Erica Synths Graphic Resonant FB

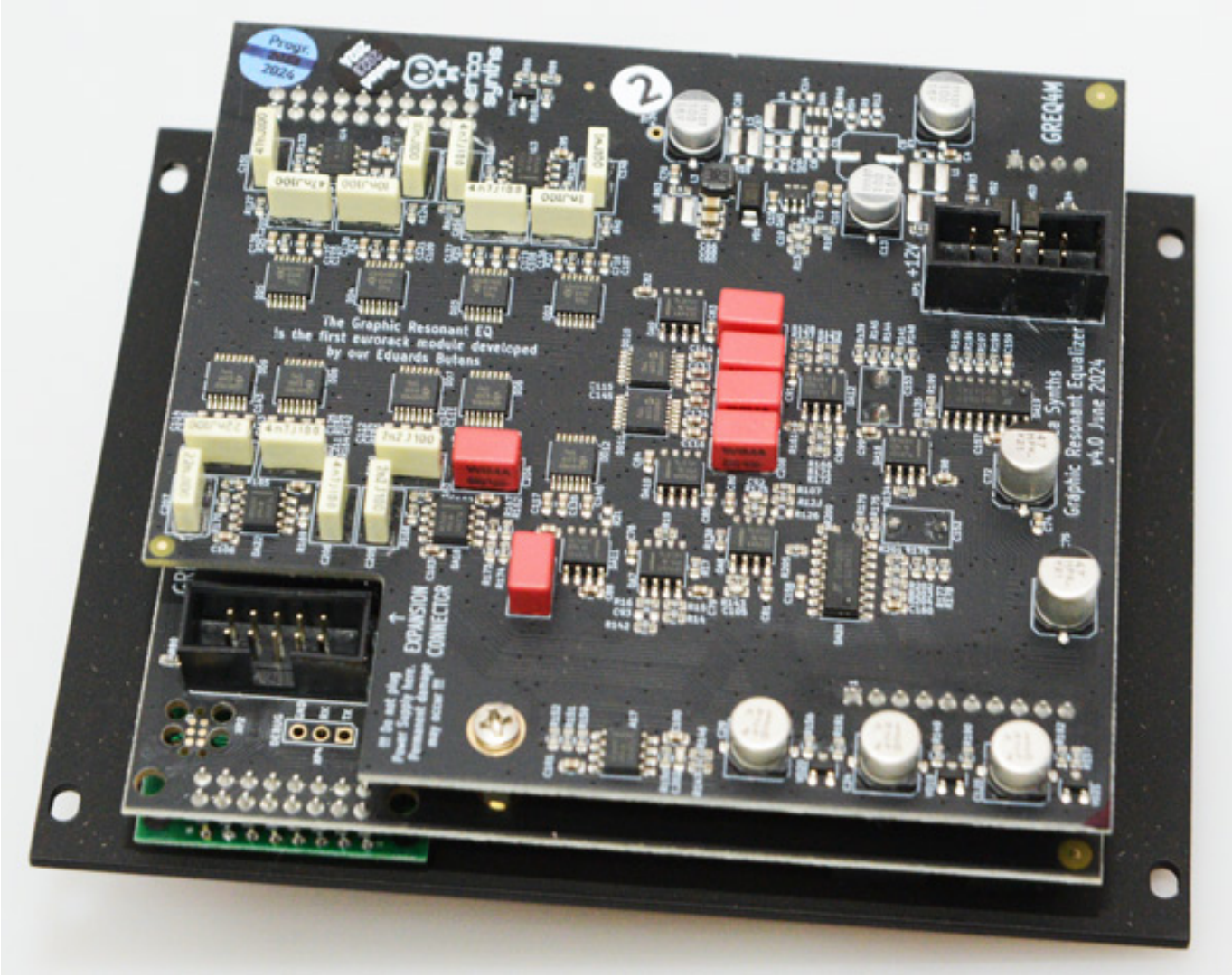
Voltage-Controlled Filterbank Eurorack-Module

