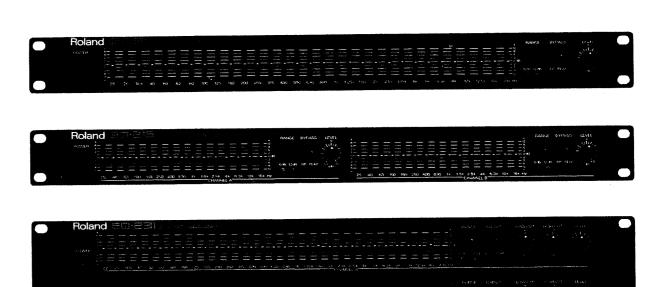
Roland®

GRAPHIC EQUALIZER

EC - 231 512 - 23 121 - 23

Owner's Manual









ATTENTION: RISQUE DE CHOC ELECTRIQUE NE PAS QUVRIR

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



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.



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

INSTRUCTIONS PERTAINING TO A RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS.

IMPORTANT SAFETY INSTRUCTIONS SAVE THESE INSTRUCTIONS

WARNING - When using electric products, basic precautions should always be followed, including the following:

- 1. Read all the instructions before using the product.
- Do not use this product near water for example, near a bathtub, washbowl, kitchen sink, in a wet basement, or near a swimming pool, or the like.
- This product should be used only with a cart or stand that is recommended by the manufacturer.
- 4. This product, either alone or in combination with an amplifier and headphones or speakers, may be capable of producing sound levels that could cause permanent hearing loss. Do not operate for a long period of time at a high volume level or at a level that is uncomfortable. If you experience any hearing loss or ringing in the ears, you should consult an audiologist.
- The product should be located so that its location or position does not interfere with its proper ventilation.
- The product should be located away from heat sources such as radiators, heat registers, or other products that produce heat
- The product should be connected to a power supply only of the type described in the operating instructions or as marked on the product.

- 8. The power-supply cord of the product should be unplugged from the outlet when left unused for a long period of time.
- Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.
- 10.The product should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled onto the product; or
 - C. The product has been exposed to rain; or
 - D. The product does not appear to operate normally or exhibits a marked change in performance; or
 - E. The product has been dropped, or the enclosure damaged.
- 11.Do not attempt to service the product beyond that described in the user-maintenance instructions. All other servicing should be referred to qualified service personnel.

For the USA

This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.

For Canada

For Polarized Line Plug

CAUTION:

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

ATTENTION: POUR ÉVITER LES CHOCS ÉLECTRIQUES, INTRODUIRE LA LAME LA PLUS LARGE DE LA FICHE DANS LA BORNE CORRESPONDANTE DE LA PRISE ET POUSSER JUSQU' AU FOND.

For the U.K.-

IMPORTANT: THE WIRES IN THIS MAINS LEAD ARE COLOURED IN ACCORDANCE WITH THE FOLLOWING CODE.

BLUE: NEUTRAL BROWN: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows:

The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured RED. Under no circumstances must either of the above wires be connected to the earth terminal of a three pin plug.

NG THE UNIT SAFEL

INSTRUCTIONS FOR THE PREVENTION OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS

About A WARNING and A CAUTION Notices

AWARNING	Used for instructions intended to alert the user to the risk of death or severe injury should the unit be used improperly.		
⚠ CAUTION	Used for instructions intended to alert the user to the risk of injury or material damage should the unit be used improperly.		
	* Material damage refers to damage or other adverse effects caused with respect to the home and all its furnishings, as well to domestic animals or pets.		

About the Symbols

The \triangle symbol alerts the user to important instructions or warnings. The specific meaning of the symbol is determined by the design contained within the triangle. In the case of the symbol at left, it is used for general cautions, warnings, or alerts to danger.

The \(\sigma \) symbol alerts the user to items that must never be carried out (are forbidden). The specific thing that must not be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the unit must never be disassembled

The symbol alerts the user to things that must be carried out. The specific thing that must be done is indicated by the design contained within the circle. In the case of the symbol at left, it means that the powercord plug must be unplugged from the outlet.

----- ALWAYS OBSERVE THE FOLLOWING

⚠WARNING

- Before using this unit, make sure to read the instructions below, and the Owner's Manual.
- Do not open or perform any internal modifications on the unit.

- When using the unit with a rack or stand recommended by Roland, the rack or stand must be carefully placed so it is level and sure to remain stable. If not using a rack or stand, you still need to make sure that any location you choose for placing the unit provides a level surface that will properly support the unit, and keep it from wobbling.



• Avoid damaging the power cord. Do not bend it excessively, step on it, place heavy objects on it, etc. A damaged cord can easily become a shock or fire hazard. Never use a power cord after it has been dam-



nel.

aged. In households with small children, an adult should provide supervision until the child is capable of fol-



lowing all the rules essential for the safe operation of the unit.

