

# SUPER-FREQ QUICKSTART MANUAL



## CONTROLS AND OPERATION

The SUPER-FREQ consists of two optical, state variable FILTERS which may be used in STEREO, MONO-DUAL, or MONO-SERIES configuration. Either FILTER can be configured as ENVELOPE FILTER (auto-wah), WAH-WAH (pedal), or PARAMETRIC EQ (manual). Either FILTER has LOW PASS, BAND PASS, and HI PASS modes as well as HI or LOW ranges. UP or DOWN mode for either ENVELOPE FILTER can be set internally. PEAK also can be set internally to operate in RESONANCE mode of a traditional Mu-Tron III or in DAMPER mode of an Alembic style active filter. Either FILTER has the ability to blend DRY signal together with the FILTERED signal. In MONO-SERIES mode, many EQ applications can be achieved as can strange effects like COMB FILTER by utilizing dual WAH-WAH and/or ENVELOPE FILTER settings.

### INPUT OUTPUT SECTION:

1. **IN A** - A standard 1/4"(TS) output jack receiving a mono input signal to whatever comes previous in your signal chain.
2. **OUT A** - A standard 1/4"(TS) output jack ending a mono output signal to whatever comes next in your signal chain.
- 3a. **PEDAL**: A 1/8" (TRS) jack used to connect an expression pedal. We recommend an expression pedal that employs a 10k or 50k linear pot. This allows you to manually sweep either FILTER or to control the rate of either or both FILTERS for stereo WAH-WAH effect.
4. **9v DC** - 9VDC (70mA current minimum) negative center power supply. The supply should use a 2.1mm barrel plug.
5. **IN B** - A standard 1/4"(TS) output jack receiving a mono input signal to whatever comes previous in your signal chain.
6. **OUT B** - A standard 1/4"(TS) output jack ending a mono output signal to whatever comes next in your signal chain.

### ROUTING SECTION:

7. **FILTER B INPUT** - Three-way toggle switch used for selecting one of three input signal options:
  - **IN A** - The input signal to both FILTER B and FILTER A is the same, commonly selected to create a stereo signal from a mono instrument.
  - **OUT A** - Audio is passed through both FILTER A and FILTER B in series; if you have a monophonic instrument and a single amplifier then you'll probably use this setting. This basically allows you to use one side as a WAH-WAH and the other as an ENVELOPE FILTER.
  - **IN B** - Stereo input signal to be processed by FILTER A and FILTER B independently.

### FILTER BYPASS SECTIONS:

#### FILTER A:

- 7a. **EFFECT FOOTSWITCH** - Determines whether the FILTER A effect is engaged or bypassed.
- 7b. **EFFECT ON-OFF LED** - When the LED is OFF, the FILTER A is bypassed. When the LED is ON, FILTER A is engaged.

#### FILTER B:

- 8a. **EFFECT FOOTSWITCH** - Determines whether the FILTER B effect is engaged or bypassed.
- 8b. **EFFECT ON-OFF LED** - When the LED is OFF, the FILTER B is bypassed. When the LED is ON, FILTER B is engaged.

### FREQUENCY FILTER SECTION (EITHER FILTER)

10. **PEAK**: Continuously-adjustable control that determines the width of the frequency range. It adds a resonant PEAK or "Q" to the FREQUENCY of the FILTER. The greater the PEAK, the narrower the frequency range that is swept, and the sharper and more dramatic is the FILTER sound. PEAK may be set to RESONANCE mode or DAMPER mode internally. RESONANCE mode is suggested when configuring either FILTER in ENVELOPE FILTER mode.
11. **FREQUENCY**: Continuously-adjustable control that sweeps the FREQUENCY of the FILTER. Turning the control clockwise, SWEEPS the FILTER into higher frequency range. Sweeping the control counter-clockwise SWEEPS the FILTER into lower frequency range. When in ENVELOPE mode or WAH-WAH mode, this controls the start point of the FILTER sweep controlled by playing dynamics or foot pedal.
12. **FILTER GAIN**: Continuously-adjustable control that determines the level of the effect to be blended with dry signal as determined by DIRECT GAIN.
13. **DIRECT GAIN**: Continuously-adjustable control that determines the level of dry signal to be blended with effect as determined by FILTER GAIN.
14. **SWEEP**: Toggle switch that determines the source to control FILTER modulation to be controlled by rate knob(MAN) or by pedal(PED).
  - **MAN**: Modulation source of FREQUENCY to be controlled manually by FREQUENCY knob.
  - **ENV**: Modulation source of FREQUENCY is the ENVELOPE FOLLOWER. There are internal jumpers to determine the UP or DOWN drive of the FILTER. There are also internal trimmers which will allow for fine calibration of UP and DOWN modes as well as FILTER ATTACK.
  - **PED**: Modulation source of FREQUENCY to be controlled manually by external expression pedal. This is WAH-WAH mode.
15. **MODE**: Toggle to determine the FILTER shape or mode.
  - **LP**: LOW PASS mode allows for bass or "bottom end" signal to pass through.
  - **BP**: BAND PASS modes allows for a more mid-range sound and is useful for cutting out muddy lows and shrill highs.
  - **HP**: HIGH PASS mode cuts out most bass and mid-range and produces sharp, nasal sounds.

