Rupert Neve Designs

OptoFET

Dual-Stage or Dual-Band Compressor

Operations Manual

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 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. 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 mains socket outlet with a protective earthing connection (the third grounding prong).
18. This apparatus has been equipped with a rocker-style AC mains 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.

The lightning flash with 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.
Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'éléctrocution.

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.
Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

This symbol indicates that this product must not be disposed of with other waste. Instead, it is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. The separate collection and recycling of your waste equipment at the time of disposal will help conserve natural resources and ensure that it is recycled in a manner that protects human health and the environment. For more information about where you can drop off your waste equipment for recycling, please contact your local city recycling office or the dealer from whom you purchased the product.

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.

ATTENTION — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant las limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le réglement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

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. Ear plugs 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 hours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Typical music via head phones
1.5	102	
1	105	Siren at 10 m distance
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

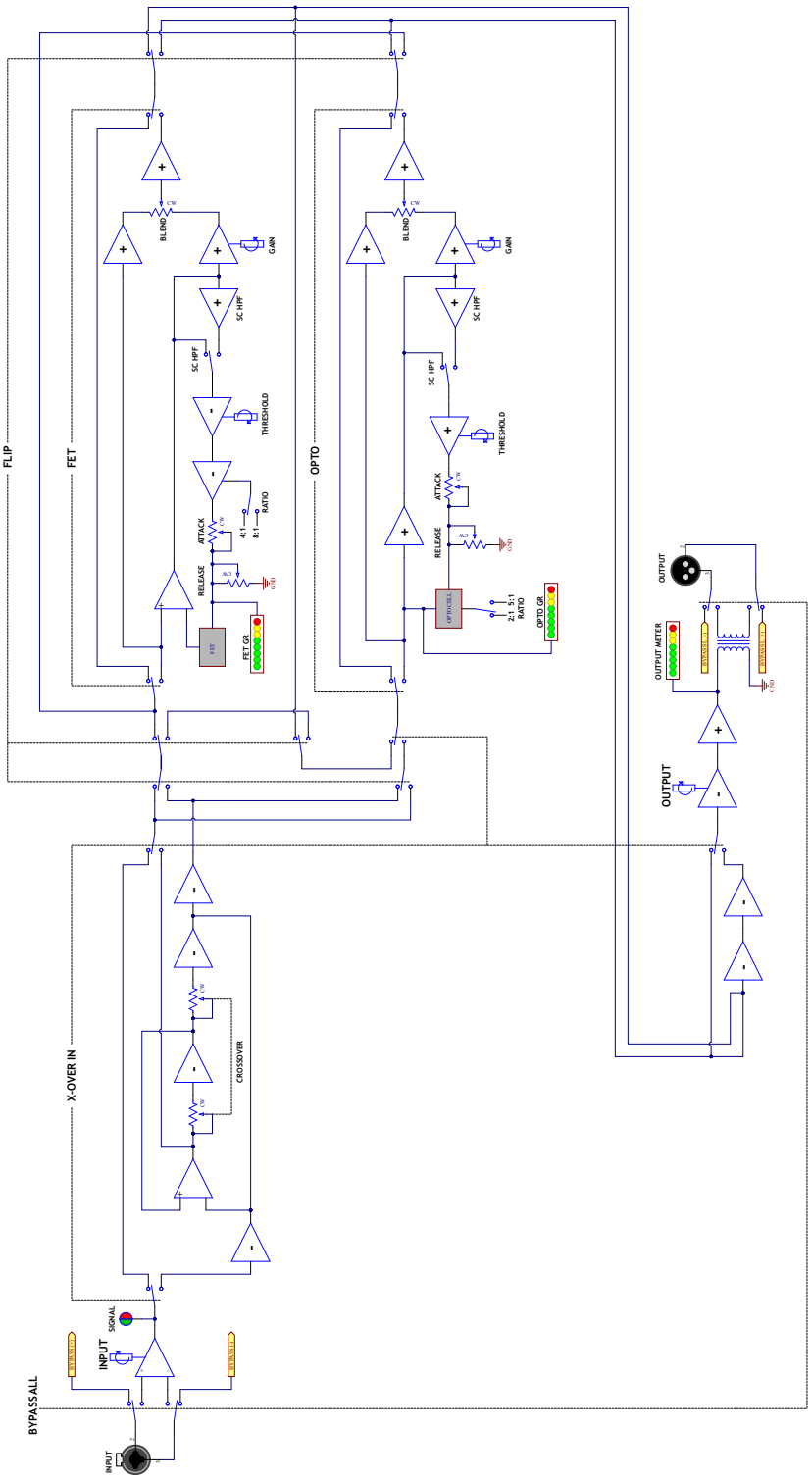
WARNING — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Table of Contents

