

# MBT

## Master Bus Transformer



# 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.



**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 les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement 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:

CAUTION AVIS

RISK OF ELECTRIC SHOCK. DO NOT OPEN  
RISQUE DE CHOC ELECTRIQUE. NE PAS OUVRIR

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK)  
NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL

ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN 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 LA PLUIE OU A L'HUMIDITE

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'électrocution.*

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.

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.

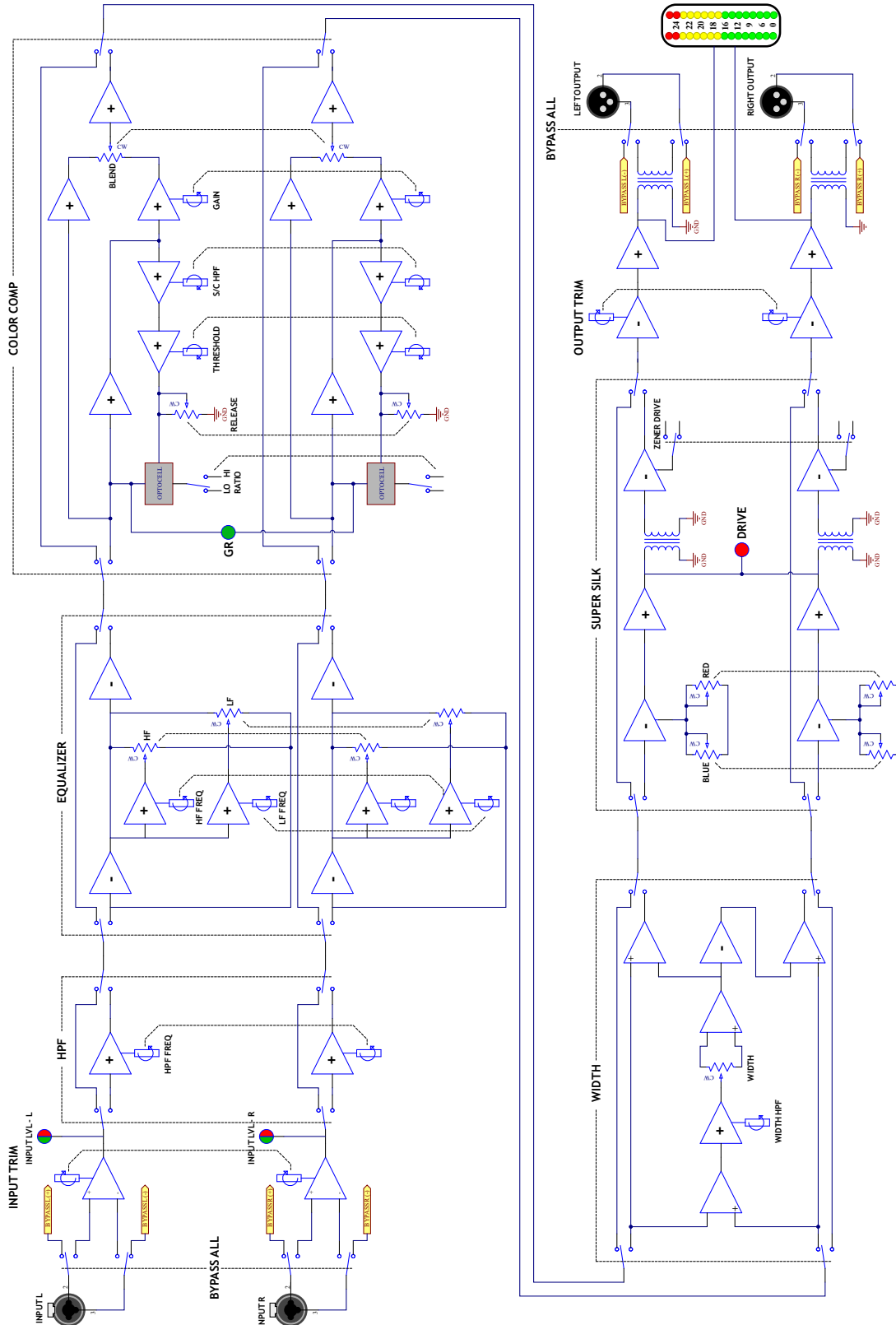
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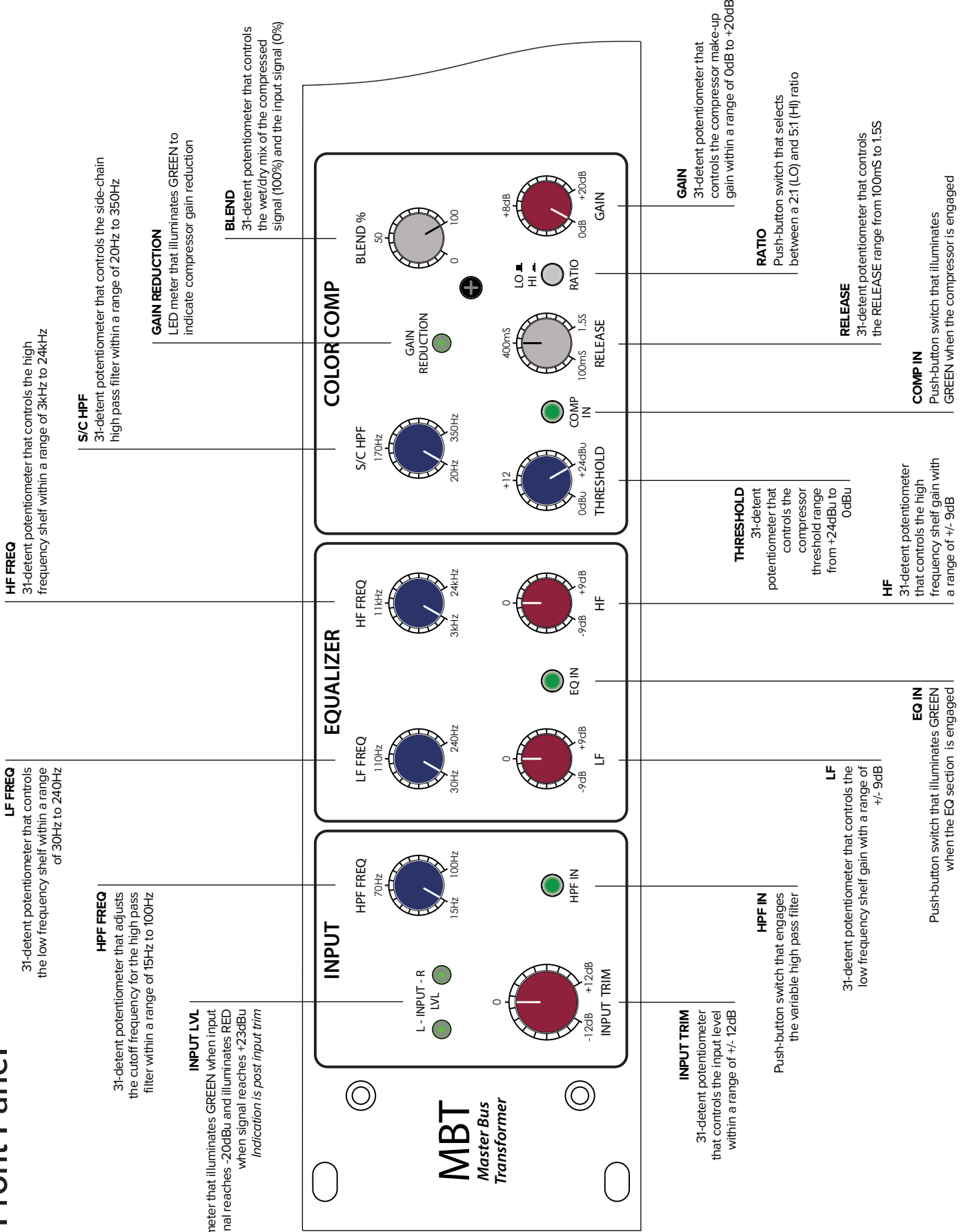
# MBT Block Diagram

