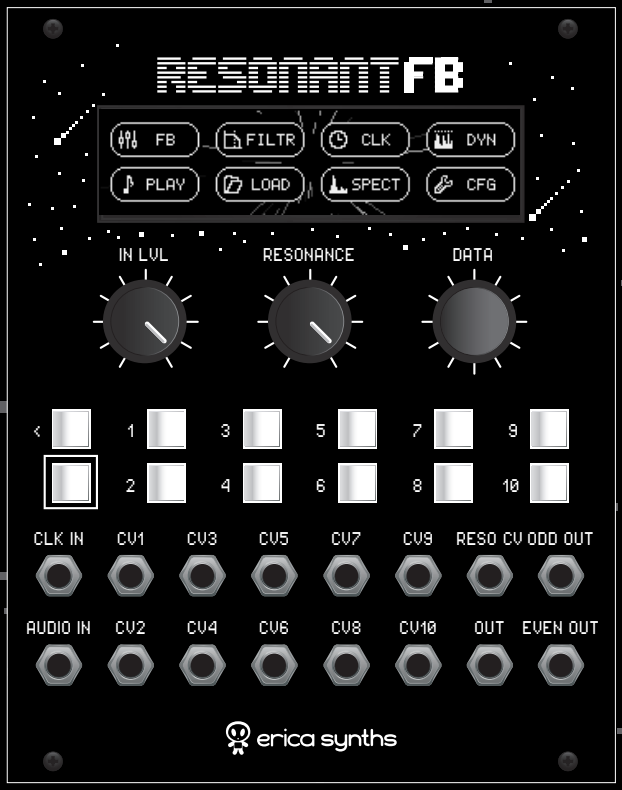


GRAPHIC RESONANT FILTERBANK

RESONANT FB

erica synths

Thank you for purchasing the Erica Synths Graphic Resonant Filterbank! The modules in the Erica Graphic series are characterized by their advanced feature sets, extensive configuration possibilities and patch memory. These modules are fine-tuned for detailed sound design and performance scenarios where you need to change settings radically on the fly.

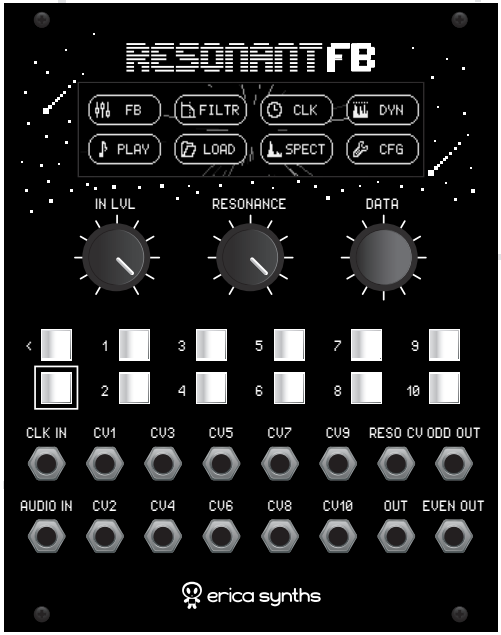
The Graphic Resonant Filterbank (FB) is a ten-band analogue filterbank with digital control over each bands' boost or cut. Each band can be controlled individually via CV or manually, while complex control configurations turn the filterbank into an unconventional multimode filter and even an instrument in its own right when played with various resonance settings. The Expander module (works exclusively with the Graphic Resonant Filterbank and is available separately) provides hands-on adjustment of boost and cut for all bands.

