RUPERT NEVE DESIGNS 545 Primary Source Enhancer User Manual

545
Primary Source Enhancer

Operations Manual

Contents

Important 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 a dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources 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 one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for the 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. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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.
15. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases or beer glasses, shall be placed on the apparatus.
16. Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
17. This apparatus has been designed with Class-I construction and must be connected to a main socket outlet with a protective earthing connection (the third grounding prong).
18. This apparatus has been equipped with a rocker-style AC main power switch. This switch is located on the rear panel and should remain readily accessible to the user.

19. The MAINS plug or an appliance coupler is used as the disconnect device, so the disconnect device shall remain readily operable.

	**CAUTION AVIS** RISK OF ELECTRIC SHOCK. DO NOT OPEN RISQUE DE CHOC ELECTRIQUE. NE PAS OUVR IR	
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER-S ICING TO QUALIFIED PERSONNEL ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE NTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE. AVIS: POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A		

 The lightning flash with an arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be of sufficient magnitude to constitute a risk of electric shock to persons.

 The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing)instructions in the literature accompanying the appliance.

20. **NOTE:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
    • Reorient or relocate the receiving antenna.
    • Increase the separation between the equipment and the receiver.
    • Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
    • Consult the dealer or an experienced radio/TV technician for help.

    CAUTION: Changes or modifications to this device not expressly approved by Rupert Neve Designs LLC, could void the user's authority to operate the equipment under FCC rules.
21. This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.
22. Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart. According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all

persons exposed to equipment capable of producing high sound pressure levels use hearing protectors while the equipment is in operation. Earplugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here:

Duration, per day in h ours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in a small club
6	92	
4	95	Subway Train
3	97	
2	100	Typical music via headphones
2.	102	
1	105	Siren at 10 m distance
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

WARNING — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

545 Primary Source Enhancer

Thank you for your purchase of the 545 Primary Source Enhancer. We hope that you enjoy using this tool as much as we have enjoyed designing and building it. Please read through the entire manual before attempting to set up or operate your 545 Primary Source Enhancer.

Design Notes

The 545 Primary Source Enhancer is a 500-series format module that is designed to reduce ringing feedback, effectively providing the live sound engineer with more room to raise the level of a microphone on stage before feedback occurs. The controls are easy to use and understand, generally requiring minimum adjustment once properly set.

The 545 shares some similarities with conventional noise gates, including threshold and depth (range) control. However, the 545 sets itself apart from more traditional gates with its control over the dynamic envelope, resulting in a less audible transition between periods of attenuation.

The 545 is designed to accept line-level signals such as the output of a microphone preamplifier, or the insert sent from a console. The 545 output is also line level, which typically feeds the line input or inserts the return of a console. The 545 can easily interface between balanced and unbalanced inputs and outputs due to the 545's transformer-coupled input and output.

Operation

Once the 545 has been properly connected and powered on, the operation is quite simple:

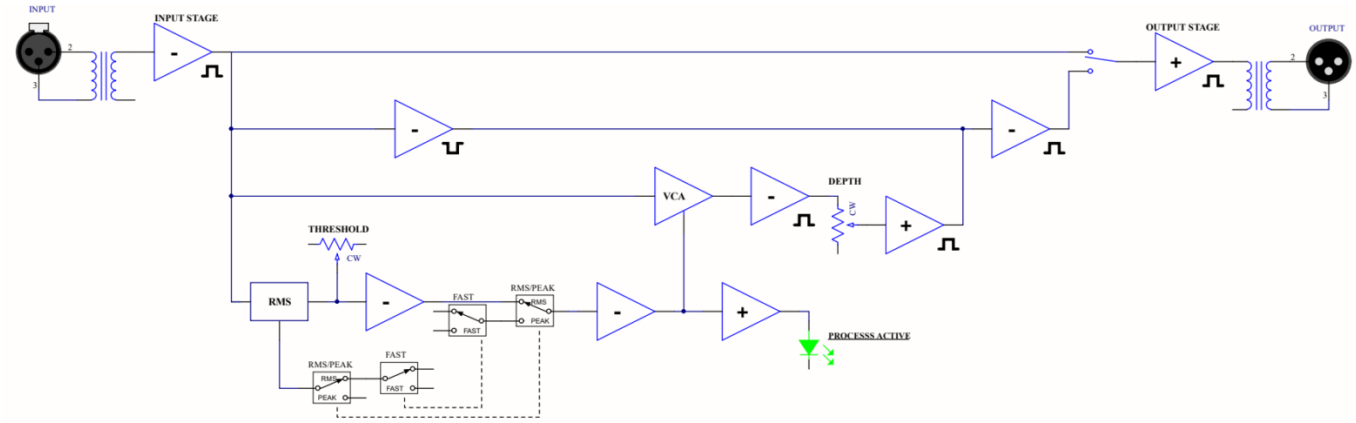
Start with ALL push-buttons in the OUT position (ENGAGE, FAST, PEAK). The THRESHOLD pot should be at the -18dB position (fully CCW), and the DEPTH pot should be at the 0dB position (fully CCW).