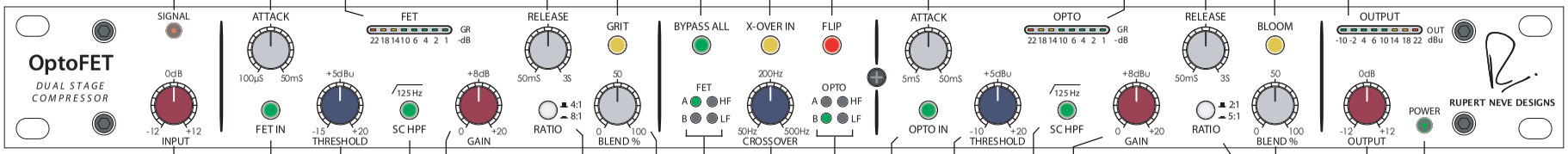
Rupert Neve Designs: OptoFET Dual Stage Compressor

Thank you for purchasing the Rupert Neve Designs OptoFET Dual Stage Compressor. We hope you enjoy using this product as much as we have enjoyed designing and building it. The OptoFET Compressor includes both an Optical-based compressor and a FET-based compressor in a single 1RU chassis. Each compressor has a comprehensive & flexible control set, including variable attack & release, dry/wet blend, & dedicated switches to increase harmonic content. The Global section includes a switch to 'Flip' the signal order of the 2 compressors and a Crossover control, transforming each compressor into a frequency dependent, tone shaping tool. With a custom Rupert Neve Designs transformer-coupled output stage and an accompanying output trim control, the OptoFET can be used on a wide variety of sources in unique and creative ways.

OptoFET Compressor Block Diagram



OptoFET Compressor Front Panel



GR METER
8 segment LED meter that indicates FET compressor gain reduction in dB

BYPASS ALL
Illuminated push-button switch that engages a hard-wire bypass for both the FET and OPTO compressors

X-OVER IN
Illuminated push-button switch that engages cross-over filters and the corresponding CROSSOVER frequency control

FLIP
Illuminated push-button switch that places the OPTO compressor before the FET compressor in the signal path

RELEASE
31-detent potentiometer that controls the OPTO compressor release time within a range of 50mS to 3S

BLOOM
Illuminated push-button switch that adjusts the S/C detection circuit to generate more harmonic content

ATTACK
31-detent potentiometer that controls the FET compressor attack time within a range of 100uS to 50mS

GRIT
Illuminated push-button switch that adjusts the S/C detection circuit to generate more harmonic content

ATTACK
31-detent potentiometer that controls the OPTO compressor attack time within a range of 5mS to 50mS

OUTPUT METER
8 segment LED meter that indicates output level in dBu

SIGNAL
LED that illuminates GREEN when signal is present and RED when near clip point

RELEASE
31-detent potentiometer that controls the FET compressor release time within a range of 50mS to 3S

GR METER
8 segment LED meter that indicates OPTO compressor gain reduction in dB

INPUT
31-detent potentiometer that controls the input level within a range of +/-12 dB

RATIO
Push-button switch that selects between a 4:1 or 8:1 ratio

GAIN
31-detent potentiometer that controls the OPTO compressor make-up gain from 0dB to +20dB

POWER
LED that illuminates GREEN when the power is ON

FET IN
Illuminated push-button switch that engages the FET compressor

BLEND
31-detent potentiometer that controls the wet/dry mix of the compressed signal (100%) and the input signal (0%)

SC HPF
Illuminated push-button switch that engages the OPTO compressor side-chain high pass filter

OUTPUT
31-detent potentiometer that controls the output level within a range of +/-12 dB

THRESHOLD
31-detent potentiometer that controls the FET compressor threshold range from +20dBu to -15dBu

