RS210 & RS215

8 OCTAVE FIXED FILTER BANKS

In addition to various types of VCF, there is another class of filter that you will occasionally find on powerful synthesisers. These are the fixed filter banks, and they differ from low-pass, high-pass, band-pass or band-reject filters in a number of significant ways. Perhaps the most obvious of these is that, whereas the action of a VCF is typically determined by a single frequency and a single resonance value, the fixed filter bank divides the signal into a number of bands and acts upon each of these individually. The more bands that you have, and the more precise these are, the more control you can exert over the sound.

Fixed filter banks often reside within cars or cheap home stereos, wherein they are called 'graphic equalisers'. On a more professional level, you will find 31 or more fixed filters in a studio-quality graphic equaliser. The most flexible of these devices divide the frequency spectrum into as many as 512 separate bands, and allow you to boost or cut the amplitude in each of these individually. There is, of course, overlap between these bands (because the techniques required to fully separate them without unpleasant artefacts are not practical) but they can be used to sculpt sounds very precisely.

The fixed filter banks in modular synthesisers are less precise than those found in dedicated graphic equalisers, but they fulfill a similar purpose: they allow you to accentuate or reduce the prominence of bands of frequencies, and they are capable of shaping sounds in ways that are impossible using conventional filters. Furthermore, and in common with all the other signal processing tools within modular synths, they can also be used to modify CVs.

RS210

The RS210 is based on a filter bank originally designed in the 1970s for inclusion in the ultra-rare EMS Synthi 100 Mk2. (Only one of those instruments was ever built.) It operates in a relatively low frequency range and has gentle (low 'Q') filters that are ideal for overall shaping of the sound.

IN USE

The RS210 incorporates eight static filters with centre frequencies of 75Hz, 150Hz, 500Hz, 700Hz, 1.5kHz, 3kHz and 7kHz, and the eight knobs on the front panel are gain controls that allow you to affect the amplitude of the signal in each band.

With its knob below '5' on the marked scale, a filter will attenuate the signal. Due to the low Q, the maximum attenuation in the band is heavily dependent upon the positions of the knobs in adjacent bands.

If a knob is in its fully clockwise position (MAX) the gain in that band is approximately +2.5dB.

IN

The input accepts audio signals and CVs in the range ±10V.

OUT

The RS210 outputs signals and CVs in the range ±10V.

Note: If a ±10V signal is presented to the input of the RS210 and further boosted, distortion will occur.

RS215

The RS215 is a modern filter bank with steeper filters than the RS210, and which operate in a slightly higher range. It allows you to shape the sound more precisely than the RS210.

IN USE

The RS215 incorporates eight static filters with centre frequencies of 100Hz, 200Hz, 400Hz, 800Hz, 1.6kHz, 3.2kHz, 6.4kHz and 12kHz, and the eight knobs on the front panel are gain controls that allow you to affect the amplitude of the signal in each band.

With its knob below MAX, a filter will attenuate the signal. With just one knob at MIN the level in that band is reduced by approximately 9dB. With all knobs at MIN the signal attenuation approaches ∞dB.

If a knob is in its fully clockwise position (MAX) the gain in that band is approximately unity.

IN

The input accepts audio signals and CVs in the range ±10V.

OUT

The RS215 outputs signals and CVs in the range ±10V.