



MIAD AUDIO

Professional Audio Equipment
for Recording, Mixing and Mastering

Operator's Manual

Version 1.7

LC PQ 4040

Discrete 4-band EQ



PS230

External Power Supply





Visit MIAD AUDIO at:

www.miad.eu

No part of this publication may be reproduced in any form or by any means, whether mechanical or electronic, without the written permission of MIAD AUDIO MICHAIL GOUNELAS, Gazeli 11A/2, 05-506, Lesznowola, Poland

As research and development is a continual process, MIAD AUDIO MICHAIL GOUNELAS reserves the right to change the features and specifications described herein without notice or obligation.

MIAD AUDIO MICHAIL GOUNELAS cannot be held responsible for any loss or damage arising directly or indirectly from any error or omission in this manual.

PLEASE READ ALL INSTRUCTIONS, PAY SPECIAL HEED TO SAFETY WARNINGS.

E&OE



Company: MIAD AUDIO Michail Gounelas **VAT No.** PL7010442720

Address: Gazeli 11A/2, Lesznowola, 05-506, Poland

Tel: +48 882153350 **Email:** info@miad.eu **Web:** www.miad.eu

Table of Contents

1.0 LCPQ 4040

- 1.1 Overview
- 1.2 Features
- 1.3 Front Panel
- 1.4 Rear Panel

2.0 PS 230

- 2.1 Overview
- 2.2 Features
- 2.3 Front Panel
- 2.4 Rear Panel

3.0 Troubleshooting

4.0 Specifications

- 4.1 LCPQ 4040 Technical Specifications
- 4.2 LCPQ 4040 Dimensions
- 4.3 PS 230 Technical Specifications
- 4.4 PS 230 Dimensions

5.0 Appendix

- 5.1 Warranty Registration
- 5.2 Product Warranty
- 5.3 Block Diagram
- 5.4 Frequency Response
- 5.5 EQ Response Curves
- 5.6 Recall Sheet

Important Safety Notices

GENERAL SAFETY

- Please read these instructions.
- Adhere to all warnings and follow instructions.
- Do not operate this unit in the presence of rain, liquids, or condensing moisture. **Liquid entering the product enclosure presents the risk of fire or electric shock injury.**
- Clean only with a dry cloth and never when the unit is powered.
- Do not place heavy objects on the unit.
- Do not install near any heat sources such as radiators, heat registers, stoves, or other devices that produce heat.
- Use only attachments/accessories specified by the manufacturer.
- Refer all service to qualified personnel.
- MIAD AUDIO does not accept liability for damage caused by maintenance, repair or modification by unauthorized personnel.
- Do NOT modify this unit, alterations may affect performance, safety and/or international compliance standards.

INSTALLATION NOTES

- When installing this apparatus either fix it into a standard 19" rack or place it on a secure level surface.
- If the unit is rack mounted, fit all rack screws. Rack shelves are recommended.
- Ensure that no strain is placed on any cables connected to this apparatus.
- Ensure that all such cables are not placed where they can be stepped on, pulled or tripped over.

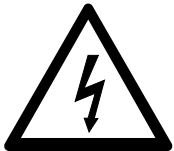
POWER SAFETY

- Do not defeat the safety purpose of the polarized or grounding type AC plug.
- Refer to the rating label on rear of the PS230 unit and always use a suitable mains cord.
- Connect only to an AC power source that contains a protective earthing (PE) conductor.
- Only connect units to single phase supplies with the neutral conductor at earth potential.
- Protect both the AC power cord to the power supply and the DC cable between the power supply and the EQ unit from being walked on or pinched.
- Unplug this device during lightning storms or when unused for long periods of time.



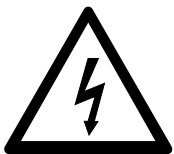
CAUTION!

This equipment must be Earthed. Refer to the manual for installation instructions. Disconnect all power sources before removing any panels. No user-serviceable parts inside. To be serviced only by qualified personnel.