FET STATUS
LEDs that indicate where the FET compressor is located in the signal path (A=1st, B=2nd) and whether it is compressing the LF or HF band when X-OVER is engaged

THRESHOLD
31-detent potentiometer that controls the OPTO compressor threshold range from +20dBu to -10dBu

BLEND
31-detent potentiometer that controls the wet/dry mix of the compressed signal (100%) and the input signal (0%)

SC HPF
Illuminated push-button switch that engages the FET compressor side-chain high pass filter

OPTO IN
Illuminated push-button switch that engages the OPTO compressor

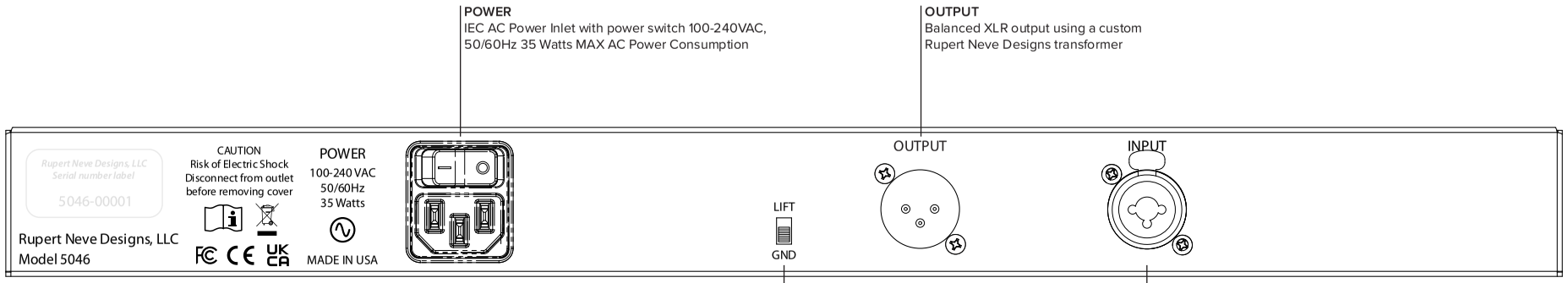
RATIO
Push-button switch that selects between a 2:1 or 5:1 ratio

GAIN
31-detent potentiometer that controls the FET compressor make-up gain from 0dB to +20dB

CROSSOVER
31-detent potentiometer that selects the corner frequency point of the crossover filters

OPTO STATUS
LEDs that indicate where the FET compressor is located in the signal path (A=1st, B=2nd) and whether it is compressing the LF or HF band when X-OVER is engaged

OptoFET Compressor Rear Panel



OptoFET Compressor Front Panel Features

FET Compressor:

ATTACK

31-detent potentiometer that controls the FET compressor attack time within a range of 100uS to 50mS.

FET IN

Illuminated push-button switch that engages the FET compressor, making it possible to make quick A/B comparisons.

THRESHOLD

31-detent potentiometer that controls the FET compressor threshold range from +20dBu to -15dBu.

GR METER

8 segment LED meter that indicates FET compressor gain reduction in dB.

SC HPF

Illuminated push-button switch that engages the side-chain high-pass filter. The HPF has a 12dB/octave slope that helps control the amount of low frequency energy hitting the compressor side-chain when engaged. The corner frequency of the HPF is fixed at 125Hz.

GAIN

The GAIN control is a 31-detent potentiometer designed to add make-up gain to the compressed signal.

RELEASE

31-detent potentiometer that controls the FET compressor release time within a range of 50mS to 3S.

RATIO

Push-button switch that selects between a 4:1 or 8:1 ratio.

GRIT

Illuminated push-button switch that adjusts the S/C detection circuit to generate more harmonic content.

BLEND

The BLEND control is a 31-detent potentiometer that allows the user to adjust the ratio of the compressed (wet) signal with the uncompressed (dry) signal to achieve parallel compression. Turning the BLEND control fully counter-clockwise adjusts the mix toward the fully dry, uncompressed signal. Turning the BLEND control fully clockwise adjusts the mix toward the fully wet, compressed signal.

OptoFET Compressor Front Panel Features (continued)

OPTO Compressor:

ATTACK

31-detent potentiometer that controls the OPTO compressor attack time within a range of 5mS to 50mS.

