɤ, o, ɯ, u Default: i (Vowel 1), e (Vowel 2)
Q	The resonance, or steepness of the formant filter peak. The filter bandwidth is Frequency/Qs	0.5 to 20. Default: 5
Gain 1/2/3	The gain of formant filter peaks. This applies to both vowels in Simple Mode, but only to Vowel 1 in Expert Mode.	-100 - 0dB Default: 0dB, -6dB, -18dB
Morph	The position of the Formant Frequencies between vowel 1 and 2 (in simple mode), and also between Vowel 1 & 2 Bandwidths and Gains in expert mode.	0-100% Default: 0%

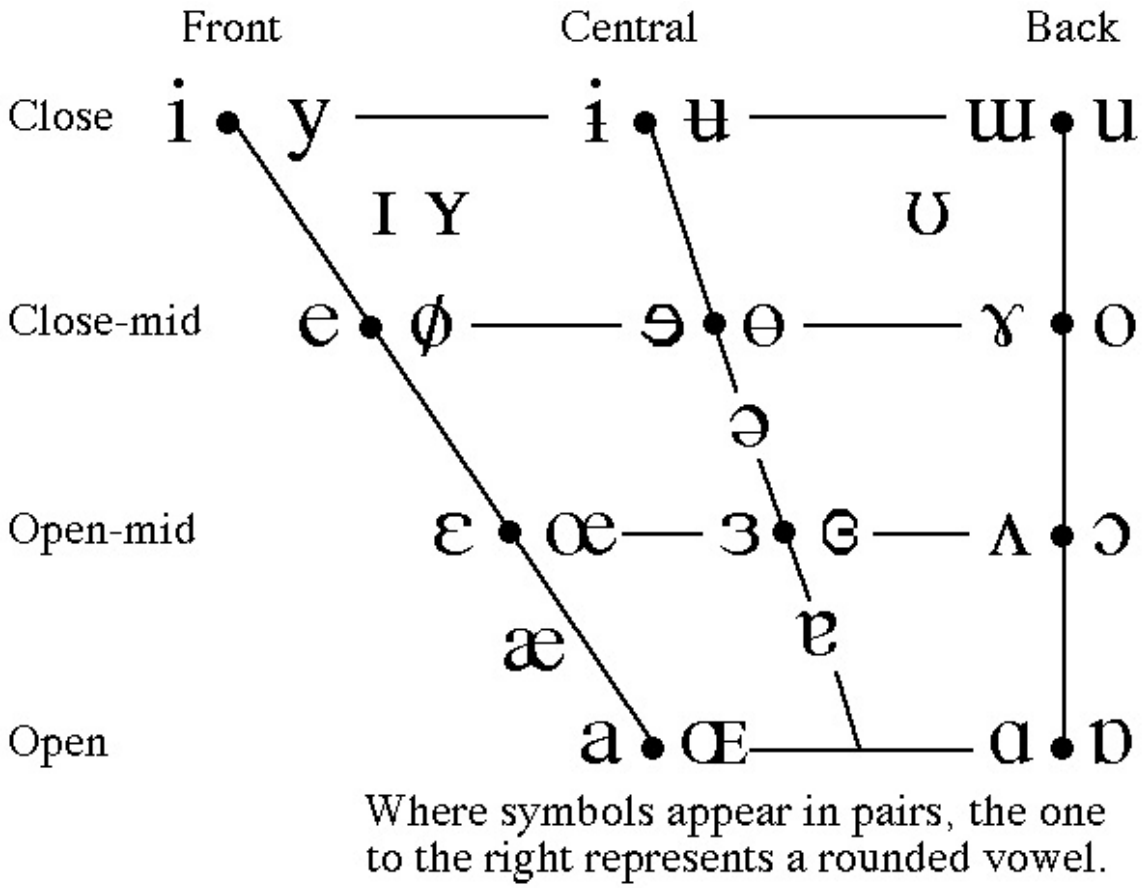
Parameter	Description	Range
Vowel Bandwidtths 1/2/3	The width of each formant filter. Formant 1 is the most dominant, followed by 2 and 3, Vowel 1 Bandwidth 2 and 3 and Vowel 2 Bandwidth 1 are related to Vowel 1 Bandwidth 1. Vowel 2 Bandwidth 2 and 3 are in relation to Vowel 1 Bandwidth 1. Resonance still changes all bandwidths, but maintains the different ratio's once set.	0 - 1000% Default: 100%
Expert Mode	Enables the extra pages for expert mode. When in simple mode, expert controls are bypassed.	Simple, Expert

This algorithm is a formant filter that uses the first three formants of the IPA vowels and allows real time morphing between 2 different vowel sounds. Expert mode allows for fine tuning of formant amplitudes and bandwidth.

In Expert Mode, the actual filter bandwidths will be updated when resonance or the ratio knobs are moved, to help with fine tuning of the formants.

When in expert mode, the morph knob also morphs between bandwidths and gain's for each of the three sets of filters in each vowel.

The formants in this filter algorithm can be found on the following vowel chart. *Source: http://www.phonetics.ucla.edu/course/chapter1/vowels.html.*



IPA symbols and example words are as per the following table. *Source: https://www.singwise.com/articles/vowels-formants-modifications*

IPA	Example Words	IPA	Example Words
æ	bad, cat, trap, black, lad	e	bait, great, late
ɑː	father, palm, cot, arm	uː	soon, through, goose, blue, food
ɒ	not, wasp, lot, hot, rock	aɪ/ aj	my, wise, high, price, five, eye
ɔː	law, caught, all, call, halt, talk, thought	ɔɪ	boy, hoist, choice
ə	about, spotted, comma	o/oʊ	no, toe, soap, goat, tow, soul, roll, cold, folk, go, home
ɪ	sit, kit, hit	aʊ/aw	now, trout, mouth, about, cow, flour, out
i	heat, see, city, happy	ɪuː/juː	cute, few, dew, use, pupil
eɪ	date, day, pain, whey, rein, face, say, eight	ɪər	deer, here, near
ɛ	bed, dress, met	ɛər	mare, there, bear, where, air
ɜr	burn, herd, nurse, earth, bird, turn, learn	ɔɪ/ oʊ/ ɔər	tore, boar, port, sort
ər	winner, letter	jʊər	pure, Europe, cure
ʌ	run, won, flood, strut, but, cup, luck	oːr	sort, warm
ʊ	put, hood, foot, could, good	uːr/uər	tour, poor

Due to limitations in the characters available within Emote and on the H9000 User Interface, the following Vowels are represented on the UI as follows:

IPA Vowel	Emote/H9000 Vowel
i	1[i]
y	2[y]
e	3[e]
ø	4[phi]
ɛ	5[epsilon]
œ	6[ae]oe
a	7[a]
ɶ	8[AE]OE[u]
ɑ	9[at]
ɒ	10[short a]
ʌ	11[^]
ɔ	12[c]
ɤ	13[gamma]
o	14[o]
ɯ	15[w]
u	16[u]

For a demo of this algorithm visit https://youtu.be/Am9P3btltz4