

# User's Manual

## EQU Series

15/31 Band Graphic Equalizer



[www.altoproaudio.com](http://www.altoproaudio.com)

Version 2.0 Dec. 2002

— English —

## SAFETY RELATED SYMBOLS



This symbol, wherever used, alerts you to the presence of un-insulated and dangerous voltages within the product enclosure. These are voltages that may be sufficient to constitute the risk of electric shock or death.



This symbol, wherever used, alerts you to important operating and maintenance instructions. Please read.



Protective Ground Terminal



AC mains (Alternating Current)



Hazardous Live Terminal

**ON:** Denotes the product is turned on.

**OFF:** Denotes the product is turned off.

### WARNING

Describes precautions that should be observed to prevent the possibility of death or injury to the user.

### CAUTION

Describes precautions that should be observed to prevent damage to the product.

## WARNING

### • Power Supply

Ensure that the mains source voltage (AC outlet) matches the voltage rating of the product. Failure to do so could result in damage to the product and possibly the user. Unplug the product before electrical storms occur and when unused for long periods of time to reduce the risk of electric shock or fire.

### • External Connection

Always use proper ready-made insulated mains cabling (power cord). Failure to do so could result in shock/death or fire. If in doubt, seek advice from a registered electrician.

### • Do Not Remove Any Covers

Within the product are areas where high voltages may present. To reduce the risk of electric shock do not remove any covers unless the AC mains power cord is removed.

**Covers should be removed by qualified service personnel only.**

No user serviceable parts inside.

### • Fuse

To prevent fire and damage to the product, use only

the recommended fuse type as indicated in this manual. Do not short-circuit the fuse holder. Before replacing the fuse, make sure that the product is OFF and disconnected from the AC outlet.

### • Protective Ground

Before turning the product ON, make sure that it is connected to Ground. This is to prevent the risk of electric shock.

Never cut internal or external Ground wires. Likewise, never remove Ground wiring from the Protective Ground Terminal.

### • Operating Conditions

Always install in accordance with the manufacturer's instructions.

To avoid the risk of electric shock and damage, do not subject this product to any liquid/rain or moisture. Do not use this product when in close proximity to water.

Do not install this product near any direct heat source.

Do not block areas of ventilation. Failure to do so could result in fire.

Keep product away from naked flames.

## IMPORTANT SAFETY INSTRUCTIONS

Read these instructions

Follow all instructions

Keep these instructions. Do not discard.

Heed all warnings.

Only use attachments/accessories specified by the manufacturer.

### • Power Cord and Plug

Do not tamper with the power cord or plug. These are designed for your safety.

Do not remove Ground connections!

If the plug does not fit your AC outlet seek advice from a qualified electrician.

Protect the power cord and plug from any physical stress to avoid risk of electric shock.

Do not place heavy objects on the power cord. This could cause electric shock or fire.

### • Cleaning

When required, either blow off dust from the product or use a dry cloth.

Do not use any solvents such as Benzol or Alcohol.

For safety, keep product clean and free from dust.

### • Servicing

Refer all servicing to qualified service personnel only. Do not perform any servicing other than those instructions contained within the User's Manual.

## Preface

Dear Customer:

Thanks for choosing ▲LTO Graphic Equalizer and thanks for choosing one of the results of ▲LTO AUDIO TEAM job and researches.

For our ▲LTO AUDIO TEAM, music and sound are more than a job...are first of all passion and let us say...our obsession!

We have been designing professional audio products for a long time in cooperation with some of the major brands in the world in the audio field.

The ▲LTO line presents unparalleled analogue and digital products made by Musicians for Musicians in our R&D Centres in Italy, Netherlands, United Kingdom and Taiwan. The core of our digital audio products is a sophisticated DSP (Digital sound processor) and a large range of state of the art algorithms which have been developed by our Software Team for the last 7 years.

Because we are convinced you are the most important member of ▲LTO AUDIO TEAM and the one confirming the quality of our job, we would like to share with you our work and our dreams, pay attention to your suggestions and your comments.

Following this idea we create our products and we will create the new ones! From our side, we guarantee you and we will guarantee you also in future the best quality, and the best fruits of our continuous researches and the best prices.