OPTO IN

Illuminated push-button switch that engages the OPTO compressor, making it possible to make quick A/B comparisons.

THRESHOLD

31-detent potentiometer that controls the OPTO compressor threshold range from +20dBu to -10dBu.

GR METER

8 segment LED meter that indicates OPTO compressor gain reduction in dB.

SC HPF

Illuminated push-button switch that engages the side-chain high-pass filter. The HPF has a 12dB/octave slope that helps control the amount of low frequency energy hitting the compressor side-chain when engaged. The corner frequency of the HPF is fixed at 125Hz.

GAIN

The GAIN control is a 31-detent potentiometer designed to add make-up gain to the compressed signal.

RELEASE

31-detent potentiometer that controls the OPTO compressor release time within a range of 50mS to 3S.

RATIO

Push-button switch that selects between a 2:1 or 5:1 ratio.

BLOOM

Illuminated push-button switch that adjusts the S/C detection circuit to generate more harmonic content.

BLEND

The BLEND control is a 31-detent potentiometer that allows the user to adjust the ratio of the compressed (wet) signal with the uncompressed (dry) signal to achieve parallel compression. Turning the BLEND control fully counter-clockwise adjusts the mix toward the fully dry, uncompressed signal. Turning the BLEND control fully clockwise adjusts the mix toward the fully wet, compressed signal.

OptoFET Compressor Front Panel Features (continued)

Global Controls:

SIGNAL

LED that illuminates GREEN when signal is present and RED when near clip point.

INPUT

31-detent potentiometer that controls the input level within a range of +/-12 dB.

BYPASS ALL

Illuminated push-button switch that engages a hard-wire bypass for both the FET and OPTO compressor sections.

X-OVER IN

Illuminated push-button switch that engages cross-over filters and the corresponding CROSSOVER frequency control.

FLIP

Illuminated push-button switch that places the OPTO compressor before the FET compressor in the signal path.

FET STATUS

LEDs that indicate where the FET compressor is located in the signal path (A=1st, B=2nd) and whether it is compressing the LF (low frequency) or HF (high frequency) band when X-OVER is engaged.

CROSSOVER

31-detent potentiometer that selects the corner frequency point of the crossover filters.

OPTO STATUS

LEDs that indicate where the OPTO compressor is located in the signal path (A=1st, B=2nd) and whether it is compressing the LF or HF band when X-OVER is engaged.

OUTPUT METER

8 segment LED meter that indicates output level in dBu.

OUTPUT

31-detent potentiometer that controls the output level within a range of +/-12 dB.

POWER

LED that illuminates GREEN when the power is ON.

OptoFET Compressor Rear Panel Features

POWER

IEC standard 3-pin grounded AC power inlet with power switch. 100-240VAC 50/60Hz input range with a maximum power consumption of 35W.

INPUT

Neutrik XLR combo jack line input utilizing an electronically balanced input stage.

OUTPUT

Neutrik XLR jack line output utilizing custom Rupert Neve Designs transformer-coupled, balanced outputs.

GROUND LIFT

The ground lift switch can be used to interrupt a ground loop if encountered in the studio environment. In the LIFT position, Pin 1 of the XLR line outputs are disconnected from chassis ground.