## Rupert Neve Designs Master Bus Transformer

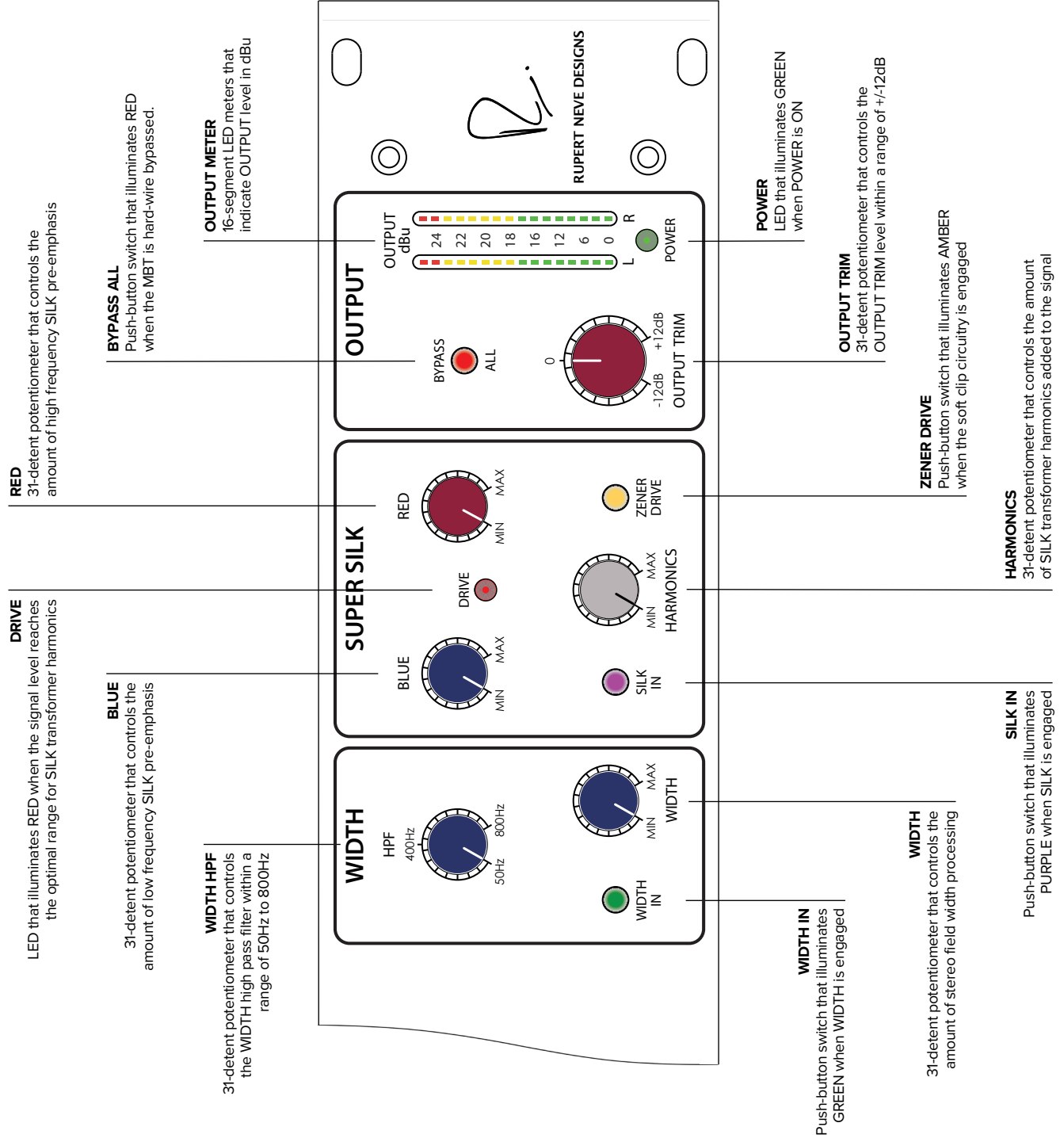
Thank you for purchasing the Rupert Neve Designs Master Bus Transformer. We hope you enjoy using this product as much as we have enjoyed designing and building it. The MBT features a shelving EQ, an opto compressor, a stereo field processor and an upgraded SILK section. The MBT is designed to provide a range of tonal options with EQ, compression, and harmonic control, ensuring it will be useful in a wide variety of both mix bus & individual source applications.