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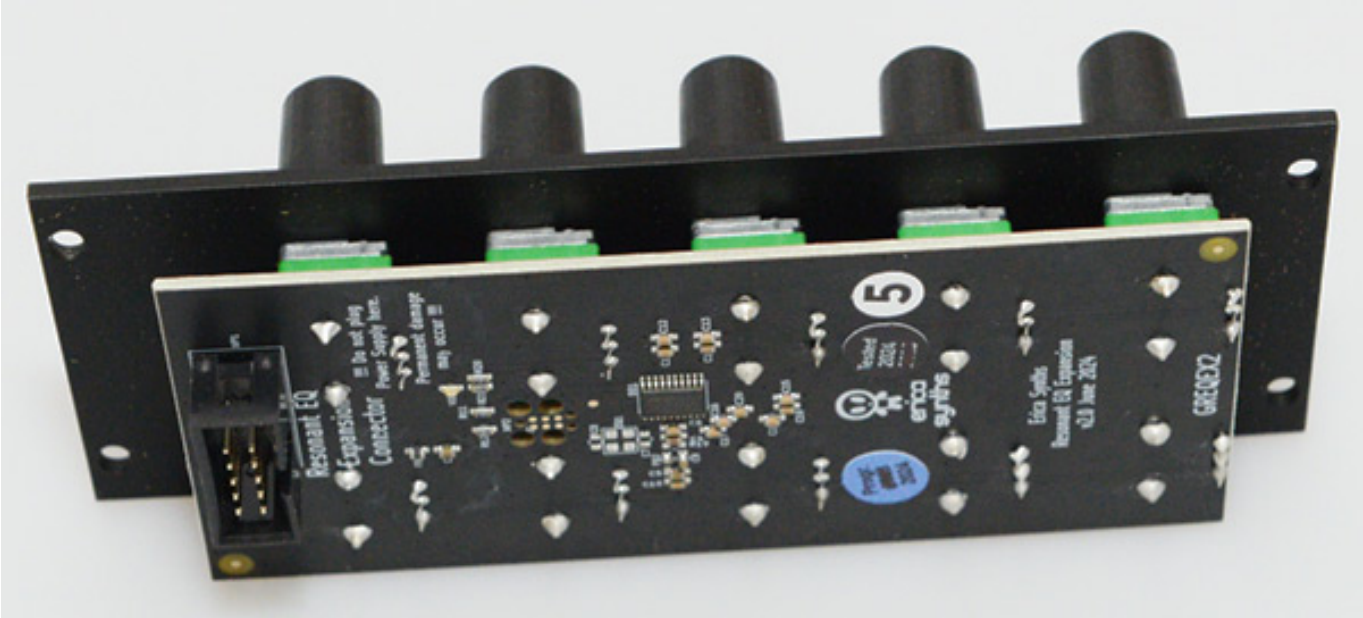
The concept of an analog 10-band equalizer with digital control and monitoring from Erica Synths has been announced for quite some time now. In 2024, the Eurorack module Graphic Resonant FB was announced for availability together with the optional expander module FBEX.

Concept and Technology



Resonant FB is a 20 HP wide Eurorack module with ten fixed frequency bands: 29, 61, 115, 218, 411, 777Hz, as well as 1.5, 2.8, 5.2, and 11kHz, i.e., approximately one octave apart. The mounting depth with the plug inserted is 43mm. The current consumption of our test module was, on average, 112mA, and at peak times 125mA. The module has two pin strip connectors: one for the power supply and one for the connecting expander.

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The expander FBEX has a width of 10TE. The mounting depth is only 30mm with the plug. The expander is only connected to the filter module, where it draws its power supply from the filter module. The operating current increases only slightly with the expander module; therefore, the total current with the filter module was on average 118mA and 131mA at peak times in our tests.

Graphic Resonant FB

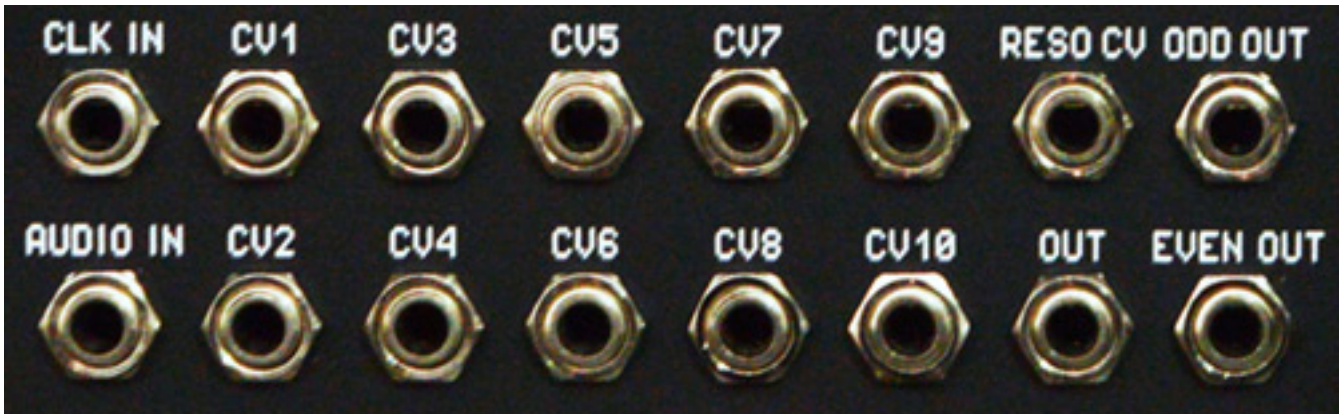
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This module is operated via twelve buttons with LED indicators, a controller for adjusting the input level and filter resonance of all bands, as well as a push/turn control for menu selection and parameter entry. A monochrome OLED display measuring 70 x 18mm is included.