FEATURES:

Analogue 10 band filterbank
Main, even and odd outputs
Manual and voltage-controlled band boost/cut
Configurable resonance feedback loops
Manual and voltage-controlled resonance
Clock input for synchronization of events with a master clock source
Multimode filter mode
Spectral analyzer mode
Dynamic spectral compressor mode
Discrete and morphing pattern change
Configurable CV inputs
Expander module for immediate access to band levels
Skiff-friendly design

SPECIFICATIONS:

Audio signal amplitude	10Vptp
Bandpass filter frequencies:	29Hz,61Hz,115Hz,218Hz,411Hz,777Hz, 1,5kHz,2,8kHz,5,2kHz,11kHz +-10%
CV input amplitude (configurable)	-10V - +10V
Number of presets	128
Panel width	20HP
Module depth	30mm
Power consumption (with EXP)	138(145)mA@+12V,50mA@-12V



RESONANT FB

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1 The OLED display gives visual feedback for the main functions of the module

2 Adjust the AUDIO INPUT LEVEL. With the level all way down and resonance turned up, you can use the module as a drone instrument

3 Adjust the RESONANCE LEVEL

4 The DATA encoder allows you to navigate the menus and adjust settings

5 The BACK button allows for navigating one step backwards

6 The SHIFT button allows for accessing secondary functions of the controls

7 These are the bandpass filter selection buttons. Push one or several buttons to select the filters and rotate the DATA encoder to alter filter boost or cut. The selected filters will change their settings simultaneously. These buttons also access submenus directly

8 This is the CLOCK INPUT. It accepts eurorack level clock signals

9 This is the AUDIO INPUT

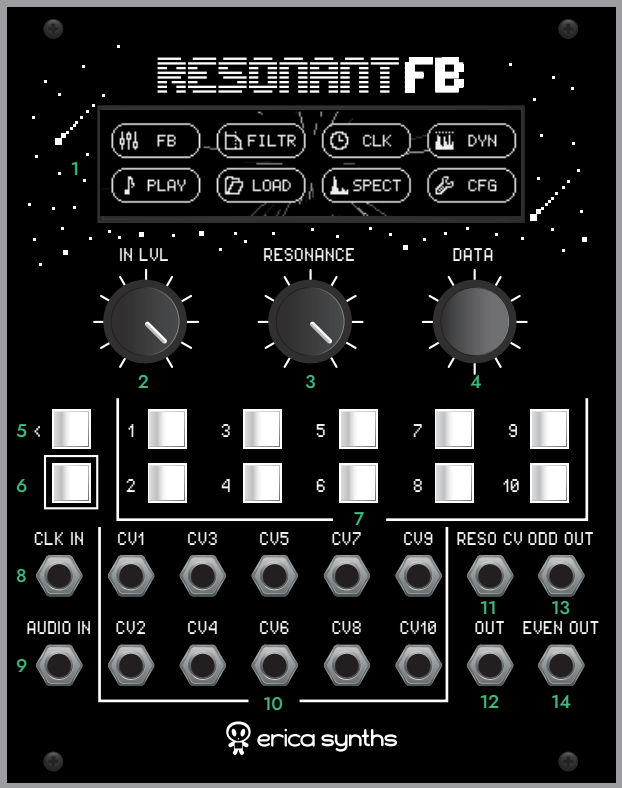
10 These are individual band boost or cut CV inputs. The CV applied to the relevant input is also added to the manual setting of the band level

11 This is the RESONANCE CV input. The incoming CV is added to the manual resonance setting

12 This is the MASTER OUTPUT of the module

13 This is the summed output of the ODD (1, 3, 5, 7, 9) filters

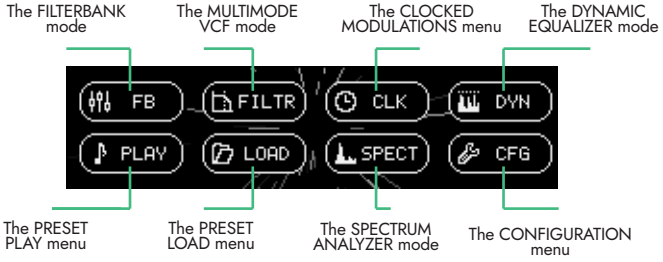
14 This is the summed output of the EVEN (2, 4, 6, 8, 10) filters



How it works

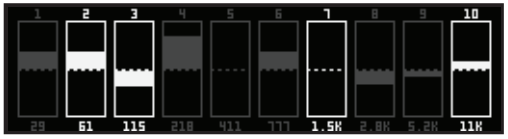
The MAIN MENU

The MAIN MENU provides access to the main functions of the Graphic Resonant Filterbank. Eight buttons under the OLED screen are lit and every function is accessible by pushing the relevant button. For example, to activate the filterbank mode, push the upper left button.



