551

500 Series Inductor EQ

By: RUPERT NEVE DESIGNS

Serial #: ☐☐☐☐☐☐

Operations Manual

551: 500 Series Inductor EQ

Thank you for your purchase of the 551 Inductor EQ. Everyone at Rupert Neve Designs hopes you enjoy using this tool as much as we have enjoyed designing and building it. Please take note of the following list of safety concerns and power requirements before the use of this product.

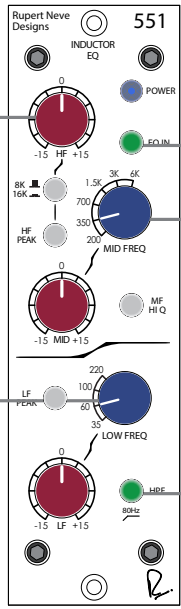
Safety

It's usual to provide a list of "do's and don'ts" under this heading but mostly these amount to common sense issues. However here are some reminders:

Don't operate your 551 module in or around water! Electronic equipment and liquids are not good friends. If any liquid is spilled such as soda, coffee, alcoholic or other drink, the sugars and acids will have a very detrimental effect. Sugar crystals act like little rectifiers and can produce noise (crackles, etc.). SWITCH OFF POWER IMMEDIATELY because once current starts to flow, the mixture hardens, can get very hot (burnt toffee!) and cause permanent and costly damage. Please contact support as soon as possible at support@rupertneve.com for resolution.

Safety Instructions:
1) Read these instructions.
2) Keep these instructions.
3) Heed all warnings.
4) Follow all instructions.
5) Do not use this apparatus near water.
6) Clean only with dry cloth.
7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8) Do not install near any heat source such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10) Protect the power cord from being walked on or pinched, particularly at plugs convenience receptacles and the point where they exit from the apparatus.
11) Only use attachments/accessories specified by the manufacturer.
12) Unplug this apparatus during lightning storms or when unused for long periods of time.
13) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
14) Do not expose this apparatus to rain or moisture.
15) The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

551: Front Panel



High Frequency Shelf / Peak

Selectable at 8 and 16 Khz. With continuous gain from -15 to +15dB. Selectable peak or shelf curves

EQ IN

Engages EQ. Illuminates green when active

Mid Parametric

Selectable at 200, 350, 700, 1.5 K, 3 K, and 6 KHz. With continuous gain from -15 to +15dB. Selectable Hi Q

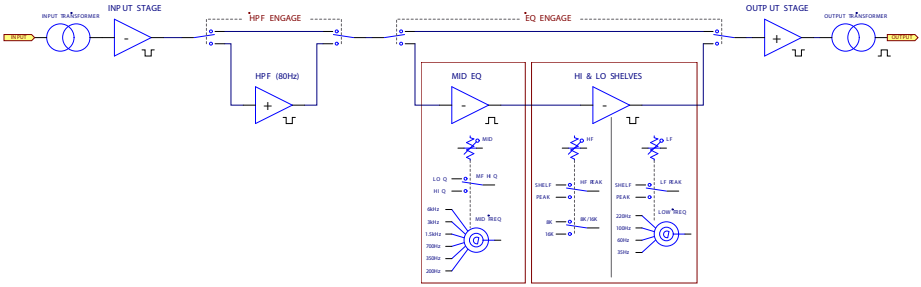
Low Frequency EQ

Selectable at 35, 60, 100, and 220 Hz. Continuous gain from -15 to +15dB. Selectable peak or shelf curves

HPF

Engages 80Hz HPF. Illuminates green when active

551: Block Diagram



551 Design Notes

Featuring 3 bands of EQ inspired by Mr. Neve's most prized vintage designs, along with custom transformers and class-A gain blocks, the 551 brings the thick, powerful lows and sweet highs of Rupert's classic EQs to the 500-Series format.