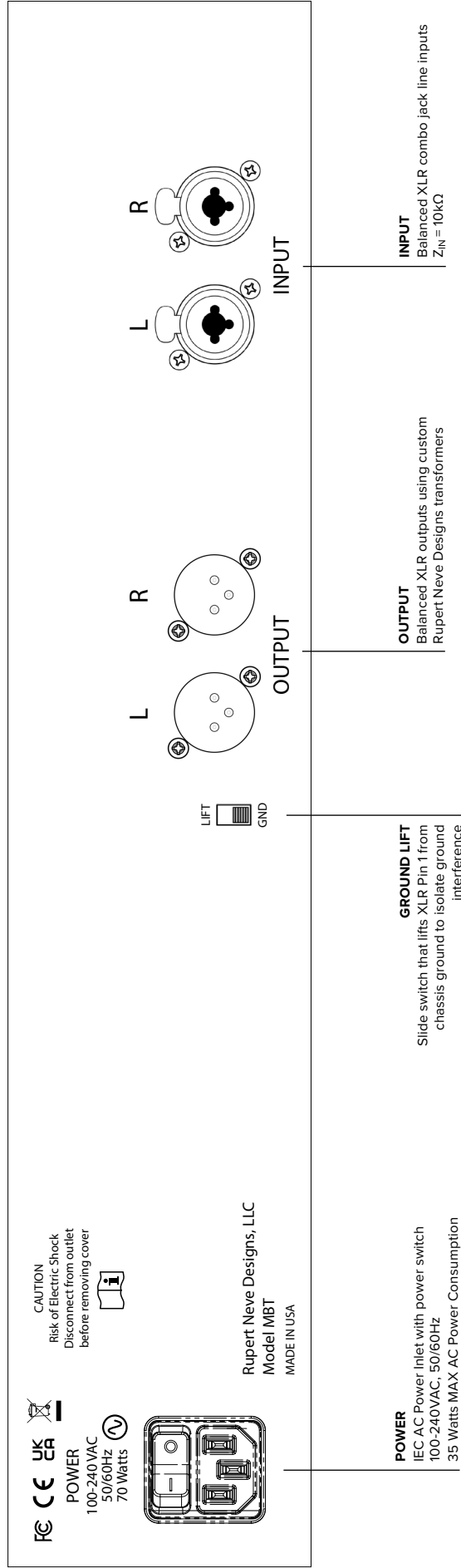
# MBT Front Panel



# MBT Front Panel (continued)



# MBT Rear Panel



# MBT Front Panel Features

## Input Level

LED indication that illuminates GREEN when the input signal reaches -20dBu and illuminates RED to show when the input signal reaches +23dBu. This indication is post input trim control.

## Input Trim

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

## HPF Freq

31-detent potentiometer that controls the HPF frequency within a range of 15Hz to 100Hz.

## HPF In

Push-button switch that illuminates GREEN when the 6dB/octave HPF is engaged.

## LF

31-detent potentiometer that controls the Low Frequency Shelf gain within a range of +/- 9dB.

## LF Freq

31-detent potentiometer that controls the Low Frequency Shelf corner frequency within a range of 30Hz to 240Hz.

## HF

31-detent potentiometer that controls the High Frequency Shelf gain within a range of +/- 9dB.

## HF Freq

31-detent potentiometer that controls the High Frequency Shelf corner frequency within a range of 3kHz to 24kHz.

## EQ In

Push-button switch that illuminates GREEN when the equalizer section is engaged.

## Threshold

31-detent potentiometer that controls the compressor threshold within a range of +24dBu to 0dBu.

## S/C HPF

31-detent potentiometer that controls the corner frequency of the S/C HPF within a range of 20Hz to 350Hz.

## Comp In

Push-button switch that illuminates GREEN when the compressor section is engaged.