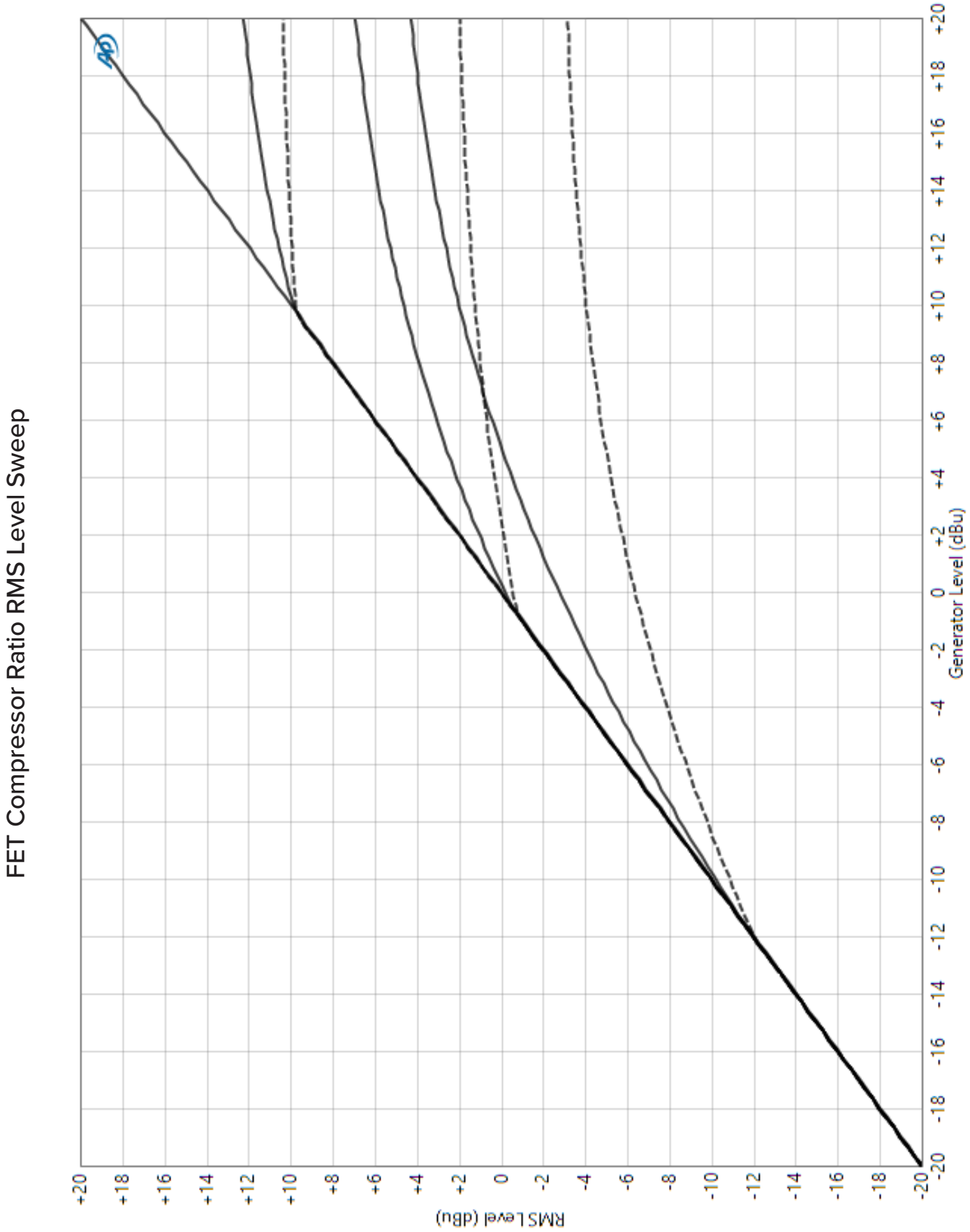
OptoFET Compressor Specifications

XLR Line Input to XLR Line Output (Compressor Bypassed)	Z_{SOURCE}= 40 Ω Balanced
Input Impedance	10 kΩ
Output Impedance	40 Ω
Maximum Input Level @ 1 kHz	+24 dBu
Maximum Output Level @ 1 kHz	+24 dBu
Noise (22 Hz - 22 kHz BW)	-96 dBu
Frequency Response	
6 Hz to 70 kHz	+/- 0.1 dB
<5 Hz to 183 kHz	-3 dB
THD+N @ 1 kHz	
0 dBu	0.002%
+20 dBU	0.0006%
FET Compressor Specifications	
Noise (22 Hz - 22 kHz BW)	-82 dBu
Attack Time	100µS – 50mS
Release Time	50mS – 1.5S
OPTO Compressor Specifications	
Noise (22 Hz - 22 kHz BW)	-93 dBu
Attack Time	5mS – 50mS
Release Time	50mS – 1.5S