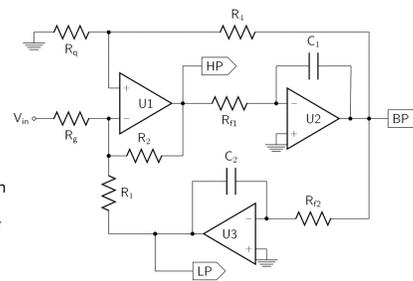
## SUPER-FREQ SETTINGS AND USAGE

The SUPER-FREQ is a dual state variable filter with multiple routing and actuating options. Either filter can be run as an ENVELOPE FILTER, WAH-WAH pedal, or a PARAMETRIC EQ with resonance control. It can be used in STEREO, MONO IN -DUAL OUT, or MONO-SERIES to allow for limitless applications.

A state variable filter is a type of active filter in electronic circuits which can produce simultaneous lowpass, highpass, and bandpass outputs from a single input. State variable filters are frequently used for modifying frequency response in audio signal processing. At low Q settings they are often used in parametric equalizer circuits, and at high or variable Q settings to create resonant filter modules in analog synthesizers.

For manual control of frequency, dual potentiometers are usually employed as in the Tychobrahe Parapedal, Alembic SF-2, and Anderton Super Tone Control. The SUPER-FREQ utilizes optical circuits to servo both filters simultaneously. Both the Mu-Tron III and the Mu-Tron Vol-Wah are examples of optically controlled state variable filters. The Mu-Tron III translates the musician's playing dynamics into current which then drives an LED. The Mu-Tron Vol-Wah uses a potentiometer in the foot pedal to sweep current to the LED. The LED in either design then servos multiple photo-resistors to vary the resistance of the state variable filter.

### State Variable Filter Circuit



## QUICK START SETTING **STACKED WAH-WAH**



Connect a recommended power supply to the power socket at the rear of the SUPER-FREQ. Connect expression pedal to pedal jack using TRS 1/8 to 1/4 adaptor. Connect your instrument to the [FILTER A INPUT] socket at the rear of the pedal. Connect the [FILTER B OUTPUT] to your amplifier. Using the visual guide below, set the controls to the above template. Make sure both channels are turned on – both channel LEDs should be lit – then play something and turn up your amp.

## DUAL PARAMETRIC FILTERS **BI-AMP CROSSOVER**



For surgical crossover and equalization applications. Set FILTER A to split upper-mid and high frequencies to one amplifier and set FILTER B to split low frequencies to another amplifier. Connect your instrument to the [FILTER A INPUT] jack and the [FILTER B OUTPUT] jack to your amplifier. Set FILTER A to act as a BAND PASS or HIGH PASS filter. Set FILTER B to act as a LOW PASS filter. This is a very useful combination to EQ and route "dry" and "wet" signals, such as in an effects chain.

## DUAL ENVELOPE PEDALS **UP AND/OR DOWN**



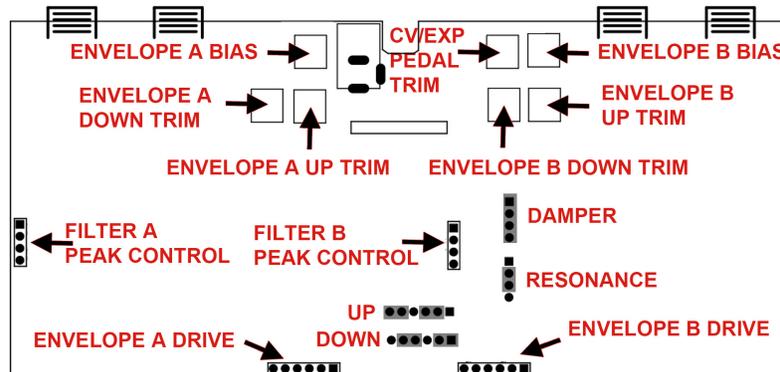
Connect your instrument to [FILTER A INPUT] on the rear of the pedal, and your amplifier to [FILTER B OUTPUT]. Set FILTER A to Envelope Mode and find the sweet spot of your instrument. Set FILTER B to Envelope Mode and find the sweet spot of your instrument. Either ENVELOPE may be used independently or you can run one into the other. Try setting one in UP drive and set the other filter in DOWN mode. It is like having two pedals in one chassis. You can also try other combinations such as WAH-WAH and ENVELOPE, WAH-WAH and PARAMETRIC, PARAMETRIC and ENVELOPE, and so on.

## TWO AMPLIFIERS **MONO TO STEREO WAH-WAH**



Connect your instrument to [FILTER A INPUT] on the rear of the pedal, your primary amplifier to [FILTER B OUTPUT], your secondary amplifier to [FILTER A OUTPUT], then set the controls like template. There is a noticeable 'movement' of the input audio signal between the two amplifiers. Try to experiment with various LOW PASS, BAND PASS, and HIGH PASS settings on either side. By actuating different frequency ranges simultaneously, you can achieve some weird COMB-FILTERING effects.

### INTERNAL CONTROL SETTINGS



For more information on the SUPER-FREQ please visit [mu-tron.com](http://mu-tron.com)