## Gain Reduction

LED that illuminates GREEN when gain reduction is occurring. The LED indicates compression for left and right channels.



# MBT Front Panel Features (continued)

## Release

31-detent potentiometer that controls the Release time of the compressor within a range of 100mS to 1.5S.

## Ratio

Opaque push-button switch that toggles between a LO (OUT) 2:1 ratio and a HI (IN) 5:1 compressor ratio curve.

## Blend

31-detent potentiometer that controls the amount of dry (0%) vs. wet (100%) compressed signal in the audio path.

## Gain

31-detent potentiometer that controls the amount of compressor make-up gain within a range of 0dB to +20dB.

## Width In

Push-button switch that illuminates GREEN when the WIDTH section is engaged.

## Width HPF

31-detent potentiometer that controls the corner frequency of the width processing HPF within a range of 50Hz to 800Hz.

## Width

31-detent potentiometer that controls the amount of Width stereo field processing within a range of MIN to MAX.

## SILK In

Push-button switch that illuminates PURPLE when the SUPER SILK section is engaged.

## Blue

31-detent potentiometer that controls the amount of low frequency SILK pre-emphasis.

## Drive

LED that illuminates RED when the signal level reaches the optimal range for transformer harmonics. The LED indicates drive level for left and right channels.

## Red

31-detent potentiometer that controls the amount of high frequency SILK pre-emphasis.

## Harmonics

31-detent potentiometer that controls the amount of transformer harmonics added to the audio path.

## Zener Drive

Push-button switch that illuminates AMBER when the soft clip circuitry is engaged.

## **MBT Front Panel Features (continued)**

### **Bypass All**

Push-button switch that illuminates RED when the master bypass is engaged. This master bypass is a true hard-wire bypass that ensures the MBT will pass audio in the event that power is lost.

### **Output Trim**

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

### **Output Meters**

Stereo 16-segment LED meters that indicate output level in dBu.

### **Power**

LED that illuminates GREEN when POWER is ON.

## **MBT Rear Panel Features**

### **Power**

IEC standard 3 pin grounded switched AC power inlet with an input range of 100-240 VAC. 70 Watts maximum AC power consumption.

### **GND Lift**

Slide switch that lifts XLR Output Pin 1 from chassis ground to minimize ground loops.

### **Output**

Balanced XLR outputs with custom Rupert Neve Designs transformers capable of handling up to +26.8 dBu at 1kHz.

### **Input**

Balanced XLR combo jack inputs capable of handling up to +26.8 dBu at 1kHz.

# MBT Specifications

Note: All specifications are typical, all measurements recorded using 25ft XLR output cables with Balanced  
 $Z_{SOURCE} = 40 \text{ ohm}$

**Input Impedance** 10 kilohm

## No features Engaged

**Noise (22 Hz - 22 kHz)** Better than -95 dBu

**THD+N (0 dBu @ 1 kHz)** Better than 0.004%

**THD+N (+20 dBu @ 1 kHz)** Better than 0.002%

**Maximum Input Level** +25.5 dBu

**Crosstalk @ 1 kHz** Better than -95 dB

## Frequency Response

**<5 Hz - 30 kHz** +/- 0.1 dB

**<5 Hz - 60 kHz** +/- 0.25 dB

**<5 Hz - 180 kHz** -3 dB

## HPF Engaged

**Noise (22 Hz - 22 kHz)** Better than -95 dBu

**THD+N (+20 dBu @ 1 kHz)** Better than 0.002%

## Equalizer Engaged

**Noise (22 Hz - 22 kHz)** Better than -93 dBu

**THD+N (+20 dBu @ 1 kHz)** Better than 0.002%

## Compressor Engaged

**Noise (22 Hz - 22 kHz)** Better than -92 dBu

**THD+N (+20 dBu @ 1 kHz)** Better than 0.002%

## Width Engaged

**Noise (22 Hz - 22 kHz)** Better than -88 dBu

**THD+N (+20 dBu @ 1 kHz)** Better than 0.002%

# MBT Specifications (continued)

## SILK Engaged

Noise (22 Hz - 22 kHz)

Better than -95 dBu

THD+N (+20 dBu @ 1 kHz)