WARNING!

Un-earthed metal parts may be present inside the enclosure. Check for hazardous voltages before touching. To reduce the risk of fire or electrical shock, **do not expose** this apparatus to rain or moisture.



WARNING!

Do not use a damaged or excessively worn IEC cable to connect this unit to AC power.



The construction of the LCPQ 4040 and PS230 are in compliance with the standards and regulations of the European Community.

1.0 LCPQ 4040

1.1 Overview

The LCPQ 4040 is a transformer balanced, high performance all-discrete equalizer with four passive RLC sections in cascade configuration.

Each band has a variable level control ranging from -12dB to +12dB (or -6dB to +6dB). The four bands of equalization offer selectable Shelving/ Bell on the first and fourth band and selectable HiQ/ LowQ on the second and third band.

Each band can be independently bypassed. When an EQ band is not engaged, the audio signal still travels through the transformers and the discrete circuit but not through the RLC circuit and thus the unit can be used as a high quality unity gain line amp. In addition to the individual bypass, the unit employs a true bypass relay system, where the input signal is connected directly to the output. When the unit is not powered (or in situations where the power accidentally goes down), the bypass relay system is automatically activated and therefore the signal will not disappear.

The LCPQ 4040 features CARNHILL high-level audio signal input and output transformers and a combination of four CARNHILL and custom-made tapped inductors that were chosen after extended listening tests and measurements.

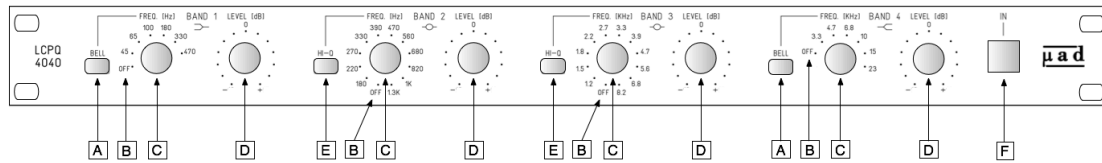
The unit consists of GRAYHILL rotary stepped switches for frequency selection, plastic conductive potentiometers for boosting/cutting, WIMA polypropylene (low tolerance) film capacitors in the RLC path, PANASONIC audio grade electrolytic capacitors in the active circuit and Neutrik connectors for the audio and power connections.

Each unit is hand-built and hand-wired. All the components are chosen and tested thoroughly for best performance, musicality and long-term reliability.

1.2 Features

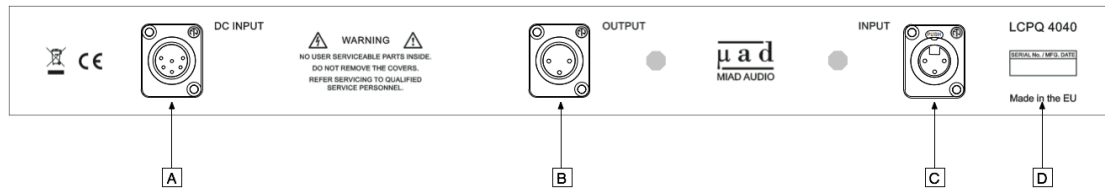
- Fully discrete (transistor) circuit
- Transformer (CARNHILL) balanced input and output
- CARNHILL and custom made tapped inductors
- Thirty four selectable frequencies
- 12dB (or 6dB) of Gain/ Attenuation per band
- Selectable Shelving/ Bell on Band1 and Band4
- Selectable HiQ/ LowQ on Band2 and Band3
- True bypass relay system and Individual bypass on each band
- High quality NEUTRIK XLR connectors
- Low components tolerance for stereo configuration
- Hand-built and hand-wired
- 3-year limited warranty