Our ▲LTO Graphic Equalizer is the result of many hours of listening and tests involving common people, area experts, musicians and technicians.

The results of this effort is a high-end Graphic Equalizer which will provide a permanent precise equalization to the musician, performer, studio engineer and sound contractor.

Nothing else to add, but that we would like to thank all the people that made the ▲LTO Graphic Equalizer a reality available to our customers, thank our designers and all ▲LTO staff, there to make possible the realization of products containing our idea of music and sound and there to support you, our customers, in the best way, conscious that you are our best richness.

Thank you very much.

▲LTO AUDIO TEAM

## TABLE OF CONTENT

<b>1. INTRODUCTION</b> .....	4
<b>2. FEATURE LIST</b> .....	4
<b>3. CONTROL ELEMENTS</b> .....	4
3.1 The Front Panel	
3.2 The Rear Panel	
<b>4. INSTALLATION &amp; CONNECTION</b> .....	8
4.1 Mains Connection	
4.2 Audio Connection	
- Wiring Configuration	
- In Line Connection	
- Insert Points Connection	
4.3 Rack Mounting	
<b>5. APPLICATION</b> .....	10
5.1 The Sound Frequency	
5.2 Equalizer In Sound Reinforcement Systems	
- Line Instrument	
- Mixing Console	
<b>6. TECHNICAL SPECIFICATIONS</b> .....	12
<b>7. WARRANTY</b> .....	13

seven models:

r\*1  
er\*2  
isplay\*2  
Display\*2

cy

ectors

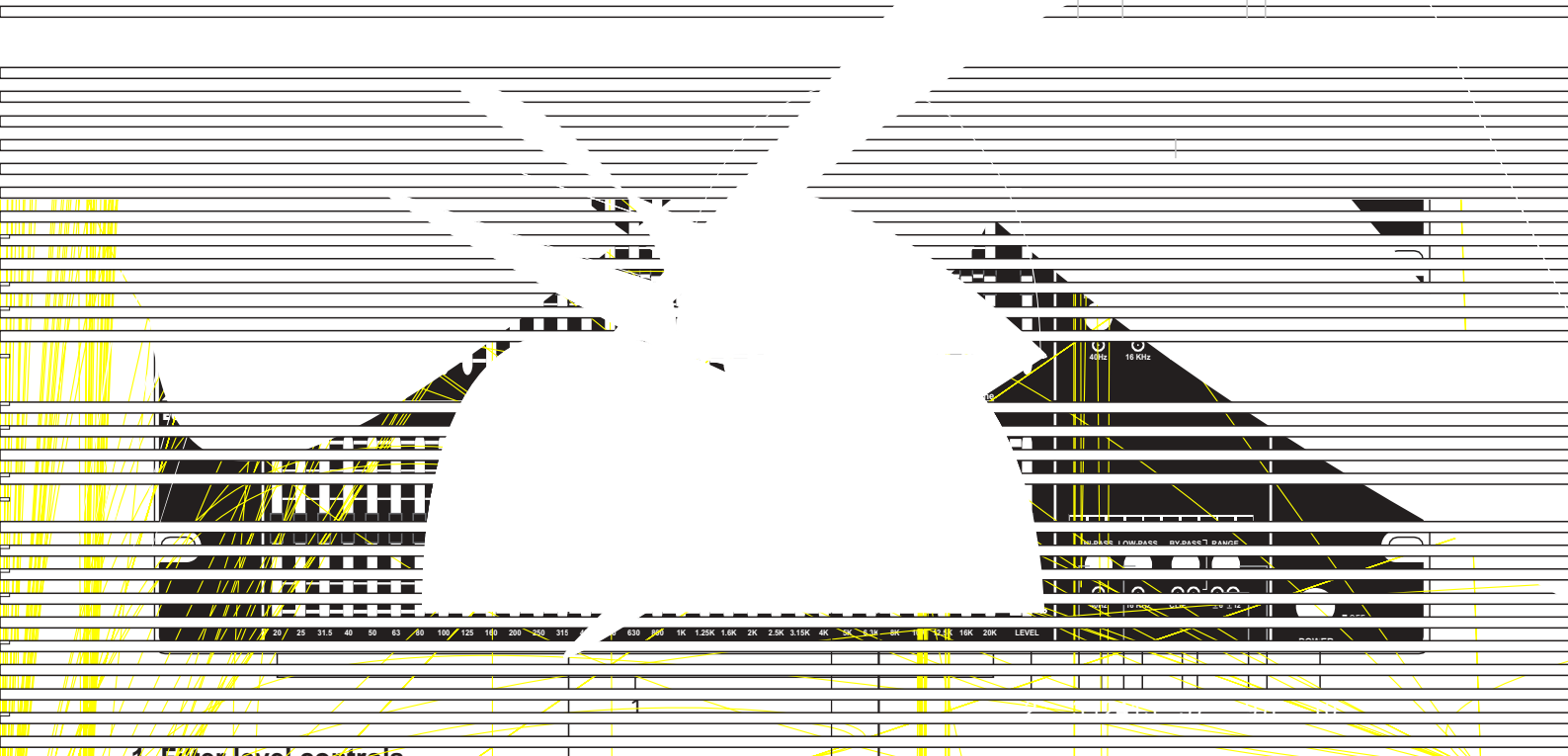
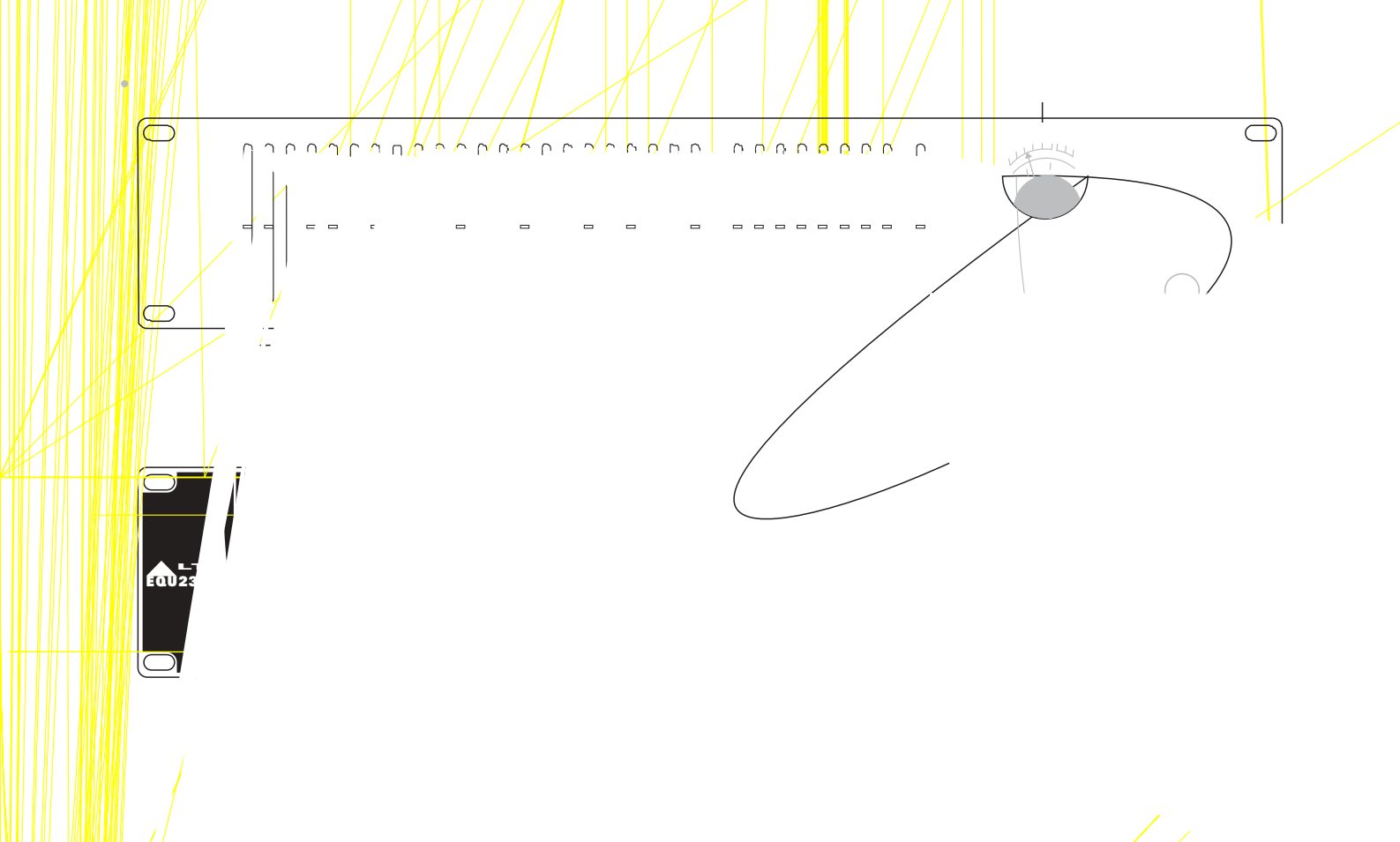
chassis ground