Better than 0.003%

Product Dimensions (W x D x H)

19" (48.3 cm) x 10.125" (25.7 cm) x 3.5" (8.9 cm)

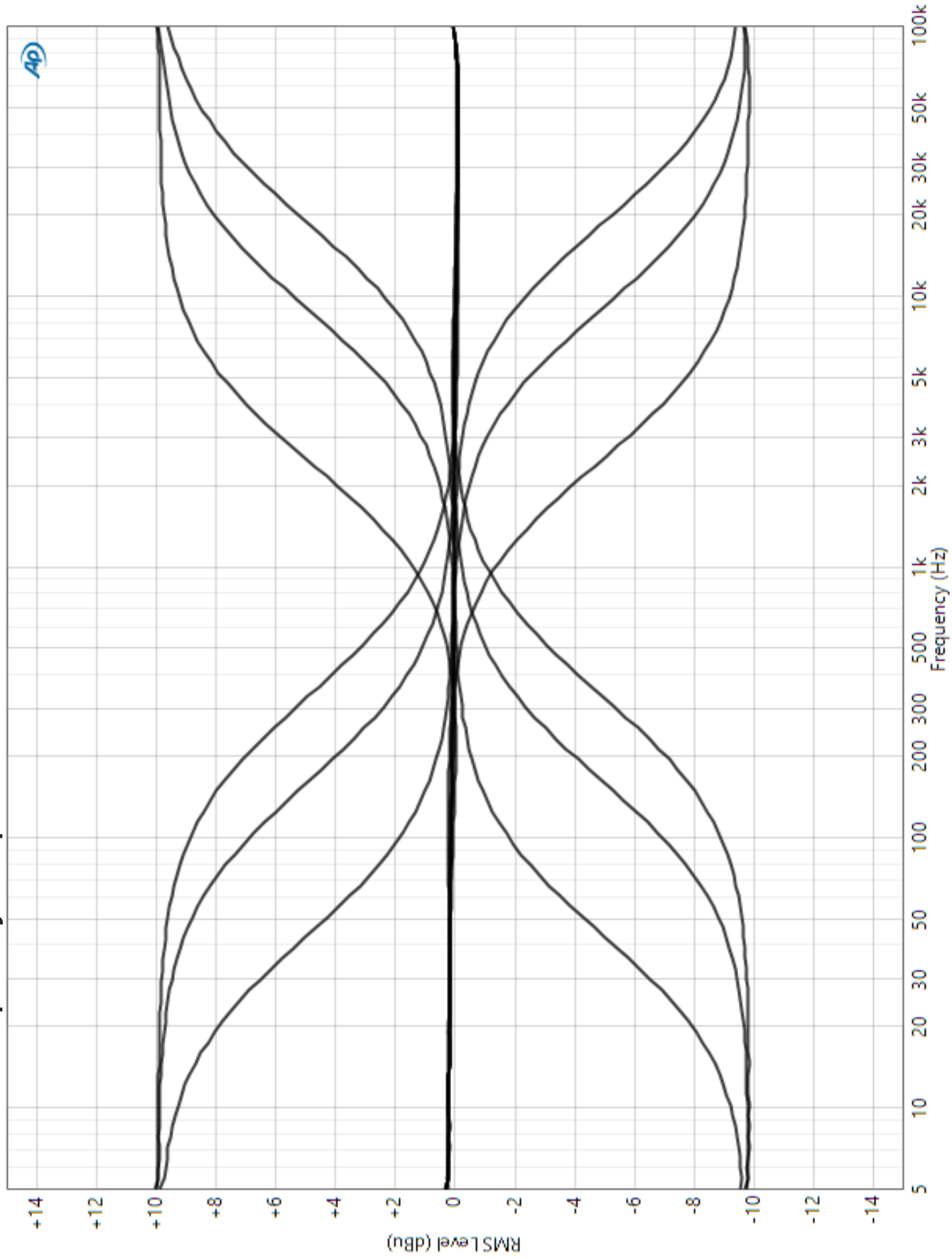
Shipping Dimensions (W x D x H)