1.3 Front Panel



- A. SHELIVING/ BELL SWITCH – This switch toggles between Shelving and Bell shape. When the switch is pressed, the Bell shape is active.
- B. OFF – When the FREQ. rotary switch is in the OFF position, the band is not engaged (i.e. the filter circuit and the LEVEL control are inactive). However, the audio signal still travels through the discrete circuit and the audio transformers.
- C. FREQ. – This rotary stepped switch determines the frequency point for each band. The frequency points for each band are as follows:
 - Band 1:** OFF, 45Hz, 65Hz, 100Hz, 180Hz, 330Hz, 470Hz
 - Band 2:** OFF, 180Hz, 220Hz, 270Hz, 330Hz, 390Hz, 470Hz, 560Hz, 680Hz, 820Hz, 1kHz, 1.3kHz
 - Band 3:** OFF, 1.2kHz, 1.5kHz, 1.8kHz, 2.2kHz, 2.7kHz, 3.3kHz, 3.9kHz, 4.7kHz, 5.6kHz, 6.8kHz, 8.2kHz
 - Band 4:** OFF, 3.3kHz, 4.7kHz, 6.8kHz, 10kHz, 15kHz, 23kHz
- D. LEVEL – Each band has a high quality continuously variable potentiometer that controls the amount of gain or attenuation.
- E. HI-Q/ LOW-Q SWITCH – This switch controls the sharpness of the peak or dip and it toggles between High Q and Low Q. When the switch is pressed, the High Q is active.
- F. IN – This switch toggles between the active (LED ON) and bypassed (LED OFF) modes. Since the unit employs a bypass relay system, no audio signal passes through this switch. Instead, the IN switch is a DC voltage switch that controls the relays' state.

1.4 Rear Panel



- A. 6-PIN DC POWER SUPPLY INPUT – This input allows interconnection of the external supply (PS 230) required for the unit to operate. A 2-meter power supply cable is supplied with every unit.

Pin out is as follows:

Pin 1= Chassis Ground

Pin 2= -28V (audio circuit)

Pin 3= +28V (audio circuit)

Pin 4= +24V (relay bypass system and bypass indicator)

Pin 5= 0V (reference for +24V)

Pin 6= 0V (reference for $\pm 28V$)

- B. 3-PIN AUDIO OUTPUT – This is a transformer balanced XLR output with the following pin configuration:

Pin 1 = Ground

Pin 2 = Hot (+)

Pin 3 = Cold (-)

- C. 3-PIN AUDIO INPUT – This is a transformer balanced XLR input with the following pin configuration:

Pin 1 = Ground

Pin 2 = Hot (+)

Pin 3 = Cold (-)

- D. PRINT – Contains information regarding the model, the serial number and the origin of the unit.

2.0 PS 230

2.1 Overview

The PS 230 is a 3-rail linear power supply capable of powering two LCPQ 4040 units, housed in a robust enclosure.

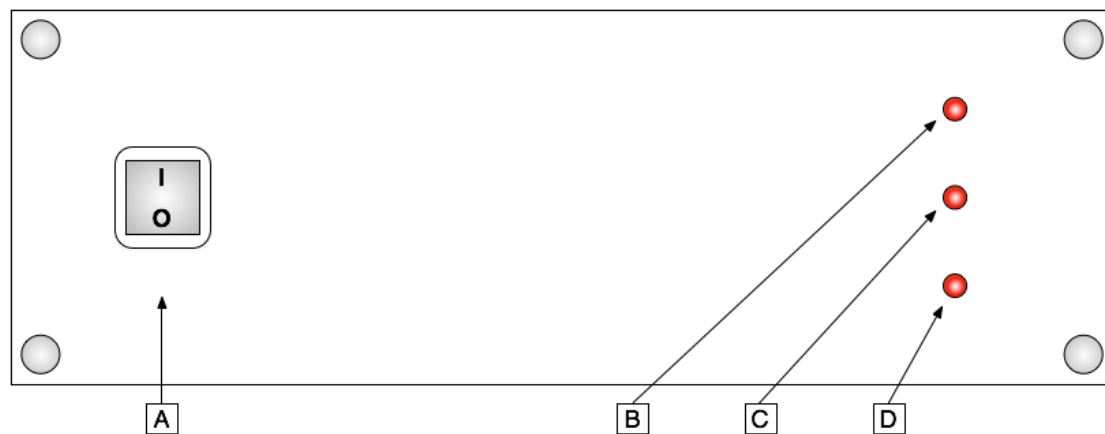
The unit provides $\pm 28\text{V}$ DC for the audio circuit and $+24\text{V}$ DC for the relay bypass system and the bypass indicator (LED). In order to cut the cost (and for the sake of simplicity), a lot of audio equipment use a common power rail for the audio circuit and for other functions such as relays, LEDs, lamps, etc. However, it is a better practice to use a dedicated power rail for all non-audio circuits. Therefore, the PS 230 has an additional $+24\text{V}$ DC rail, which ensures that no unwanted noise (caused by the relays and the bypass indicator) is added to the audio signal.