The 551 echoes the simple and definitive Rupert's classic 3-band EQ feature-set, with a custom inductor, switched frequencies and a HPF. Traditional transformer coupled inputs and outputs designed specifically for the 500 series are used for both technical performance reasons and optimum musical reproduction.

The 3-band, custom-tapped inductor EQ on the 551 was inspired by RND's favorite portions of Rupert's vintage EQ designs. The low frequency band is designed to produce a creamy, resonant bass response. Additionally, the LF band on the 551 can be used as either a shelf or a peak filter, adding punch, dimension, and immense control to your low end. The 551's inductor midrange band is also based off of his classic EQs, which are ideal for sweetening vocals and instruments while bringing them forward in a mix. Additionally, the mid frequency band's proportional "Q" response makes it well-suited for minimizing problematic frequencies in a source. The 551's high frequency band is a hybrid vintage / modern design, blending inductor circuitry with capacitor-based topologies to achieve the vintage tones with enhanced control. The High Pass filter is a 12dB/octave design with a fixed 80Hz frequency. As Rupert originally intended with his most prized classic designs, each EQ section uses low-feedback, class-A discrete electronics to prevent low-level artifacts and harshness from detracting from the tonal shaping. The EQ circuit itself, however, is a decidedly modern updated design using techniques and components that were simply not available 35 years ago, and should not be considered a "clone".

Both the high and low band can be switched from shelf to peak curves and offer 15 dB of boost or cut. The high band can be switched from 8 kHz to 16 kHz, and the low band can be selected at 35 Hz, 60 Hz, 100 Hz or 220 Hz. The inductor based Mid Band offers 6 center frequencies; 200 Hz, 350 Hz, 700 Hz, 1.5 kHz, 3 kHz and 6 kHz. The Mid Band also has a "Mid Hi Q" switch to narrow the bandwidth (increase the Q) of the filter.

Power and audio connectivity can be supplied through any 500 series compatible rack.

551 Features

EQ IN
Engages all bands of the equalizer except the hpf.

HF
Adjusts up to 15 dB of boost or cut at selected high frequencies.

8K /16K
With the switch out, the center or corner frequency of the high band is 8 kHz. With the button pressed, the center or corner frequency changes to 16 kHz. Between this switch and the HI PEAK switch, you have 4 different EQ curves to finesse the high frequency content.

HI PEAK
When the button is out, the high frequency band operates in shelf mode, boosting or cutting above the corner frequency at approximately 6 dB/octave. Below the corner frequency the amount of boost or cut gradually diminishes. With the HI PEAK button pressed, the high frequency band changes to peak mode with a bell shaped boost or cut curve. The Peak mode utilizes an inductor and capacitor circuit to create the bell-shaped curve.

MID FREQ
The MID FREQ rotary switch has 6 positions to select the center frequency of the mid band EQ stage. This circuit utilizes an inductor and capacitors to shape the EQ curve, the same way as Rupert Neve's console designs of the 70's. The frequencies chosen are 200 Hz, 350 Hz, 700 Hz, 1.5kHz, 3 kHz and 6 kHz. 200 Hz is especially useful for cuts on individual tracks within a dense mix.

MID HI Q
The resonance or Q of the mid band at maximum boost is typically 2 when the button is out. When the MID HI Q is pressed at maximum boost, the Q narrows to approximately 3.5. The Q widens nicely with less boost or cut as is typical for passive EQ circuits. The Q tends to be slightly wider when the frequency is set lower, and slightly higher for higher frequency selections. The Q is also narrower for cuts than it is for boosts and the mid band is non-symmetrical by design.

MID LEVEL
Adjusts up to 15 dB of boost or cut at the selected mid frequencies. Remember to reduce the signal level at the source to minimize the potential for distortion when any of the 3 bands are boosted significantly.

HPF
Engages an 12dB per octave High Pass Filter set to 80Hz

LOW FREQ
The LOW FREQ rotary switch has 4 positions for selecting one of four corner or center frequencies for the low band EQ section. The frequencies are 35 Hz, 60 Hz, 100 Hz and 220 Hz.

