



Wiard Synthesizer Company

The Filter Module

Preliminary Manual (v 0.2.0)

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Please see block diagram at end for additional information

The Wiard Filter Module is another incredibly complex module that encompasses signal mixing, and multi-type filtering with a level of voltage control never before seen.

LED Series

The LED series at the top of the module is split into two sections – the "mode" display, and an "output level" display. These lights are included to provide visual feedback of the current functionality of the module settings.

The left four LED set shows the current "mode" of the filter LP, BP, HP and AP. Since the filter mode can be modified by voltage control, this display provides feedback to the currently selected mode.

The right four LEDs show the current output level (in dB) at the filters 24dB output jack. The levels displayed represent 300mV, 1V, 3V and 10V (left to right expressed in dB: -10, 0, +10 and +20 dB).

Front Panel Controls

Course Tuning:

The Course Tuning control allows you to set the "baseline" frequency cutoff for the filter.

Fine Tuning:

Fine Tuning provides a higher level of control for frequency cutoff selection (1 octave range).

1-2 Mix:

The signal level passed from the Input 1 and Input 2 jacks that are passed to the filter input.

Q (Resonance):

The amount of "pre-emphasis" applied to the signal just prior to the frequency cutoff. The filter will self-oscillate at higher settings.

3-4 Mix:

The signal level passed from the Input 3 and Input 4 jacks that are passed to the filter input.

Q Mod (Resonance Modification):

An attenuation control for the resonance modulation input. This allows control of the level of resonance mod applied to the filter.

F Cont 1:

An attenuator control for the frequency control voltage (as applied in the FC 1 input jack) used for frequency modulation.

Linear:

An attenuator control for the linear frequency control voltage (as applied in the Linear input jack) used for frequency (cutoff) FM.

Mode:

A manual selector for the filter mode function. In order, the control allows for selection of LP (low-pass), BP (band-pass), HP (high-pass) and AP (all-pass) functionality.

F Cont 2:

An attenuator control for the frequency control voltage (as applied in the FC 2 input jack) used for cutoff frequency modulation. It provides positive and negative modulation of the cutoff, with a 10 o'clock position representing "no modulation".

Front Panel Switches

+ Phase - :

This switch sets the phase of the signal sent to the filter input. This results in a change to the characteristics of the filter causing either peaks or notches to be created in the filtering functions.

Off Mix On:

When in AP (all-pass) mode, this will mix the input signal into the filter output, providing a flanging/phasing effect.