Have the artist talk or sing into the microphone and press the ENGAGE push button. If the 545 is connected properly, there should be no initial change in level. As the artist

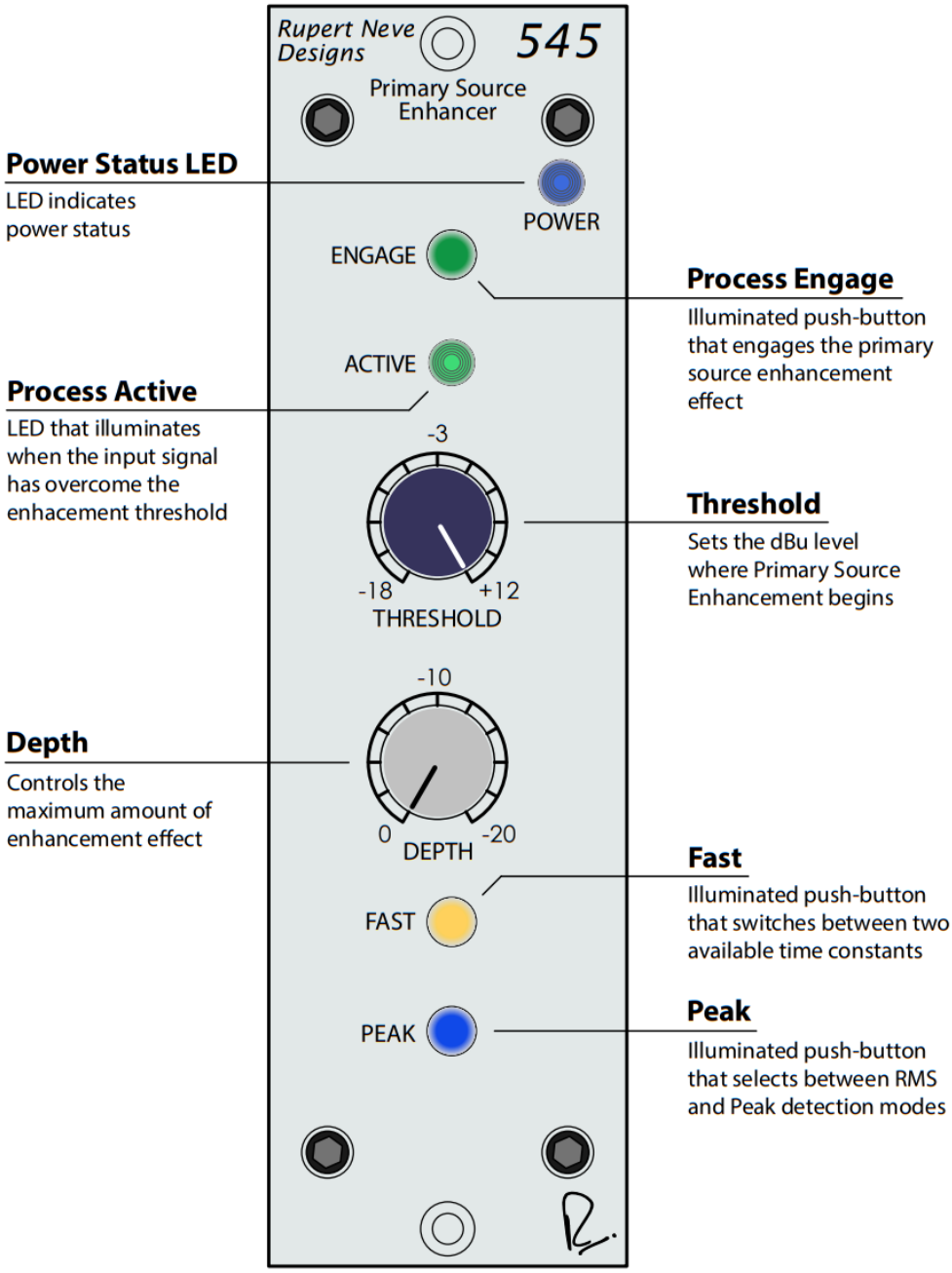
continues to talk or sing, adjust the THRESHOLD pot so that the green ACTIVE LED glows solidly when they are singing, and extinguishes when they stop. Once the 545's ACTIVE LED is responding in this manner, slowly rotate

the DEPTH pot to the -10dB position for a good starting point.
If the PA system was previously on the edge of feedback, the procedure detailed above should have helped to decrease ringing. If the PA system volume was set at a lower, “safe level” below the threshold of feedback, try increasing the volume of the Primary Source Enhanced channel. If feedback occurs, try adjusting the DEPTH pot. Although the 545 will not entirely eliminate the chance of feedback, the Primary Source Enhancer is a very effective tool for decreasing the potential for feedback while increasing overall volume in live sound applications.