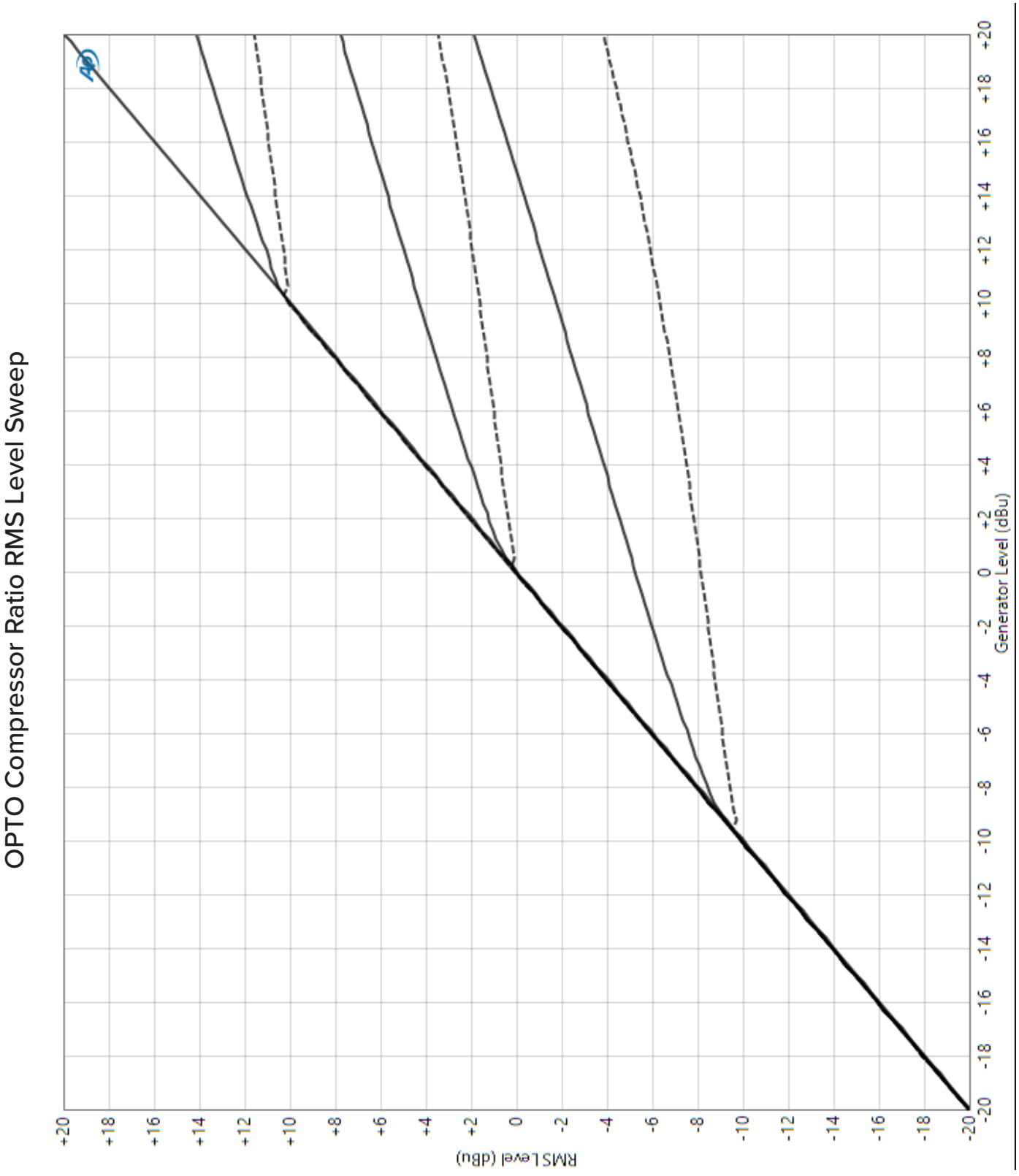
Note: Compressor time constant ranges represent the full range achievable within all front panel settings.

Product Dimensions (W x D x H)	19” (48.3 cm) x 8.125” (20.63 cm) x 1.75” (4.5 cm)
Shipping Dimensions (L x W x H)	24” (61 cm) x 13” (33 cm) x 4” (10.2 cm)
Shipping Weight	9 lbs. (4.1 kg)

OptoFET Compressor Ratio RMS Level Sweeps



OptoFET Compressor Ratio RMS Level Sweeps



PRODUCT WARRANTY

Rupert Neve Designs warrants this product to be free from defects in materials and workmanship for a period of three (3) years from date of purchase, and agrees to remedy any defect identified within such three 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 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 contact our support staff for troubleshooting by phone (512-847-3013) or email (service@rupertneve.com). 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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