THE RESONANT FILTERBANK MODE

This is the most obvious mode of the module – it sends the audio signal into the analogue resonant filterbank and you can adjust the cut or boost of every bandpass filter, one or multiple filters at the time. Push the CH1 – CH10 buttons to select filters (the selected buttons will light up) and rotate the DATA encoder to adjust band levels. For finer adjustment, hold SHIFT while rotating the DATA encoder. Please note that all selected bands will be adjusted simultaneously. If you are using the Graphic Resonant Filterbank EXPANDER, you can adjust each band directly without selecting it. Play with RESONANCE settings and see how this affects the resulting sound. Please note that no resonance will be audible at the 12 o'clock position – turning the knob further counter-clockwise will invert the resonance. This results in an attenuating effect.
To access alternate functions, hold SHIFT – you can clear all bands to the mid position, randomize all, or randomize only the selected bands. Randomization is an easy way to find cool and unique presets.



SAVING PRESETS

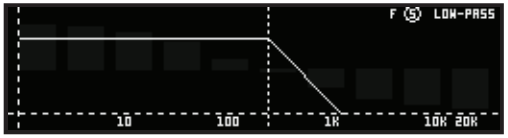
You can SAVE the filterbank, filter and dynamic EQ modes along with the resonance setting as a PRESET. To do so, push and hold the DATA encoder for 3" and the SAVE menu will appear. Three buttons in the bottom row will light up, indicating DISCARD, RANDOM and SAVE functions. In order to name the preset, rotate the DATA encoder to navigate through symbols and push to confirm the selection. Once happy with the name, push the SAVE (the rightmost) button. Push the left button to DISCARD saving. Push the middle button to generate a RANDOM NAME for the preset and you will be surprised – these random names will actually make some sense! You can save up to 128 presets.
In order to exit the FILTERBANK menu, push the BACK button.

THE MULTIMODE FILTER MODE

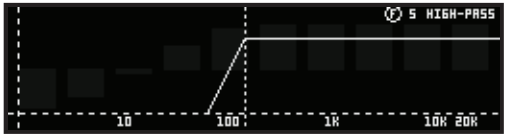
The MULTIMODE FILTER MODE is a unique way to use the filterbank – it sequentially changes the boost or cut of the bandpass filters to emulate behaviour of resonant lowpass, highpass, bandpass or notch (band reject) filters. Please note that filter response will be different from what you can achieve with dedicated multimode filters, because the "filter" is composed of series of bandpass filters.

Once in MULTIMODE FILTER MODE, hold SHIFT and press either BAND4, BAND6, BAND8 or BAND10 to select different filter types – lowpass, highpass, bandpass and notch. The filter mode is indicated visually and in the top right corner of the display. Each mode has slightly different settings (indicated in the top right corner of the display).

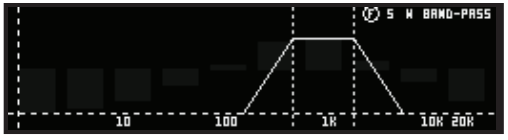
In LOWPASS filter mode, you can adjust the cutoff frequency (F) of the filter and the slope (S), as well as resonance. In order to adjust the filter CUTOFF FREQUENCY, push and hold the SHIFT button and push the CH1 button (it will light up) and rotate the DATA encoder to alter the cutoff frequency. The control assigned to the DATA encoder is indicated with a circle around the relevant letter in the top-right corner of the display. The cutoff frequency can also be CV controlled with a signal applied to the CV1 input.
In order to adjust the filter SLOPE, push and hold the SHIFT button and push the CH3 button (it will light up), and rotate the DATA encoder to alter the slope. The slope also can be controlled with a CV applied to the CV3 input.
For finer filter frequency/slope adjustment, hold SHIFT while rotating the DATA encoder.