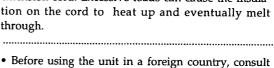


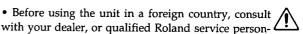
 Protect the unit from strong impact. (Do not drop it!)



riangle WARNING

 Do not force the unit's power-supply cord to share an outlet with an unreasonable number of other devices. Be especially careful when using extension cords—the total power used by all devices you have connected to the extension cord's outlet must never exceed the power rating (watts/amperes) for the extension cord. Excessive loads can cause the insulation on the cord to heat up and eventually melt through.



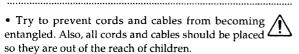


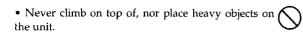
 When replacing the fuse, use only the specified type and size (0.5A/250V; see p. 10).

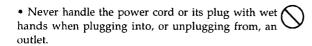


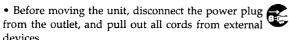
A CAUTION

• Always grasp only the plug on the power-supply cord when plugging into, or unplugging from an outlet.











• Before cleaning the unit, turn off the power and unplug the power cord from the outlet (p. 11).



• Whenever you suspect the possibility of lightning in your area, pull the plug on the power cord out of the outlet.



Thank you for purchasing the Roland EQ-131/215/231 Graphic Equalizer.

* Before using this unit, carefully read the sections entitled: "IMPORTANT SAFETY INSTRUCTIONS" (p. 2), "USING THE UNIT SAFELY" (p. 3, 4), and "IMPORTANT NOTES" (p. 5). These sections provide important information concerning the proper operation of the unit. Additionally, in order to feel assured that you have gained a good grasp of every feature provided by your new unit, this manual should be read in its entirety. The manual should be saved and kept on hand as a convenient reference.

Main Features

•The EQ-131 and EQ-231 are 31-band graphic equalizer which provide a wide range of detailed equalization over the 20 Hz - 20 kHz bands.

The EQ-215 is a two-channel graphic equalizer with 15 bands spaced at 2/3 octave intervals. It allows a wide range of detailed equalization over the 25 Hz - 16 kHz bands.

- Equalization range can be switched between +/- 6 dB and +/- 12 dB.
- An equalizer Bypass Switch is provided.
- A total level control allows you to compensate for the volume difference in equalizer and bypassed sound.
- The Low Cut Filter and High Cut Filter can be used to cut unwanted frequency bands.
- Peak Indicators for each channel allow you to adjust levels to the optimum distortion-free settings.
- Both balanced phone jacks and XLR connectors are provided for input and output, allowing use with a variety of equipment including channel insertion.

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IMPORTANT NOTES

In addition to the items listed under "IMPORTANT SAFETY INSTRUCTIONS" and "USING THE UNIT SAFELY" on pages 2 and 3, please read and observe the following:

Power Supply

- Do not use this unit on the same power circuit with any device that will generate line noise (such as an electric motor or variable lighting system).
- Before connecting this unit to other devices, turn off the power to all units. This will help prevent malfunctions and/or damage to speakers or other devices.

Placement

• Using the unit near power amplifiers (or other equipment containing large power transformers) may induce hum. To alleviate the problem, change the orientation of this unit; or move it farther away from the source of interference.

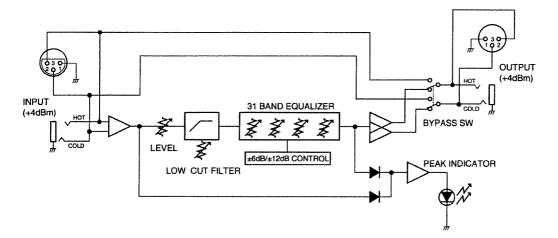
Maintenance

- For everyday cleaning wipe the unit with a soft, dry cloth or one that has been slightly dampened with water. To remove stubborn dirt, use a cloth impregnated with a mild, non-abrasive detergent. Afterwards, be sure to wipe the unit thoroughly with a soft, dry cloth.
- Never use benzene, thinners, alcohol or solvents of any kind, to avoid the possibility of discoloration and/or deformation.