ement syste

2

5

2



			±	±



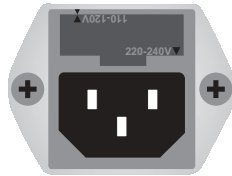




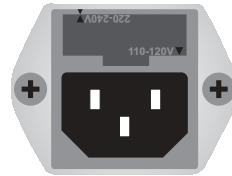
### 18. Ground lift switch

This switch is used to disconnect the signal ground from the mains and chassis earth. If it is determined that the equalizer is the cause of hum or buzz in your system due to a ground loop, move this switch to the "lift" position.

### 19. Fuse holder / Voltage selector



THIS IS SET FOR  
110V AC TO 120V  
AC OPERATION



THIS IS SET FOR  
220V AC TO 240V  
AC OPERATION

Please note the triangular markers on both sides of the fuse holder (see above figure). To change the voltage pull the fuse holder out, rotate it 180° and push it back again. The operating voltage will be indicated by one of the two triangular markers.

### 20. AC Inlet

This connector is meant for the connection of the supplied main cord.

Do not insert power cord into unit until voltage has been correctly set. Do not plug power cord into AC power until voltage has been correctly set.

## 4. INSTALLATION & CONNECTION

### 4.1 Mains Connection

Please ensure that the EQU Series Graphic Equalizer is set to the correct supply voltage before plugging the power cord into the wall outlet, use the same fuse as marked on the fuse holder at the AC power connection socket.

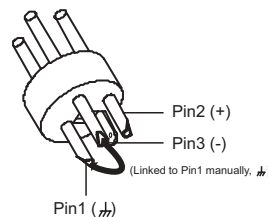
The mains connection of the EQU Series Graphic Equalizer is made by using the enclosed mains cord and a standard IEC receptacle. It meets all of the international safety certification requirements.

### 4.2 Audio Connection

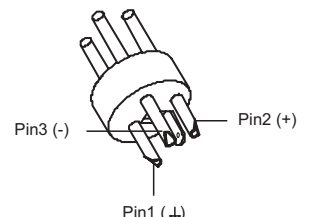
#### - Wiring Configuration



TRS Type Balanced



XLR Type Unbalanced

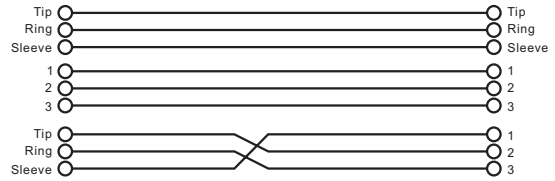
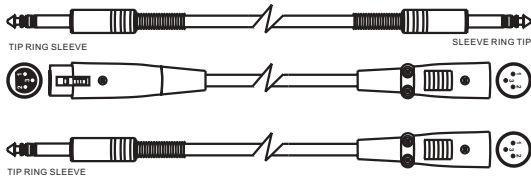