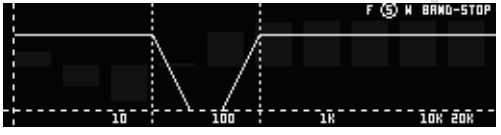
The HIGHTPASS filter controls are identical to the lowpass filter.



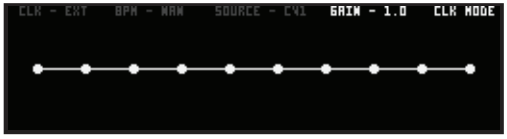
In the BANDPASS filter mode, you can adjust the cutoff frequency (F) of the filter, the slope (S), the bandwidth (W), as well as resonance. In order to adjust the filter CUTOFF FREQUENCY, push and hold the SHIFT button and push the CH1 button (it will light up), and rotate the DATA encoder to alter the cutoff frequency. The control assigned to the DATA encoder is indicated with a circle around the relevant letter in the top-right corner of the display. The cutoff frequency also can be controlled with a CV applied to the CV1 input.
In order to adjust the filter SLOPE, push and hold the SHIFT button and push the CH3 button (it will light up), and rotate the DATA encoder to alter the slope. The slope also can be controlled via CV applied to the CV3 input.
In order to adjust the filter BANDWIDTH, push and hold the SHIFT button and push the CH5 button (it will light up), and rotate the DATA encoder to alter the bandwidth. The bandwidth also can be controlled by a CV applied to the CV5 input. For finer filter frequency/slope/width adjustment, hold SHIFT while rotating the DATA encoder.



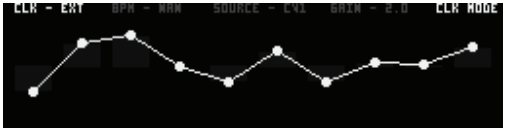
The controls for the NOTCH (BAND REJECT) filter are identical to ones on the bandpass filter.
You can SAVE all filter settings along with the resonance setting as a PRESET.
In order to save the settings, push and hold the DATA encoder for 3" to enter the save menu. The preset saving menu is identical to the one in the filterbank mode.
In order to exit the FILTER menu, push the BACK button.



THE CLOCK MODULATIONS MENU



Push and hold the SHIFT button and press the corresponding BAND button to navigate through the clock settings. These are: INTERNAL/EXTERNAL clock, BPM of the internal clock, CV source and CV gain. The selected function lights up and you can alter it, you will see this on the top of the display.
In order to choose the clock source, select the CLK setting (top left of the display) and rotate the DATA encoder to select the desired mode (INT or EXT). If the internal clock mode is selected, you can alter the BPM – select the BPM setting (next to CLK setting) and rotate the DATA encoder to alter the BPM. Please note, you can change the BPM in increments of 10 BPM. For finer BPM adjustment, hold SHIFT while rotating the DATA encoder.
The next option is for CV SOURCE. Here you can select between a single CV applied to the CV1 input and all CVs. In CV1 mode, the modulations are performed in a shift-register manner – with each incoming clock pulse, the CV applied to the CV1 input is passed to the next bandpass filter until filter 10 is reached and then the cycle starts from the first bandpass filter again. In ALL CV mode, the modulations work in a sample&hold manner. Here you can apply multiple CVs to CV inputs 1-10 and each incoming clock pulse will freeze the CVs to their momentary state until the next clock pulse appears.
The last setting in the clock mode is for the CV attenuator that alters the CV level. The gain setting can be adjusted from 0-2.
In order to exit the CLOCK mode, push the BACK button.



THE PLAY MENU

If you have saved multiple presets, they can be played sequentially as a "song".