The PS 230 can be switched for 115V AC or 230V AC operation and the mains fuse is accessible to the user from the rear side of the unit (in the IEC inlet).

2.2 Features

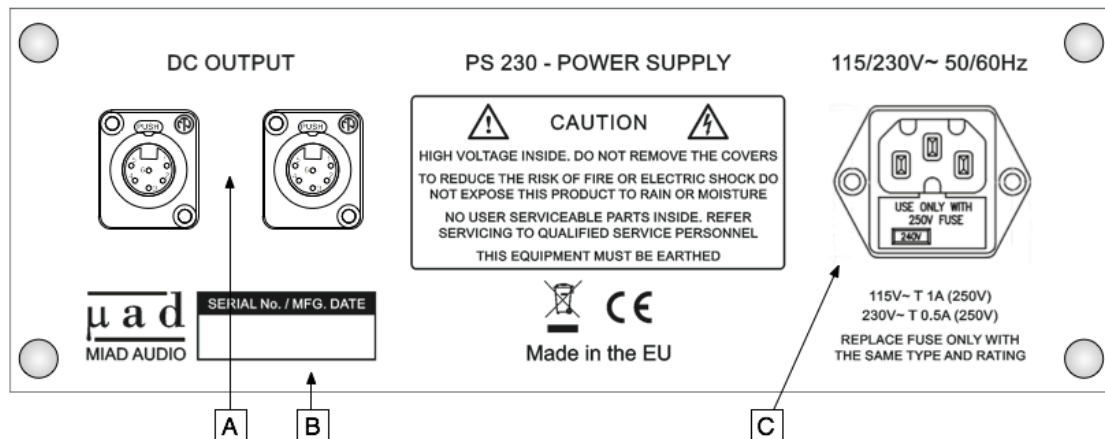
- High efficiency, low noise design
- Switchable 115V/ 230V AC
- Capable of powering two LCPQ 4040 units
- Separate power rails for the audio signal and the relay bypass system
- LED indicators for each power rail at the front of the unit
- High quality 6-pin Neutrik connectors
- Hand-built and hand-wired
- 3-year limited warranty

2.3 Front Panel



- A. AC POWER SWITCH – This switch turns the unit ON and OFF. **Make sure you do not plug (or unplug) the 6-pin DC cable between the power supply and the EQ unit while the unit (PS 230) is ON. Hot-plugging (i.e connecting the DC cable while the unit is powered on) may damage your equipment.**
- B. POWER INDICATION (-28V) – This LED allows visual confirmation of the presence of -28V.
- C. POWER INDICATION (+28V) – This LED allows visual confirmation of the presence of +28V.
- D. POWER INDICATION (+24V) – This LED allows visual confirmation of the presence of +24V.

2.4 Rear Panel



- A. 6-PIN DC POWER SUPPLY OUTPUTS – This output allows interconnection of the LCPQ 4040 unit. Up to two EQs can be connected to the power supply.