XLR Type Balanced

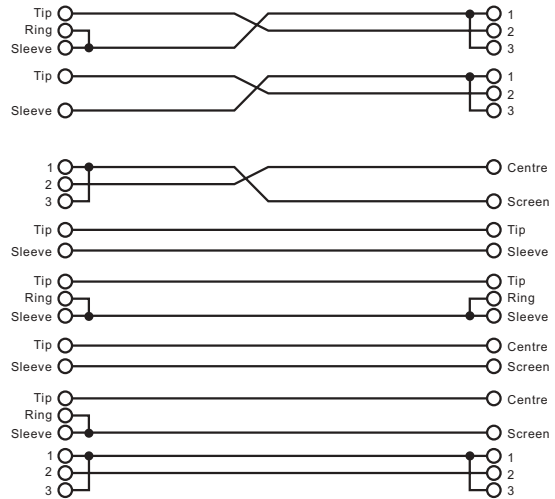
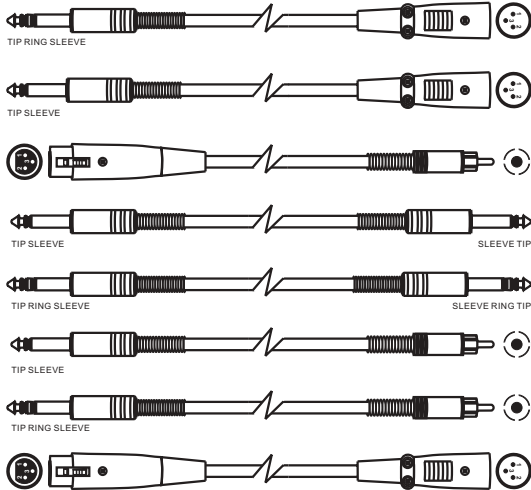
## - In Line Connection

For these applications the EQU Series Graphic Equalizer provides 1/4" TRS connectors, XLR connectors and RCA connectors to easily interface with most any professional audio device. Follow the configuration examples below for your particular connection.

### • Balanced



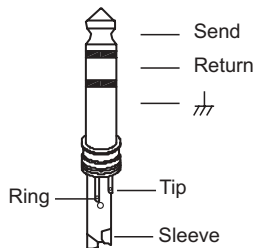
### • Unbalanced



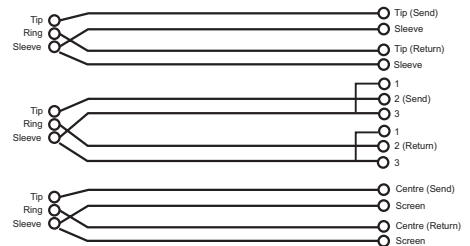
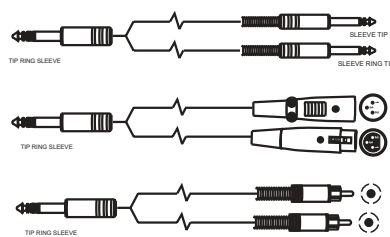
## - Insert Points Connection

If you are connecting to a mixing console's main inserts, you may have a single TRS jack for SEND & RETURN, in this case, use an insert "Y" cable that configured like the examples below.