There are 4 different PLAY modes available which can be accessed by holding SHIFT:

1. CLK – each incoming rising clock edge will switch the filterbank into the next preset in the memory list.
2. RND-CLK – each incoming rising clock edge will switch the filterbank into a random preset in the memory list (but not the already active preset).
3. CV – presets are switched via the CV1 input – a 0V to 10V range is mapped onto 128 presets resulting in 0.78V per preset. Presets swap immediately without needing a CLK input.
4. CV-CLK – the same as CV mode except a CLK edge is required to swap to the next preset.

While holding SHIFT, select the corresponding lit band button to select the mode. Push the bottom right button (it will blink) to start PLAYBACK of the sequence. The PLAY button will keep blinking, indicating active playback.

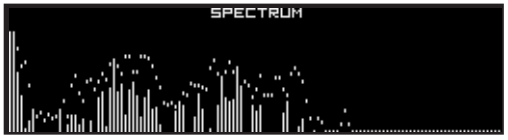
Holding SHIFT also allows for configuring morph settings – here you can configure whether the presets change in a discrete or smooth way. Keep holding SHIFT and press the ENCODER to turn morphing on/off. Rotate the encoder to adjust how much time the morphing takes.
In order to exit the PLAY menu, push the BACK button.

THE LOAD MENU

All saved presets (filterbank, VCF, dynamic EQ + resonance setting) can be recalled instantly during performance.

In order to LOAD a PRESET, rotate the DATA encoder to select the preset and push the encoder to load it. The presets in the list have a mode indicator in the right column – you can identify whether it is a filterbank (FB), dynamic EQ (DYN) or multimode filter (FILT) preset. The order of the presets (numbers on the left) determine the order of playback in PLAY mode. By holding shift, you can access three options – delete (DEL), rename (REN) and MOVE. These are, as the names suggest, options for deleting, renaming or moving a preset in the list. When selecting MOVE, the selected preset will be highlighted and you can select a new place in the list for it via the DATA encoder. Please note that placing a preset into a different slot will switch places with the preset in this slot.
In order to exit the LOAD menu, push the BACK button.

THE SPECTRUM ANALYZER MENU



A nice feature of the module is a SPECTRUM ANALYZER – it will show the frequency content of the incoming audio signal.

The spectrum analyzer optionally shows bar peaks for better visualization of the spectral content. Turn this ON/OFF by holding SHIFT and pressing the encoder. Similarly, hold SHIFT and rotate the encoder to change the fall time of bar peaks. Furthermore, if you wish to swap the X axis scale (LIN or LOG), hold SHIFT and press the corresponding lit band button.
In order to exit the SPECTRUM menu, push the BACK button.

THE DYNAMIC EQUALIZER MENU

In DYNAMIC EQUALIZER mode, the module will detect the spectral content of the audio signal and automatically cut frequencies above or boost frequencies below a manually configurable threshold.

Rotate the DATA encoder to set the desired threshold above which the frequencies are cut. Push the DATA encoder to activate the dynamic equalizer. Push and hold the SHIFT button and push the DATA encoder to activate frequency boost - this will slightly boost the frequencies that are below the threshold. Use the DYNAMIC EQUALIZER without boost for easily finding the resonance 'sweet-spots'. Enable boost for enhancing the spectral composition of your sound (be careful with resonance when boosting!).
In order to exit the DYNAMIC EQUALIZER menu, push the BACK button.

THE CONFIGURATION MENU

In the CONFIGURATION MENU you can alter master settings of the module – OLED display settings, CV inputs, the resonance potentiometer response curve and feedback loops of the filterbanks. Rotate the DATA encoder to navigate through the sub-menus and push the DATA encoder to select the relevant submenu.