There are buttons 1 to 10, which are used to select menus or filter states and to activate the filter. There is also a back button to exit menus and to open the main menu, and another button with a frame that serves as a shift button.

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The module has a signal input designed for an audio signal level of 10 volts peak to peak maximum. Internally, there are two filter groups: the odd-numbered (ODD) bands, i.e., 1, 3, 5, 7, and 9, and the even-numbered (EVEN) bands, 2, 4, 6, 8, and 10. These groups are individually routed to 3.5mm jacks and also to a mono sum signal (OUT). The gain can be controlled individually for each band, and the resonance for all filters together. There is also a clock input, which we will discuss later.



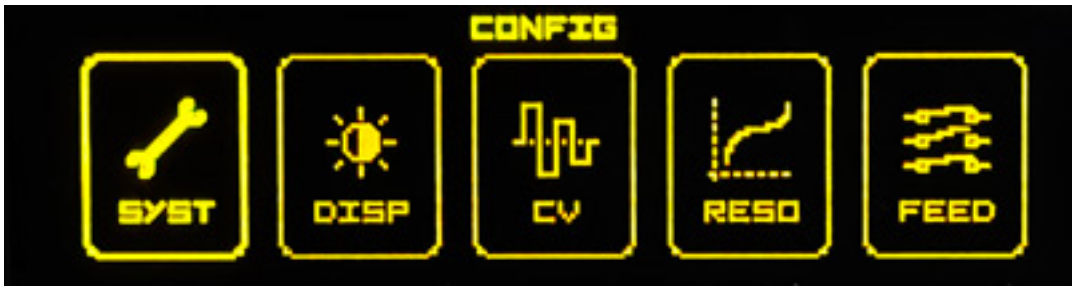
Let’s now take a look at the main menu. Here, you can activate the following five filter modes:

- FB: Filterbank with bandpass filters
- FILTR: Multimode filter
- CLK: Clock modulation mode
- DYN: Dynamic EQ mode
- PLAY: Sequential retrieval of presets

There are also three menu items for loading presets, a spectrum display and a configuration menu.

Configuration

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First, we examine to the configuration menu with its five menu items (see figure above) for setting global module parameters.



Under SYST, you can check the firmware version number. We had version 1.30 available for the test, which was from the end of October 2024. Under DISP, you can set the display brightness, the time for automatic dimming and for a screen saver.



Under CV, the user can change the voltage range of the control voltage. There are four options to choose from:

- -5... +5 V,
- -10... +10 V,
- 0... +5 V,
- 0... +10 V.

Furthermore, attenuations can be set for the gain control voltage of the bands and for the resonance, in each case from 0.1 to 1.0 in 0.1 increments (i.e. 10 to 100% in 10% increments). A connected expander can be operated in offset or attenuation mode.

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RESQ allows you to adjust the resonance control curve. In addition to the standard BALANCED setting (see figure above), you can select various linear (linear only upper, only lower or complete control range) and logarithmic curves (normal and inverted).



It is interesting to note that you can determine which filters are used for resonance feedback. This can be set globally via the feedback submenu, either all, none or one of the ten filter bands.

Presets

If you want to save a setting, press and hold the encoder knob to open a dialog in which you can specify the name of the preset. It is important to know that only the parameters of the selected filter mode are saved, and not the global settings, such as those in the configuration menu. We will discuss how you can use the presets later.



You can use the LOAD menu to reload presets and press the Shift key to access a submenu where you can then rename, move, or delete presets. Up to 128 presets can be stored.