22" (55.9 cm) x 18" (45.7 cm) x 8.7" (22.1 cm)

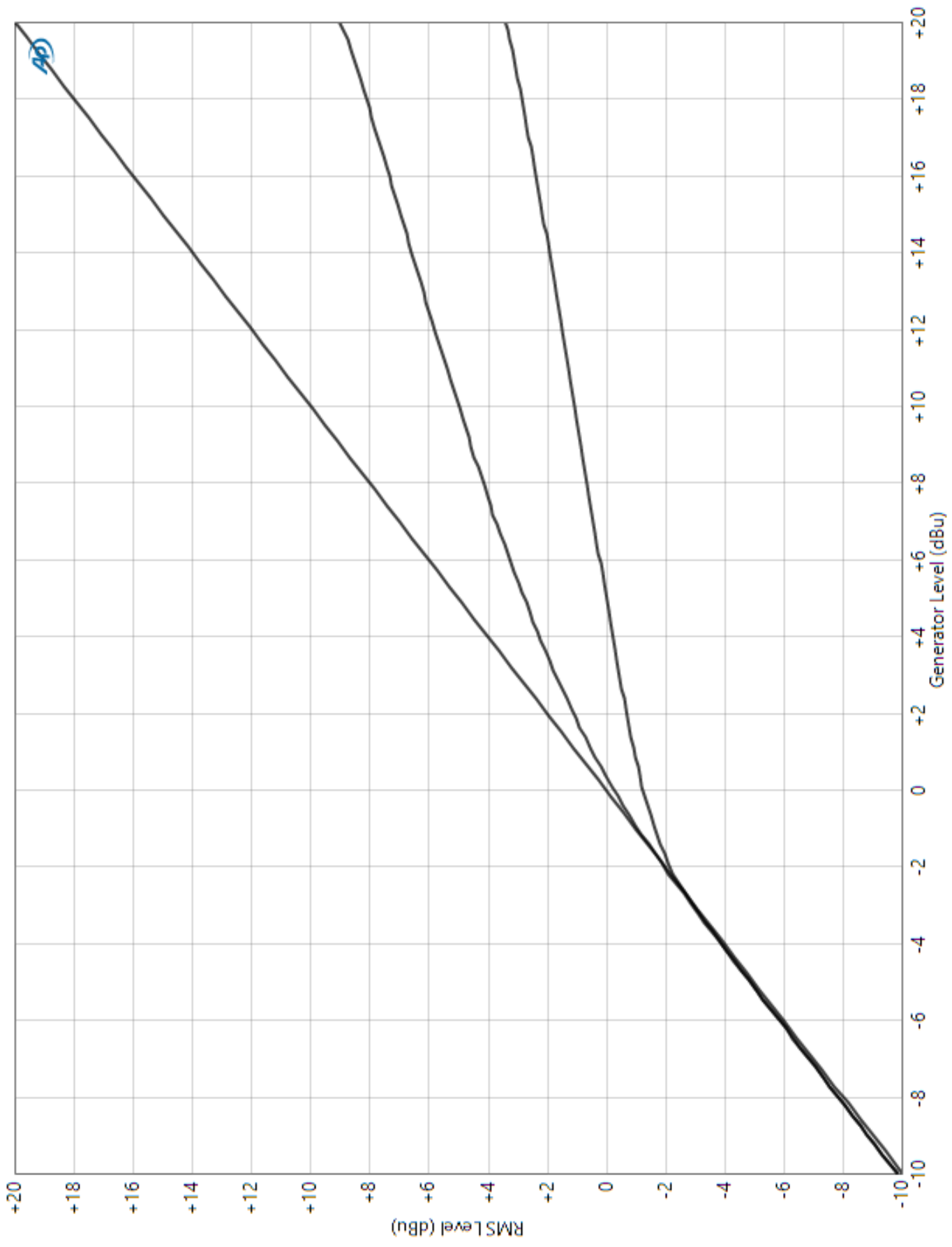
Shipping Weight

17 lbs. (7.7 kg)

# MBT Shelf EQ Frequency Response



# MBT Compressor Ratio Curves



## **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](mailto: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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