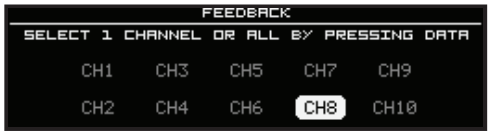
The SYST section of the configuration menu shows the firmware version, bootloader version, as well as - guess what – the manufacturer of the module. You can also reconfigure the mapping of the band buttons in case you want them incrementing horizontally. In order to FACTORY RESET, press and hold the BAND 10 button for 2'' and a pop-up menu will appear asking you to confirm/deny the reset – press the corresponding lit bank button for either CANCEL (band 1) or RESET (band 7).
In order to exit the SYST menu, push the BACK button.

In the DISPLAY section you can adjust the brightness of the OLED display, display dimming time in case no controls are operated and turn the screensaver on/off. Rotate the DATA encoder to select the parameter you wish to alter and push the DATA encoder to access the setting. Now, rotate the DATA encoder to adjust the setting. In order to return to the parameter selection, push the BACK button.
In order to exit the DISPLAY menu, push the BACK button.

In the CV input configuration section, you can select the expected CV input signal amplitude for full span operation, as well as set the master attenuation of the CV inputs for the bandpass filters of the filterbank and resonance. Rotate the DATA encoder to select the parameter you wish to alter. The CV RANGE is selected by pushing the DATA encoder. Available CV ranges are [-5V- +5V]; [-10V - +10V]; [0 - +5V] and [0 - +10V]. In order to adjust the master attenuation of the filterbank bandpass filter CV inputs, push the DATA encoder and rotate it to set the desired gain level. Push the BACK button to return to the CV configuration submenu. The resonance CV input of the configuration is identical to the filterbank CV input configuration. If you're using the expander module, you can change the expander operation mode from OFFSET (potenciometer positions gets added to the band gains) and ATTENUATE (potenciometer positions attenuate the respective CVs). In order to exit the DISPLAY menu, push the BACK button.

In the RESO configuration menu you can you can select the response curve of the resonance potentiometer. Simply rotate the DATA encoder and select the desired curve. Available options are: balanced, only highs, only lows, linear, logarithmic, exponential.
In order to exit the RESO menu, push the BACK button.

In the FEED menu you can select which bandpass filter is involved in the resonance feedback loop. Each filter will resonate at different frequency, so effect on the sound can be **radically different** depending on which filter is selected. Push one of the bandpass filter selection buttons to select the relevant filter or push the DATA encoder to select all filters at once. Keep in mind that the resonance is off when the knob is in the 12 o'clock position and further counter-clockwise movement inverts the resonance. Please note that the feedback setting is not saved with presets. In order to exit the FEED menu, push the BACK button.



NB! When resonance source is set to a single channel, the counter-clockwise position does not precisely attenuate the input and rather creates a unique and hard-to-predict resonance. Play around with it!

