

The dsp-Gplug MIDI-Synthesizer

The smallest Analog Modeling
Synthesizer in the world



User Manual v1.0



The dsp-Gplug MIDI-Synthesizer

The dsp-Gplug synthesizer is a full analog modelling MIDI synthesizer hosted inside the MIDI plug

On the other end is a 3.5mm phono plug with a stereo linelevel output. The left and right channel are identical so it is a mono output

The synth is 5-voice paraphonic with 3 DCO's per voice, a +24dB resonant lowpass filter, 2 envelope generators and a LFO with triangle and sample&hold waveforms.

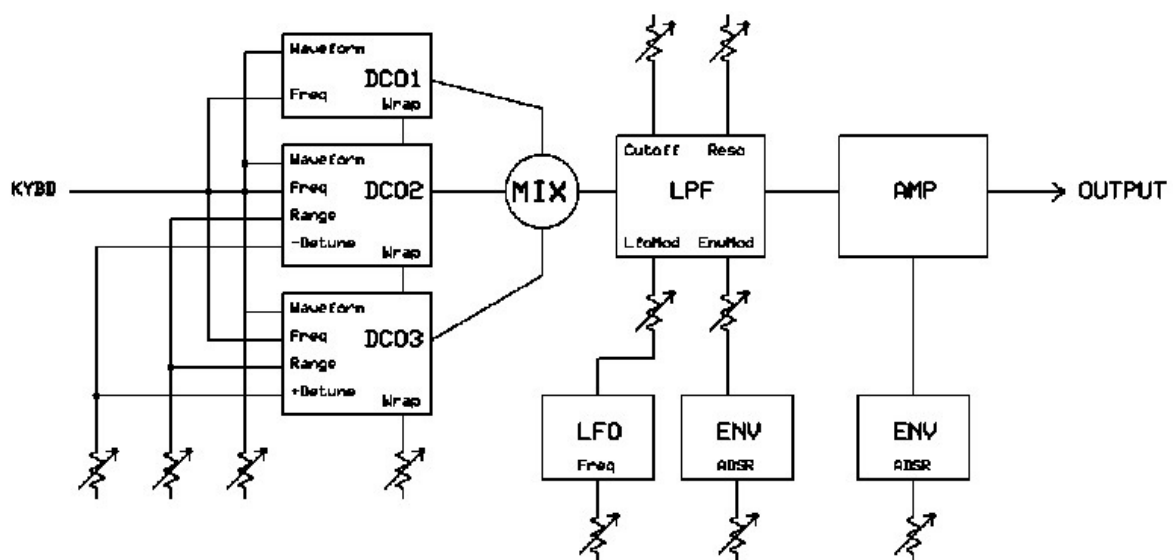
The DCO's are TRI-PULSE-SAW morphing oscillators with range, detune and wrap parameters. The wrapping is a form of pulse width adjustment that works on any waveform.

The DCF is a digital model of a +24dB 4-pole filter and has a resonance setting that can be driven to self oscillation. It has routing for ENV and LFO modulation.

The 2 ENV's are standard ADSR type and modulate the DCF and the DCA. If the DCA ENV Release parameter is set to zero, the synth is 5 voice polyphonic.

1 LFO is provided for DCF modulation and it has a TRI or S/H waveform.

The synth parameters are controlled through 19 MIDI-CC parameters.



The structure for the dsp-G1 Analog Modeling Synth

MIDI implementation

Note On	
0x90, 0xNN, 0xVV	Note On, velocity not implemented

Note Off	
0x80, 0xNN, 0xVV	Note Off, velocity not implemented

CC-07 Master Volume	
0xB0, 0x07, 0xCC	Master Volume 0-127

CC-01 LFO Filter Modulation	
0xB0, 0x01, 0xCC	Modulation Level 0-127

CC-16 LFO Rate	
0xB0, 0x10, 0xCC	LFO Rate 0-127

CC-20 LFO Waveform	
0xB0, 0x14, 0xCC	LFO Waveform 0-63 TRI, 64-127 S/H

CC-74 DCF Cutoff	
0xB0, 0x4A, 0xCC	Filter Cutoff 0-127

CC-71 DCF Resonance	
0xB0, 0x47, 0xCC	Filter Resonance 0-127

CC-82 DCF Env Attack	
0xB0, 0x52, 0xCC	Filter Env Attack Rate 0-127

CC-83 DCF Env Decay	
0xB0, 0x53, 0xCC	Filter Env Decay Rate 0-127

CC-28 DCF Env Sustain	
0xB0, 0x1C, 0xCC	Filter Env Sustain Level 0-127

CC-29 DCF Env Release	
0xB0, 0x1D, 0xCC	Filter Env Release Rate 0-127

CC-81 DCF Env Modulation	
0xB0, 0x51, 0xCC	Filter Env Modulation Level 0-127

CC-76 DCO Waveform	
0xB0, 0x4C, 0xCC	Osc Wave TRI/PULSE/SAW 0-127

CC-04 DCO Wrap	
0xB0, 0x04, 0xCC	Waveform Wrap Modulation 0-127

CC-21 DCO Range	
0xB0, 0x15, 0xCC	Oscillator 2/3 Range 0-127

CC-93 DCO Detune	
0xB0, 0x5D, 0xCC	Oscillator 2/3 Detune 0-127

CC-73 DCA Env Attack	
0xB0, 0x49, 0xCC	Amp Env Attack Rate 0-127

CC-75 DCA Env Decay	
0xB0, 0x4B, 0xCC	Amp Env Decay Rate 0-127

CC-31 DCA Env Sustain	
0xB0, 0x1F, 0xCC	Amp Env Sustain Level 0-127

CC-72 DCA Env Release	
0xB0, 0x48, 0xCC	Amp Env Release Rate 0-127

Notes on MIDI ghostpower

The Gplug requires no extra power but draws its power from the MIDI port. This doesn't work with all MIDI devices but should work with most.

For the MIDI ghost power to work Pin-2, Gnd, must be connected in the MIDI-OUT connector and MIDI cables must have a minimum of 3 wires



Do **NOT** plug headphones into the 3.5mm jack. It needs an amplifier!

Technical Specifications

DSP platform	NXP 60 DMIPS
Supply power	2.7 – 3.6 volt
Supply current	~3.2mA
MIDI input	31250bps, 8 databits, 1 stopbit TTL 0 – 5volt level
Audio output	44.1KHz 16-bit sigma-delta PDM, 1 channel mono audio
Synthesis method	Virtual Analog Modeling synthesis using DSP technology
Polyphony	5 voice paraphonic, polyphonic with zero release set
DCO	3 oscillators morphable triangle/pulse/sawwave with wrap
DCF	+24db 4-pole lowpass filter with resonance
ENV	2 envelope generators with ADSR
LFO	Low frequency oscillator with triangle and sample&hold wave
MIDI support	Note on/off, supports running status, 19 MIDI-CC parameters
MIDI channels	Fixed receive on MIDI-CH 1

Contact & Support

For support and questions please use these contact addresses:

Website: <http://www.dspsynth.eu>

Email: contact@dspsynth.eu