LO PEAK
When the button is out, the low frequency band operates in shelf mode, boosting or cutting below the corner frequency. Above the corner frequency the amount of boost or cut gradually diminishes at approximately 6 dB/octave. With the HI PEAK button pressed the low frequency band changes to peak mode with a bell shaped boost or cut curve.

LF
Adjusts up to 15 dB of boost or cut at the selected low frequencies. Cut can be used as a variable, and perhaps more gentle alternative to using the HPF.

OUTPUT
The main output signal comes from the output transformer secondary which is balanced and ground free. A ground free connection guarantees freedom from hum and radio frequency interference when connected to a balanced destination.

POWER
+/- 16V supplied by 500 series rack

Specifications

Equalizer Bypassed

Noise:
Measured at Main Output, un-weighted, 22Hz-22kHz, source impedance 40 Ohms balanced.

Better than -102dBV

Frequency Response

Main output, no load	+/- 0.1dBu from 20Hz to 31.5kHz -1dB @ 120kHz

Maximum Output Level 23.25dBu

Total Harmonic Distortion and Noise

@ 1kHz, +20dBu output level, no load.	Better than 0.0025%
@ 20Hz, +20dBu output level, no load.	0.13% Typical (2nd and 3rd harmonic)

High Pass Filter: -2.7dB @ 80Hz
Slope: 12dB/Octave

Equalizer Engaged

Noise:
Measured at Main Output, un-weighted, 22Hz-22kHz, source impedance 40 Ohms balanced.

Better than -94dBV

Frequency Response

Main output, no load	+/- 0.25dBu from 20Hz to 45kHz -2dB @ 120kHz

Maximum Output Level 23dBu

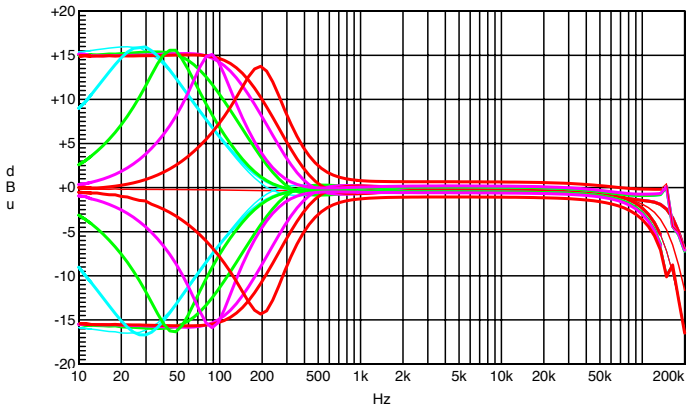
Total Harmonic Distortion and Noise

@ 1kHz, +20dBu output level, no load.	Better than 0.009%
@ 20Hz, +20dBu output level, no load.	0.13% Typical (2nd and 3rd harmonic)