Pin out is as follows:

Pin 1= Chassis Ground

Pin 2= -28V (audio circuit)

Pin 3= +28V (audio circuit)

Pin 4= +24V (relay bypass system and bypass indicator)

Pin 5= 0V (reference for +24V)

Pin 6= 0V (reference for ±28V)

- B. PRINT – Contains information regarding the serial number and the manufacturing date of the unit.
- C. IEC MAINS INLET – Including the 115/230V AC switch and fuse. **Make sure that the AC voltage indicated on the IEC inlet is the same as the mains in your country and that you use the correct fuse.** An IEC mains power cord is supplied with every unit.

3.0 Troubleshooting

In the event of unit operational failure, contact MIAD AUDIO at info@miad.eu or for more contact information, check our website (www.miad.eu). Before contacting us, please be prepared to describe in detail the exact problem that the unit is experiencing. It is highly recommended that customers do not attempt to troubleshoot their own units or have them repaired at unauthorized repair centers. Please note that any modification to the existing product will void the warranty.

4.0 Specifications

4.1 LCPQ 4040 Technical Specifications

Frequency Response: 20Hz - 20kHz, +0/-0.3dB

THD+N: Less than 0.01%, +4dbu, 20Hz -22kHz, unity gain, 22kHz BW

Signal-to-Noise Ratio: <92dB (unweighted), re +4dbu, 22kHz BW, unity gain

Maximum Output Level: +21dbu, 20Hz -22kHz into 600 Ohms

Dynamic Range: 113dB re +21dBu, 22kHz BW

I/O Connectors: Transformer Balanced XLR (1.Chassis, 2.Signal +, 3. Signal -)

4.2 LCPQ 4040 Dimensions

Unit

Width: 482.6mm (19-inch rack)

Depth: 300mm

Height: 43.7mm (1U rack)

Weight: approx. 3kg

Shipping

Width: 550mm

Depth: 450mm

Height: 180mm

Weight: approx. 4kg

4.3 PS 230 Technical Specifications

Input Voltage: 115V AC or 230V AC, 50/ 60Hz

Output Voltage: -28V DC, +28V DC, +24V DC

4.4 PS 230 Dimensions

Unit

Width: 230mm

Depth: 170mm

Height: 80mm

Weight: Unit approx. 2kg

Shipping

Width: 340mm

Depth: 240mm

Height: 180mm

Weight: approx. 3k

5.0 Appendix

5.1 Warranty Registration

To be eligible for the three (3) year limited warranty, the original purchaser must register the MIAD AUDIO product(s) within **thirty (30) days** of date of purchase. Register online at www.miad.eu/ProductRegistration

5.2 Product Warranty

During the first three (3) years from the date of the original purchase, this product is warranted to be free from defects in materials and workmanship under normal use, service and maintenance. This warranty is limited to failures during normal use, which are due to defects in material or workmanship. If any defects are found in the materials or workmanship, or if the product fails to function properly during the applicable warranty period, MIAD Audio, at its option, will repair or replace the product.