545 Block Diagram



545 Front Panel



Features

Transformer-coupled Input and Output

One major benefit of transformer coupling is galvanic isolation. An audio signal couples from a transformer's primary winding to it's secondary winding through manipulation
of the magnetic flux within the transformer's core. This magnetic isolation inherently prevents stray currents from flowing due to differences in ground potential, thereby eliminating ground loops that would typically manifest as hum in the audio path.
The 545's transformer-coupled output can drive balanced or unbalanced inputs without signal loss or degradation, while simultaneously imparting Rupert Neve's renowned transformer harmonics to your signal path.

Depth

The DEPTH pot controls how much attenuation is applied after the input signal falls below the set THRESHOLD. As the user rotates the DEPTH control clockwise (CW) from 0dB to -20dB, the 545 will attenuate the input signal more drastically. It is important to utilize the DEPTH control to find the right balance between audibility of the rimary Source Enhancement effect and reduction of feedback. This can become particularly challenging with very dynamic sources, and may require some experimentation with the DEPTH control to find the best setting for a

specific application.

Threshold

Typically, the user will need to set the THRESHOLD control higher for louder sources. The Process ACTIVE LED should be used in tandem with the THRESHOLD control to find the correct setting. Generally, the ACTIVE LED should be illuminated when the artist is singing and extinguished when the artist is quiet.

Time Constants

When the FAST push-button is in the OUT position, the Primary Source Enhancer achieves a slower attack and release that is useful as a starting point for most sources. Pressing the FAST push-button switch IN achieves a faster attack and release, which can be useful on more dynamic sources where faster transient detection is necessary (see
Specifications page 5).

RMS/Peak

When the PEAK push-button is in the OUT position, the 545 is in RMS mode. RMS mode triggers a more averaged response characteristic in the 545 sidechain that is slower than the PEAK mode response (see Specifications page 5). When the PEAK push-button is illuminated in the IN position, the 545 is in PEAK mode. PEAK mode can be useful for detecting faster transient peaks in the source material thereby preventing these peaks from getting “chopped” off. In addition, PEAK mode can be used for more creative dynamic envelope shaping on musical instruments.

Specifications

Maximum Input and Output Level +24 dBu
Total Harmonic Distortion and Noise 1 kHz, +20 dBu Output Level, no-load Better than 0.001%
20 Hz, +20 dBu Output Level, no-load 0.1% typical (2nd and 3rd harmonic)
Noise (Un-weighted, 22 Hz – 22 kHz, 40 ohm balanced source)
Primary Source Enhancer Bypassed Better than -100 dBu
Frequency Response (30 ft. Cable on Main Output)
30 Hz to 58 kHz +/- 0.25 dB
18.5 Hz -3dB
Threshold Continuously variable from -18 dBu to +12 dBu
Depth Continuously variable from 0 dB to -20 dB

Time Constants
RMS Mode
Attack and Release
Slow (FAST push-button OUT) 100 mS
Fast (FAST push-button IN) 200 mS

Peak Mode
Attack (fixed) 20 mS
Release
Slow (FAST push-button OUT) 1 S
Fast (FAST push-button IN) 200 mS
Power Consumption (+/-16 VDC) 80 mA
Shipping Dimensions 7.75“ (19.7 cm) x 10” (25.4 cm) x 3” (7.62 cm)
Shipping Weight 2 lbs, 0.9 kg

Limited Warranty

Rupert Neve Designs warrants this product to be free from defects in materials and workmanship for a period of three (3) years from the date of purchase and agrees to remedy any defect identified within that 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 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 EXTENT 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 contact our support staff (service@rupertneve.com) for troubleshooting. If it is determined that the device is malfunctioning, we will issue a Return Material Authorization and provide instructions for shipping the device to our service department.

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Documents / Resources

	RUPERT NEVE DESIGNS 545 Primary Source Enhancer [pdf] User Manual 545 Primary Source Enhancer, 545, Primary Source Enhancer

References

- Rupert Neve Designs – The Most Trusted Name in Sound.