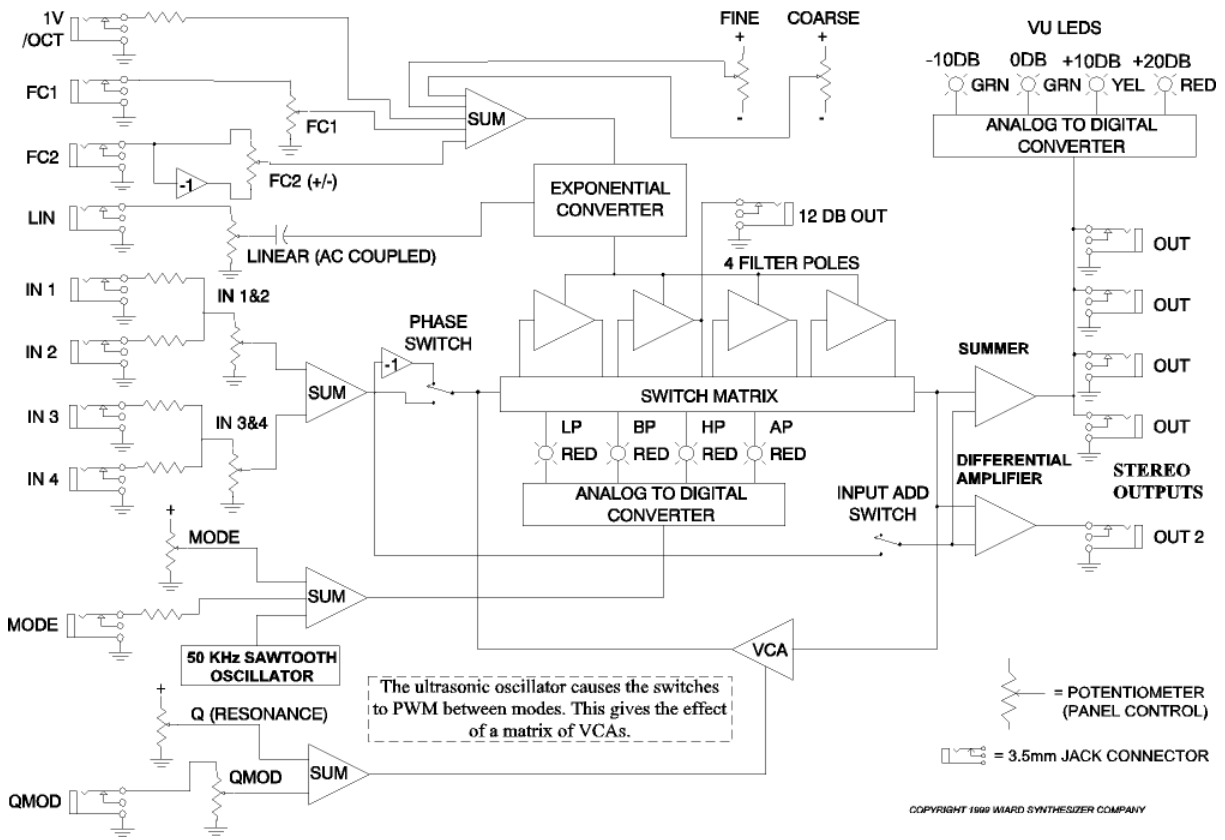
Patchbay Jacks

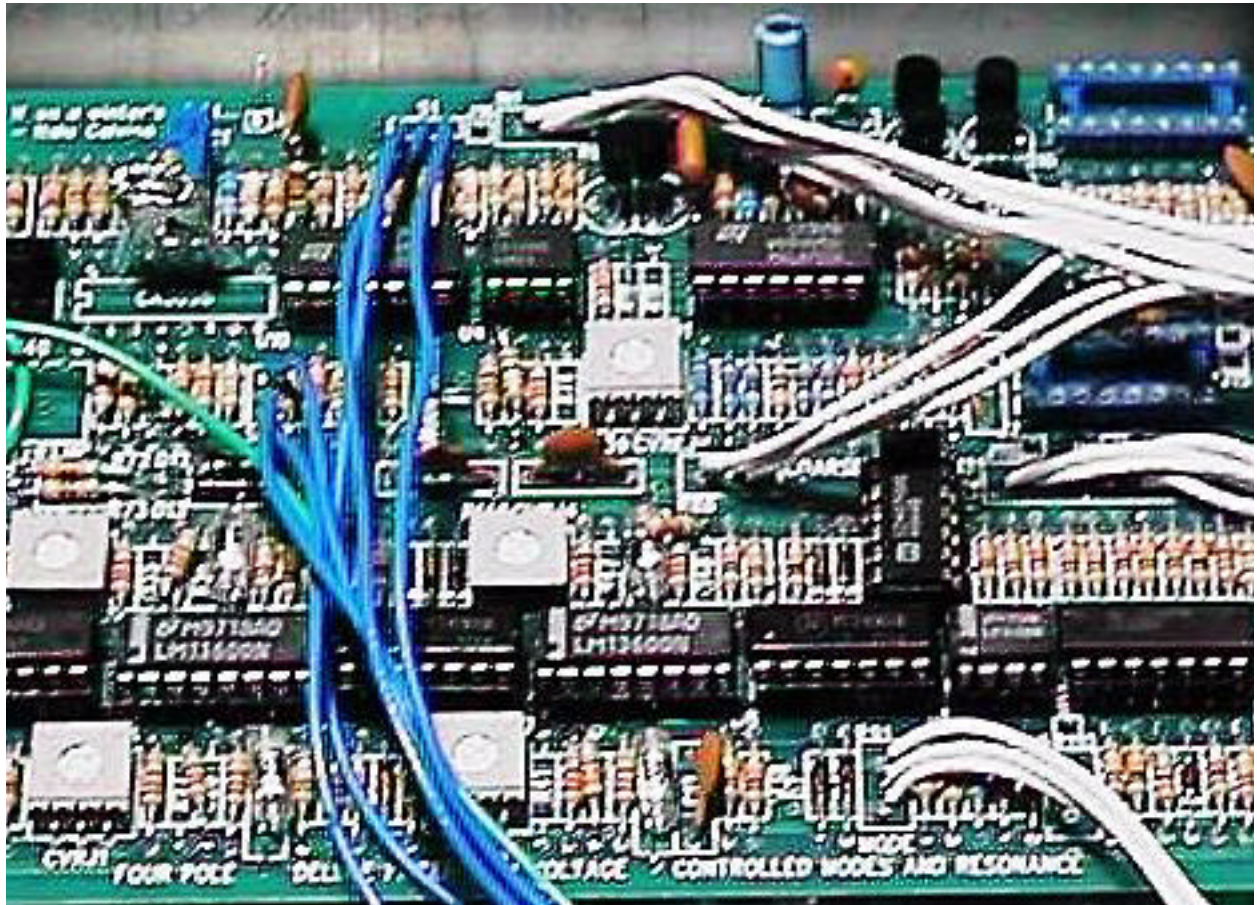
(listed top-to-bottom, from left to right)

Jack Label	In/Out	Use
IN 1-4	Input	Four inputs for the signal to be passed into the filter section.
1 V/Oct	Input	Standard 1 V/Oct (exponential) control of the frequency cutoff.
FC 1-2	Input	Frequency (cutoff) Control inputs, attenuated by the FC1 and FC 2 front panel controls.
Linear	Input	A linear cutoff voltage control input. This is commonly used for modulating the cutoff frequency with an oscillator.
Out 2	Output	When in AP (all-pass) mode, and when the Mix In switch is set to On, Out 2 provides a pseudo-stereo output in combination with the Out jack. In all other modes, this output provides a phase-inverted output.
12 dB	Output	Dependant on filter mode: LP: 12 dB LP output. BP: 12 dB LP output. HP: 12 dB HP output. AP: Maximum 360 degree phase shift.

Q Mod	Input	A modulator for the filter resonance control (Q).
Mode	Input	Voltage control modulation for the filter mode. This is a unique function that allows the filter to be changed based on input from an oscillator, LFO, envelope or any other control signal.
Out (x4)	Output	The output of the filter section.
Multiple	Either	Any signal can be multiplied (that is, duplicated) by placing a signal into any of these jacks, and using the remaining three jacks as duplicate outputs.

RICHTER MONOMORPHIC FILTER BLOCK DIAGRAM





Filter circuit board lay-out