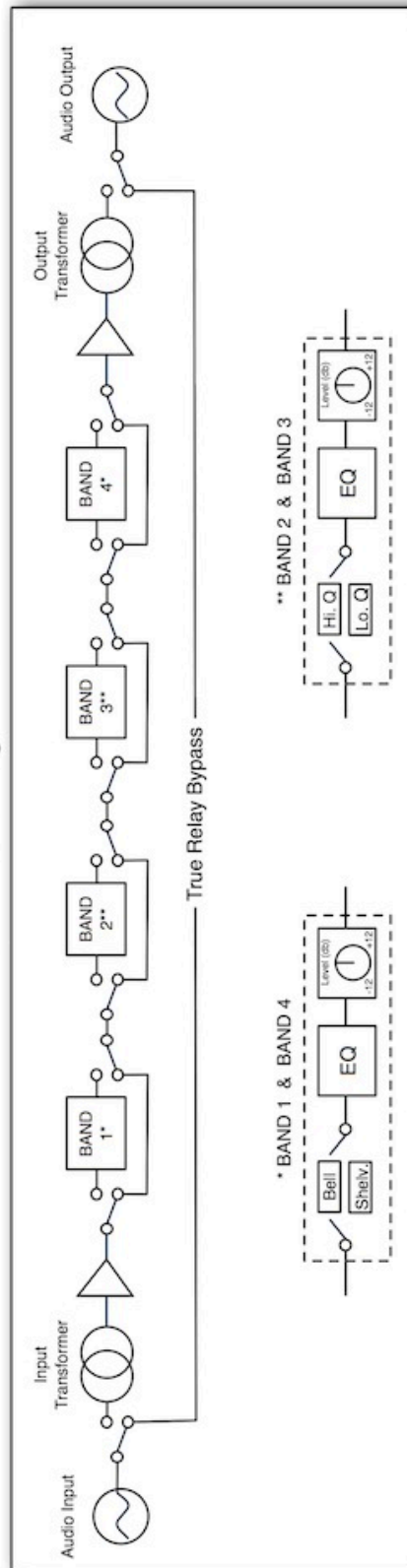
This warranty applies to the original purchaser and is subject to the following terms and conditions:

1. The warranty only applies to MIAD AUDIO products purchased directly from MIAD AUDIO or from authorized MIAD AUDIO dealers.
2. The warranty does not cover any of the following: damage caused by the user; spillages or moisture; neglect, abuse or misuse, including but not limited to the failure to use the MIAD AUDIO product for its normal purpose in accordance with the manufacturer's instructions for usage, failure to properly maintain the MIAD AUDIO product in accordance with the manufacturer's instructions, and/or the failure to use the MIAD AUDIO product in accordance with the manufacturer's specifications; use of product with incompatible or faulty equipment; unauthorised modifications; repairs conducted by unauthorised persons or service centres; the model and/or serial number being altered, removed or made illegible; damage resulting from improper packing or mishandling by a shipper; accidents; acts of God; Cosmetic defects, such as paint finish, and general wear and tear or any cause beyond the control of MIAD AUDIO
3. If the equipment requires warranty repair, return authorization must be obtained from MIAD AUDIO prior to shipment. Equipment should not be shipped until return authorization and proper shipping address is obtained from MIAD AUDIO.
4. Any products returned MIAD AUDIO for repair should be in their original packaging and they should include: (1) complete description of the problem; (2) name, address, phone number and e-mail address; (3) receipt of original purchase; (4) power supply and all accessories and cables.

5. MIAD AUDIO will not accept any warranty replacement without the original proof of purchase of the MIAD Audio, and without the registration of the MIAD AUDIO product. It is the original purchaser's responsibility to keep the original proof of purchase safe at all times, as MIAD AUDIO is not obliged to provide a replacement of the original proof of purchase, and to transfer that proof of purchase to any subsequent owners of the MIAD AUDIO product.
6. The purchaser is responsible for the shipping costs to and from MIAD AUDIO. MIAD AUDIO is not responsible for damage resulting from improper packing and/or mishandling by a shipper.
7. MIAD AUDIO reserves the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. Final determination of warranty coverage lies solely with MIAD AUDIO.