### 1/4" TRS insert



### Insert Leads



## 4.3 Rack Mounting

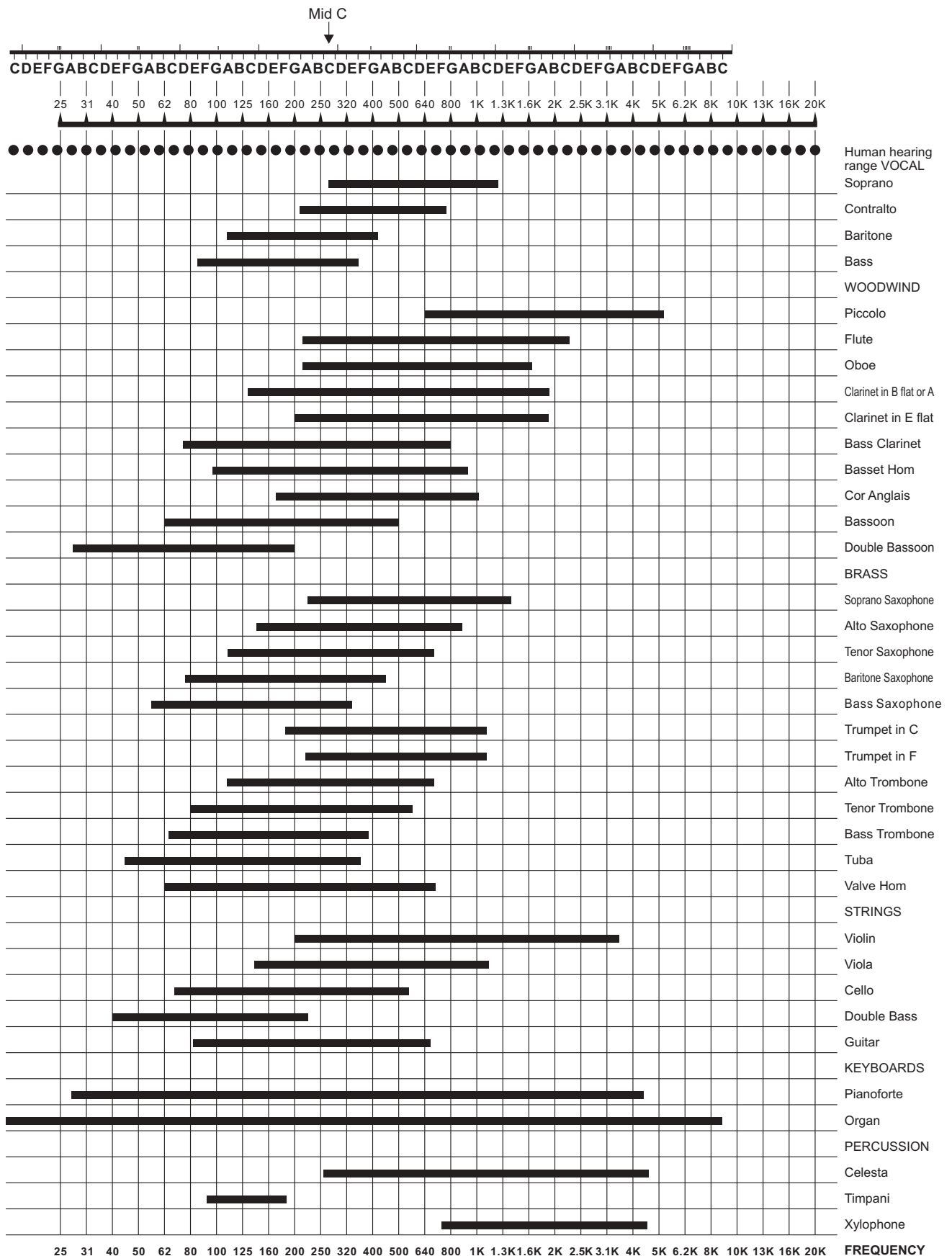
The most secure mounting is on a universal rack shelf available from various rack manufactures or your music dealer. The EQU Series fits into one standard 19" rack unit of space, but the EQU131 and EQU215 will be 1H height, the EQU231TWIN will be 4H height, while the other four models: EQU2215, EQU131VU, EQU231VU and EQU231LED will be 2H height. Please allow at least an additional 4" depth for the connectors on the rear panel. Be sure that there is enough air space around the unit for sufficient ventilation and please do not place the EQU Series on high temperature devices such as power amplifiers etc. to avoid overheating.

## 5. APPLICATION

### 5.1 The Sound Frequency

In recording studios as well as stage or radio plays, the EQU Series Graphic Equalizer will be your valuable sound tool to modify the frequency "contour" of a sound. But first of all, you should clarify the typical frequency of each instrument and voice, so that can you obtain nice results in terms of sound characterization. The tables on the following pages give you an idea of specific frequencies and their acoustic significance.