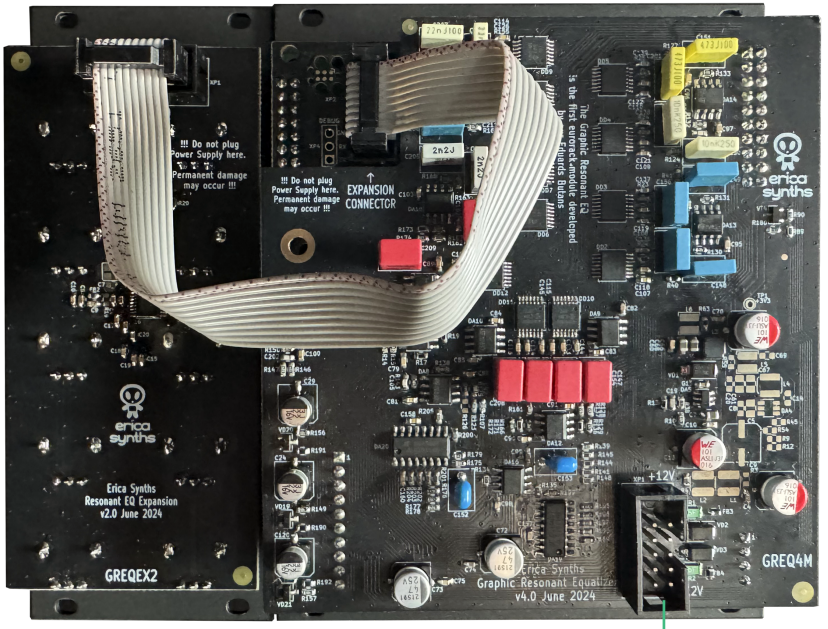
FIRMWARE UPDATE

If official firmware updates from Erica Synths are announced, you can update your Resonant FB via an audio bootloader. You can check your current firmware version in the info section that's accessible through the config screen. Download the firmware update audio file from the Erica Synths website and connect the headphones output of your computer to the AUDIO IN input of the Resonant FB. Turn the Resonant FB and whilst holding down buttons CH9 and CH10 connect it back to power - your Resonant FB will advance into the FW update mode. Move the IN LVL knob fully clockwise. Play the FW update audio file and see the LEVEL indicator. The level must oscillate around top half of the bar - if that is not the case, increase your computer volume level if the level is too low or lower if the level is too high. Alternatively change the gain of the Resonant FB by rotating the DATA encoder. The update might fail if the level is not within the required bounds - don't worry, just try again with the level adjusted. For the update to succeed, the audio file must fully play without interruptions.

Push the DATA encoder, the channel 10 button and the shift button simultaneously and see, what happens!

THE GRAPHIC RESONANT FILTERBANK EXPANDER

The Graphic Resonant Filterbank EXPANDER module provides hands-on adjustment of all bands' boost and cut without need to select the bands via buttons. This makes sound design with the Graphic Resonant Filterbank much easier. The Expander works exclusively with the Graphic Resonant Filterbank and is available separately.
In order to connect the Expander module, remove the jumper from the connector (the jumper prevents accidental connection of the PSU ribbon cable to the Expander connector) and use the ribbon cable supplied with the Expander module to connect the Expander as shown in the picture below. The extended setup is ready for use.
NB! If you are not using the Expander module, always keep the jumper on the Expander connector. Accidental connection of the power supply to the Expander socket may permanently damage the module.



This is the PSU ribbon cable connector

Safety instructions

Please follow the instructions for the use of the Erica Synths Graphic Resonant Filterbank module below, because only this will guarantee the proper operation of the module and ensure the warranty from Erica Synths.

Use the Resonant Filterbank module exclusively with the power supply unit (PSU) supplied with the system. Powering it with other PSU units may cause permanent damage to the device.

Water is lethal for most electric devices unless they have been rendered waterproof. The Resonant Filterbank module is NOT intended for use in a humid or wet environment. No liquids or other conducting substances should be allowed into the module. Should this happen, the module should be disconnected from mains power immediately, dried, examined and cleaned by a qualified technician.

Do not expose the instrument to temperatures above +50° C or below -20° C. If you have transported the instrument in extremely low temperatures, leave it at room temperature for an hour before plugging it in.

Transport the instrument carefully. Never let it drop or fall over. The Warranty does not apply to instruments with visual damage.

Resonant Filterbank module must be shipped in the original packaging only. Any instrument shipped to us for return, exchange and/or warranty repair must be in its original packaging. All other deliveries will be rejected and returned to you. Ensure that you keep the original packaging and technical documentation.

Disposal

This device complies with EU guidelines and is manufactured and confront RoHS without the use of lead, mercury, cadmium or chrome. Nevertheless, this device is special waste and disposal in household waste is not recommended.

User manual by Eduards Butans and Girts Ozolins@Erica Synths.
Design by Ineta Briede@Black8.

The specifications are subject to change without notice.
If you have any questions, feel free to contact us
via SUPPORT section on www.ericasynths.lv

You will find the Erica Synths terms of warranty at
www.ericasynths.lv

Items for return, exchange and/or warranty repair should be sent us according to the guidelines on SUPPORT section on www.ericasynths.lv

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