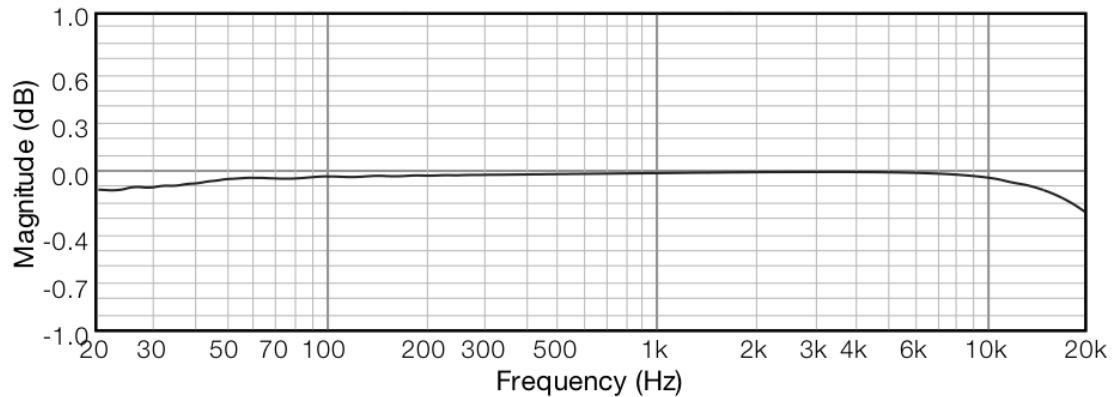
5.3 Block Diagram

LCPQ 4040 - Signal Flow



5.4 Frequency Response

Frequency Range: 20Hz to 20kHz / **Magnitude Range:** -1.0dB to +1.0dB
(All bands 'ON' at unity gain)

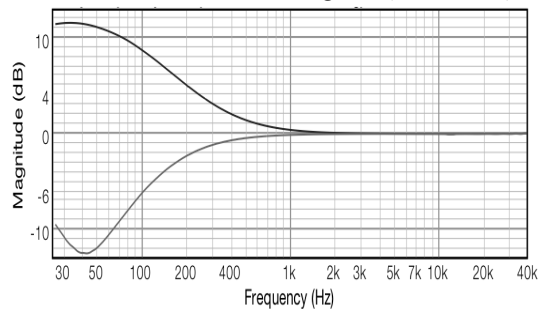


5.5 EQ Response Curves

The graphs below demonstrate some of the measured response curves for each band.

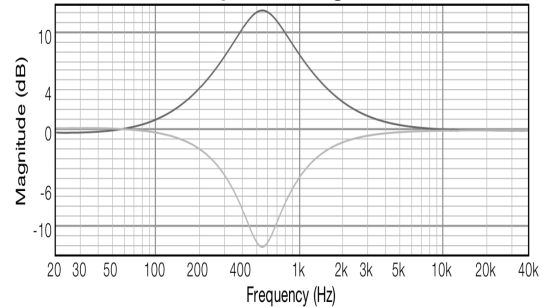
BAND 1

Top Curve: *Shelv.* - 12dB Boost @ 45Hz (20Hz – 40kHz)
Bottom Curve: *Bell* - 12dB Cut @ 45Hz (20Hz – 40kHz)



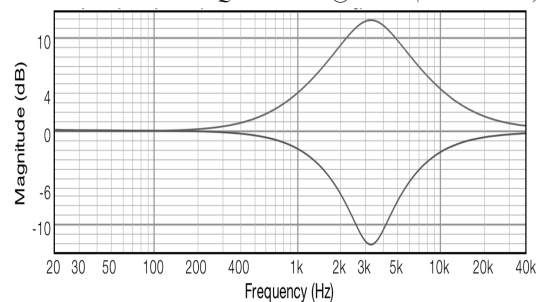
BAND 2

Top Curve: *Low Q* - 12dB Boost @ 560Hz (20Hz – 40kHz)
Bottom Curve: *Hi. Q* - 12dB Cut @ 560Hz (20Hz – 40kHz)