Power Requirements

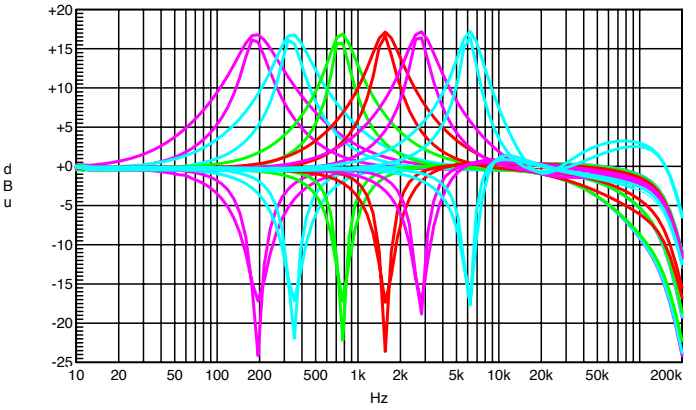
120mA on +16VDC
110ma on -16VDC

Low Frequency EQ



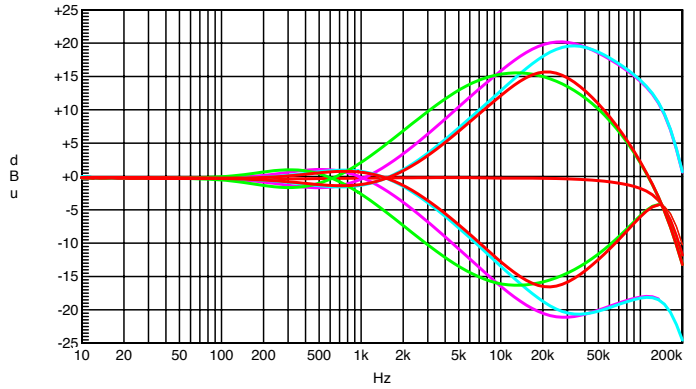
Sweep	Trace	Color	Comment
1	1	Red	EQ Flat
2	1	Cyan	35 Hz Full Boost
3	1	Cyan	35 Hz Full Cut
4	1	Green	60 Hz Full Boost
5	1	Green	60 Hz Full Cut
6	1	Magenta	100 Hz Full Boost
7	1	Magenta	100 Hz Full Cut
8	1	Red	220 Hz Full Boost
9	1	Red	220 Hz Full Cut

Mid Band EQ



Sweep	Trace	Color	Comment
1	1	Red	Flat
2	1	Magenta	200 Hz Full Boost
3	1	Magenta	200 Hz Full Boost Hi Q
4	1	Magenta	200 Hz Full Cut
5	1	Magenta	200 Hz Full Cut Hi Q
6	1	Cyan	350 Hz Full Boost
7	1	Cyan	350 Hz Full Boost Hi Q
8	1	Cyan	350 Hz Full Cut
9	1	Cyan	350 Hz Full Cut Hi Q

High Frequency EQ



Sweep	Trace	Color	Comment
1	1	Red	Flat
2	1	Magenta	8K Shelf Full Boost
3	1	Magenta	8K Shelf Full Cut
4	1	Cyan	16K Shelf Full Boost
5	1	Cyan	16K Shelf Full Cut
6	1	Green	8K Peak Full Boost
7	1	Green	8K Peak Full Cut
8	1	Red	16K Peak Full Boost
9	1	Red	16K Peak Full Cut

PRODUCT WARRANTY

Rupert Neve Designs warrants this product to be free from defects in materials and workmanship for a period of one (1) year from date of purchase, and agrees to remedy any defect identified within such one year period by, at our option, repairing or replacing the product.

LIMITATIONS AND EXCLUSIONS

This warranty, and any other express or implied warranty, does not apply to any product which has been improperly installed, subjected to usage for which the product was not designed, misused or abused, damaged during shipping, damaged by any dry cell battery, or which has been altered or modified in any way. This warranty is extended to the original end user purchaser only. A purchase receipt or other satisfactory proof of date of original purchase is required before any warranty service will be performed. THIS EXPRESS, LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, TO THE EXTEND ALLOWED UNDER APPLICABLE STATE LAW. IN NO EVENT SHALL RUPERT NEVE DESIGNS BE LIABLE FOR ANY SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE USE OF THIS PRODUCT. Some states do not allow the exclusion or limitation of consequential damages or limitations on how long an implied warranty lasts, so this exclusion may not apply to you.

WARRANTY SERVICE

If you suspect a defect in this product, please call us at 512-847-3013 or email us at support@rupertneve.com to discuss the suggested defect (it is possible that a suspected defect could be due to improper usage) and to obtain a return authorization number. It shall be your responsibility to pay for shipping the product to us, and, if the product is determined to be defective, our responsibility to pay for shipping the product back to you.

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