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Spectrum Display

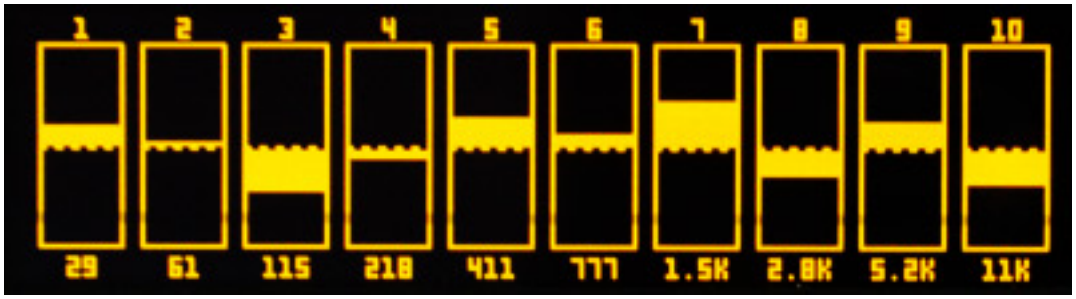


A spectrum analyzer window is opened using the SPECT menu item.



By default, however, it is set to LIN, which means linear; therefore, the display only takes place in a small area on the left. Thus, it is advisable to switch to logarithmic (LOG) if necessary.

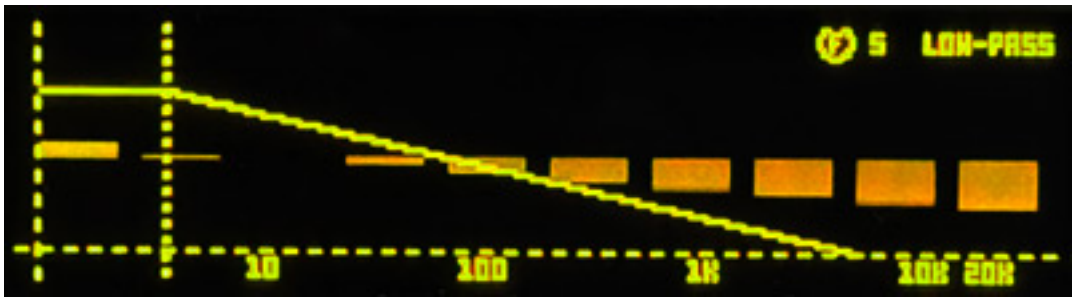
Resonant Filterbank Mode



In Resonance Filterbank Mode, the amplification of each of the ten filters can be adjusted individually. However, it is important to know that the filters do not behave like a conventional graphic equalizer, where you set positive and negative gain. Instead, when the output level of the corresponding filter is set to the minimum, it is set to 0. In other words, no signal can pass through in that frequency range. In principle, each of the bandpass filters in this module has an output level control, as in the Moog 914 Fixed Filterbank.

Multimode Filter

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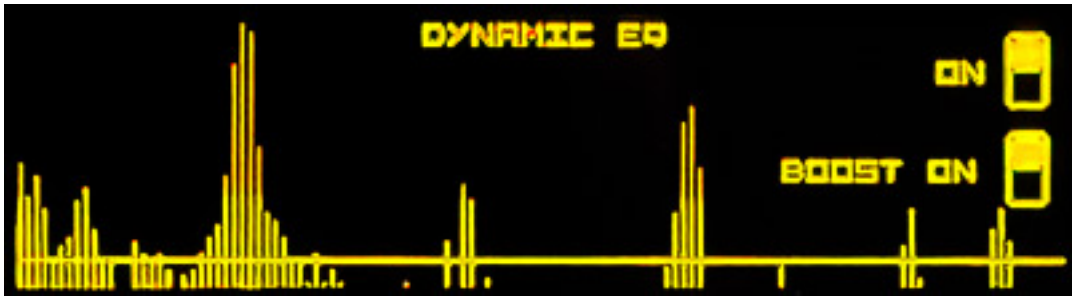
The filters can also be combined to simulate different filter characteristics such as low-pass, band-pass, band-stop and high-pass filters. The pressure/rotary encoder is used to set the cutoff frequency and the shift key can be used to access the filter type setting.

Clock Modulation



The clock modulation menu is also interesting. Here, you can set a clock source (internal/external), the speed in BPM of the internal clock, the modulation input source (CV1 or all), and a degree of modulation. With an incoming or internal clock pulse, the input value is stored as a sample & hold and assigned to the current filter. With each clock pulse, the corresponding filter number will increase.