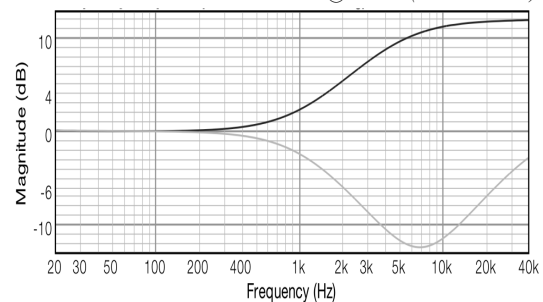
BAND 3

Top Curve: *Low Q* - 12dB Boost @ 3.3kHz (20Hz – 40kHz)
Bottom Curve: *Hi. Q* - 12dB Cut @ 3.3kHz (20Hz – 40kHz)

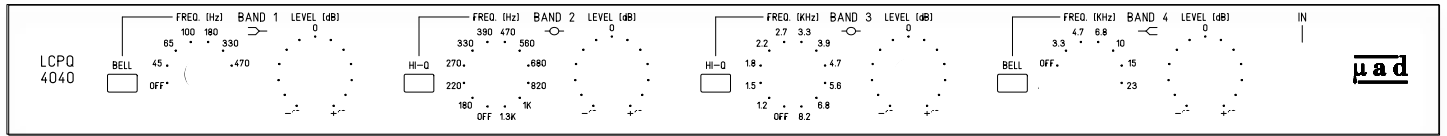


BAND 4

Top Curve: *Shelv.* - 12dB Boost @ 6.8kHz (20Hz – 40kHz)
Bottom Curve: *Bell* - 12dB Cut @ 6.8kHz (20Hz – 40kHz)



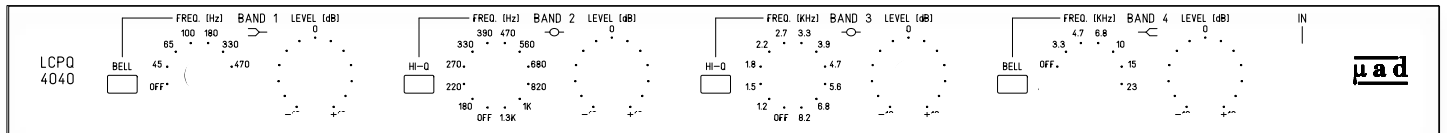
LCPQ 4040 - RECALL SHEET



ARTIST _____ PROJECT _____ DATE _____

TRACK _____ INSTRUMENT _____ ENGINEER _____

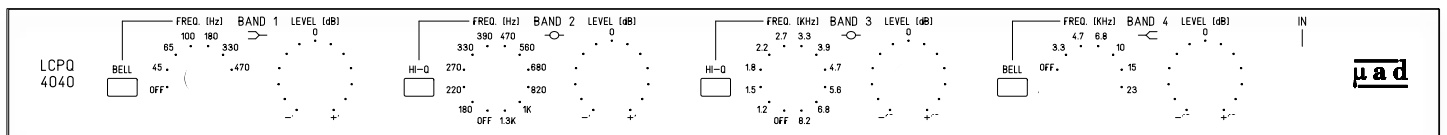
NOTES _____



ARTIST _____ PROJECT _____ DATE _____

TRACK _____ INSTRUMENT _____ ENGINEER _____

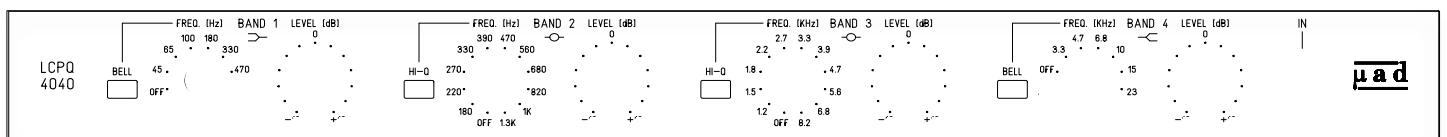
NOTES _____



ARTIST _____ PROJECT _____ DATE _____

TRACK _____ INSTRUMENT _____ ENGINEER _____

NOTES _____



ARTIST _____ PROJECT _____ DATE _____

TRACK _____ INSTRUMENT _____ ENGINEER _____

NOTES _____