#### Typical Frequency of Each Instrument and Voice



## 5.2 Equalizer In Sound Reinforcement Systems

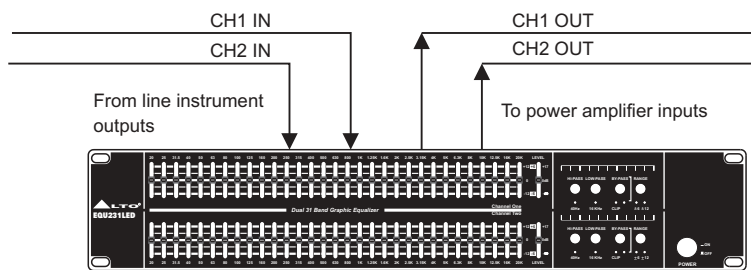
The EQU Series Graphic Equalizers can be used in the sound reinforcement systems to:

- Eliminate unwanted sounds, such as the 60Hz Hum noise.
- Shape the sound by changing the frequency response of the track.
- Special effects like telephone sounds are done by cutting off the low end to 200Hz and the high end to 6KHz.
- Allow you to modify the sound of the instrument if put EQU Series Equalizer in line with a musical instrument. you can brighten the sound, and body to a thin sounding instrument, or you can give the sound a totally different character.
- Fix a track that does not sound quite right, put the EQU Series Equalizer in an effects send and return it to the mix bus.

The following connection is probably most common field of application:

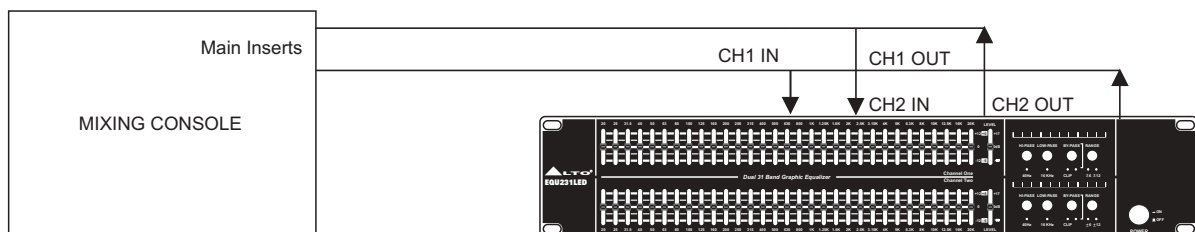
### - Line Instrument

The EQU Series Graphic Equalizer can be used on an entire mix "In-line" between a instrument outputs and a power amplifier, and this is the basic application in the PA system to offer precise Equalization control.



### - Mixing Console

The EQU Series Graphic Equalizer can also be used on a single instrument by connecting to a mixing console's main inserts, esp for those consoles without built-in equalization circuitry.



### NOTE: Mono/Stereo Application

- a. For mono application, please use the EQU131, EQU131VU mono Graphic Equalizer.
- b. For stereo application, please use the EQU215, EQU2215, EQU231LED, EQU231VU or EQU231TWIN stereo Graphic Equalizer, either of the two channels can be used as L/R input & output.

## 6. TECHNICAL SPECIFICATIONS

Type	
EQU131	1 × 31 Band: 1/3 octave , ISO spacing (1H series)
EQU215	2 × 15 Band: 2/3 octave , ISO spacing (1H series)
EQU2215	2 × 15 Band: 2/3 octave , ISO spacing (2H series)
EQU131VU	1 × 31 Band: 1/3 octave , ISO spacing (2H series)
EQU231VU / 231LED	2 × 31 Band: 1/3 octave , ISO spacing (2H series)
EQU231TWIN	2 × 31 Band: 1/3 octave , ISO spacing (4H series)
Slider travel	20mm with positive centre detente (EQU131/EQU215/EQU231VU/EQU231LED) 60mm with positive centre detente (EQU131VU/EQU2215/EQU231TWIN)
Range	±6dB or ±12dB selectable
Input connections	Active balanced XLR and 1/4" TRS Unbalanced RCA
Input impedance	20kΩ (bal.) 15kΩ (unbal.)
Maximum input level	18dBv
Output connections	Active balanced XLR and 1/4" TRS Unbalanced RCA
Output impedance	< 600Ω
Maximum output level	16dBv
Load impedance	>10KΩ
High pass filter	40Hz (12dB/oct) fixed-button type .
Low pass filter	16KHz (12dB/oct) fixed-button type
Frequency response	20Hz to 50KHz at - 3dB
THD + N %	0.02% ↓ (@ 1KHz , all VR at middle position)
S / N ratio	93dB (@ 1KHz )
Power supply	110V-120VAC -60Hz 220V-240VAC -50Hz
Consumption	
EQU131/131VU	1 × 31 band, 1/3 octave, ISO spacing: 7W
EQU215/2215	2 × 15 band, 2/3 octave, ISO spacing: 9W
EQU231VU / 231LED/231TWIN	2 × 31 band, 1/3 octave, ISO spacing: 12.5W
Dimensions	483(W) × 220(D) × 44(H)(19" × 8.66" × 1.7")mm (1H series) 483(W) × 220(D) × 88(H)(19" × 8.66" × 3.5") mm (2H series) 483(W) × 220(D) × 177.8(H)(19" × 8.66" × 7") mm (4H series)