Dynamic EQ



There is also a dynamic equalizer mode, where you can reduce or amplify frequency components depending on a threshold set by the user. The mode can be completely deactivated, and with BOOST ON, you amplify the components that are below the threshold. To see the amplified frequency components, we have set the threshold particularly low for the illustration.

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Play Mode

In this mode, stored presets are recalled as a sequence, with four operating modes available: CLK, where the preset list is switched to the next preset with each pulse; RND-CLK, where the next preset is selected at random; CV, where presets can be selected via a control voltage; and CV-CLK, which works like CV but requires a clock pulse to select the following preset.

Expander FBEX



The expander is self-explanatory. The target frequencies of the bands are displayed above the controllers. The ten potentiometers are used to set the gains of the ten bands. As mentioned earlier, there are two operating modes: Offset, where the values are added to those of the filter module, or Attenuate, where the expander settings act as attenuators.

In Practice

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The display is very easy to read, and the adjustable brightness range is very large. In studio operation, we have set the brightness to the minimum. The push/turn control is slightly grated and feels very good to the touch. The operation with the ten buttons, which are assigned to variable functions that are displayed on the screen, is also easy to understand. Many functions can be experienced intuitively; however, there are also functions that require to take to look at the manual. If you miss a function, you should first press the Shift key to make additional options appear on many dialog pages. It is noticeable that some global parameters (such as the selected display mode LIN/LOG in the spectrum analyzer or the global module settings such as a selected feedback filter in the config menu), are lost when the device is switched off and then on again because they are reset to their default values when the device is switched on again.



We had a module with firmware 1.2 that we updated to the firmware version 1.3. The update is done by an audio file that is provided on the Erica Synths website. This works best if you play the audio file on a laptop or PC and connect the audio output of the PC directly to the IN socket of the filter module because if you route

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the signal to the Resonant FB via Eurorack modules, for example, the update usually fails. When we connected the laptop audio output directly and played it with the media player, the update worked immediately without errors.

Now a few words about the settings in filter bank mode. The gain is highly dependent on the position of the resonance controller. With the resonance and gain controllers in the middle position, the amplification of a band is approximately -6dB, i.e., half of the input voltage. At 2 o'clock, it is 0dB, and at full stop, it is around +5dB. If the resonance is set to 0, i.e., fully counterclockwise, the amplification is -12dB, and at maximum gain it is approx. -6dB in the respective band. The manufacturer specifies tolerances of +/-10 percent for the frequencies. However, in our test sample, these values were significantly lower, at around three to four percent. The filter, which is specified at 777Hz, had a resonance at about 750Hz in our test. With the wide bandwidths of the bandpass filters, such a tolerance of a few hertz is completely insignificant.

It is also important to know that you can also make the filters oscillate via the internal feedback - i.e., the resonance control - when set above 12 o'clock. If you want to avoid this, or if you want to adjust the range at which the oscillation begins more sensitively, then you should set the CV ATTEN RESO value to less than 1.0 in the settings and, if necessary, select the resonance control curve ONLY LOW.

If you have never used a filter bank before, you should give it a try, because the sonic possibilities are enormous. Although only ten bandpass filters are available instead of twelve on the Moog Filter Bank and its replicas, the Graphic Resonant FB is more than a step ahead of a classic static filter bank due to its flexibility, preset recall, and, above all, the wide range of modulation options. You should also definitely check out the ODD/EVEN outputs to produce a quasi-stereo signal. Incidentally, Erica Synths Octasource LFO module has proven to be very useful for modulation with its phase-shifted outputs.

The Clock Modulation menus and the (Preset) Play offer completely new and, if necessary, beat-accurate modulation options, which are particularly interesting for use with sequencers. When using Preset Play mode, you have to choose the presets skillfully so that this effect doesn't get old quickly. Sometimes less is more here.

Be careful when using the Dynamic Equalizer in boost mode, as resonances can quickly occur when the boost is activated. Boost mode is very useful for enriching a sound with upper frequency components.

Conclusion

The price of the Graphic Resonant FB is just less than 380 euros, and that of the FBEX expander is 120 euros - and together they cost less than 500 euros. Depending on how you use the module, you may be able to get by without the FBEX expander; however, in the classic resonance filterbank mode, it is convenient to be

able to make gain changes directly without always having to select a filterband first. There is nothing comparable to the Graphic Resonant FB from Erica Synths. If you consider buying a filterbank, and one should be in every Eurorack system, you should - if your budget allows - go for the more expensive but much more flexible and versatile Graphic Resonant FB. Creative musicians of electronic music will appreciate the many possibilities.

www.ericasynths.lv