## 7. WARRANTY

### 1. WARRANTY REGISTRATION CARD

To obtain Warranty Service, the buyer should first fill out and return the enclosed Warranty Registration Card within 10 days of the Purchase Date.

All the information presented in this Warranty Registration Card gives the manufacturer a better understanding of the sales status, so as to purport a more effective and efficient after-sales warranty service.

Please fill out all the information carefully and genuinely, miswriting or absence of this card will void your warranty service.

### 2. RETURN NOTICE

2.1 In case of return for any warranty service, please make sure that the product is well packed in its original shipping carton, and it can protect your unit from any other extra damage.

2.2 Please provide a copy of your sales receipt or other proof of purchase with the returned machine, and give detail information about your return address and contact telephone number.

2.3 A brief description of the defect will be appreciated.

2.4 Please prepay all the costs involved in the return shipping, handling and insurance.

### 3. TERMS AND CONDITIONS

3.1 ▲LTO warrants that this product will be free from any defects in materials and/or workmanship for a period of 1 year from the purchase date if you have completed the Warranty Registration Card in time.

3.2 The warranty service is only available to the original consumer, who purchased this product directly from the retail dealer, and it can not be transferred.

3.3 During the warranty service, ▲LTO may repair or replace this product at its own option at no charge to you for parts or for labor in accordance with the right side of this limited warranty.

3.4 This warranty does not apply to the damages to this product that occurred as the following conditions:

- Instead of operating in accordance with the user's manual thoroughly, any abuse or misuse of this product.
- Normal tear and wear.
- The product has been altered or modified in any way.
- Damage which may have been caused either directly or indirectly by another product / force / etc.
- Abnormal service or repairing by anyone other than the qualified personnel or technician.

And in such cases, all the expenses will be charged to the buyer.

3.5 In no event shall ▲LTO be liable for any incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion or limitation may not apply to you.

3.6 This warranty gives you the specific rights, and these rights are compatible with the state laws, you may also have other statutory rights that may vary from state to state.

**SEIKAKU TECHNICAL GROUP LIMITED**  
**No. 1, Lane 17, Sec. 2, Han Shi W. Road, Taichung, 401 Taiwan**  
**<http://www.altomobile.com> Tel: 886-4-22313737**  
**email: [info@altomobile.com](mailto:info@altomobile.com) Fax: 886-4-22346757**

All rights reserved to ALTO Mobile. Due to continued development in response to customer feedback, product features, specifications and/or internal/external design may be changed without prior notice. No photocopying, translation or reproduction of any part of this user manual is allowed without prior written permission. Copyright © 2004 Seikaku Technical Group Limited.

NF00875-1.0

## Free Manuals Download Website

<http://myh66.com>

<http://usermanuals.us>

<http://www.somanuals.com>

<http://www.4manuals.cc>

<http://www.manual-lib.com>

<http://www.404manual.com>

<http://www.luxmanual.com>

<http://aubethermostatmanual.com>

Golf course search by state

<http://golfingnear.com>

Email search by domain

<http://emailbydomain.com>

Auto manuals search

<http://auto.somanuals.com>

TV manuals search

<http://tv.somanuals.com>