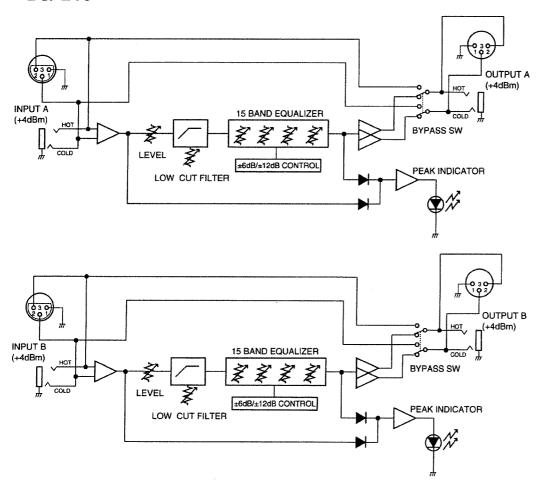
Additional Precautions

- •Use a reasonable amount of care when using the unit's buttons, sliders, or other controls; and when using its jacks and connectors. Rough handling can lead to malfunctions.
- When connecting / disconnecting all cables, grasp the connector itself—never pull on the cable. This way you will avoid causing shorts, or damage to the cable's internal elements.
- A small amount of heat will radiate from the unit during normal operation.
- •To avoid disturbing your neighbors, try to keep the unit's volume at reasonable levels. You may prefer to use headphones, so you do not need to be concerned about those around you (especially when it is late at night).
- •When you need to transport the unit, package it in the box (including padding) that it came in, if possible. Otherwise, you will need to use equivalent packaging materials.

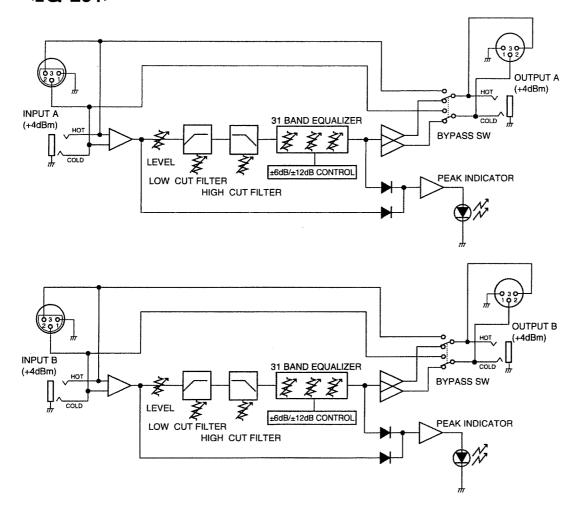
(1) Block Diagram and Signal Flow Chart <EQ-131>



<EQ-215>

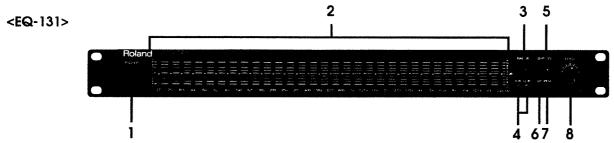


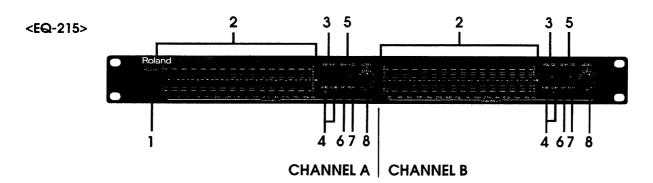
<EQ-231>

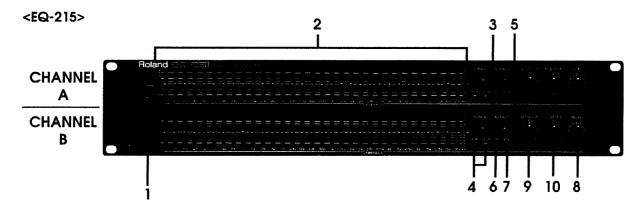


(2) Panel Descriptions

1 Front Panel







1 POWER: Power Switch

This switch turns the power on/off. When this switch is turned on, the Range Indicator will light to indicate that the unit is operating.

* This unit is equipped with a protection circuit. A brief internal (a few seconds) after power up is required before the unit will operate normally.

2 Equalizer Control Sliders (EQ-131/231)

The frequency range of 20 Hz - 20 kHz is divided into thirty-one bands of 1/3 octave, and each slider boosts or cuts the band which is centered on its frequency.

(EQ-215)

The frequency range of 25 Hz - 16 kHz is divided into thirty-one bands of 2/3 octave, and each slider boosts or cuts the band which is centered on its frequency.

* If equalizing settings make the Peak Indicator (7) frequency light, set these sliders so that the Peak Indicator lights only briefly for maximum input levels.the range will be +/- 12 dB, When this switch is off the range will be +/- 6 dB.

3 RANGE: Range Switch

This switch selects the range of the equalizing level and level control. When this switch is on the range will be \pm 12 dB, When this switch is off the range will be \pm 6 dB.

4 RANGE: Range Indicators

The yellow indicator will light when the equalizing range has been set to +/- 12 dB, and the green indicator will light when the equalizing range has been set to +/- 6 dB, allowing you to visually check the Range setting.

5 BYPASS: Bypass Switch

This switch allow you to bypass the effect. When this switch is off, the input signal will be equalized and output. When this switch is on, the input signal will be output directly without being processed.

When the power is not on, if you want direct output of the input sound, turn on Bypass.

6 BYPASS: Bypass Indicators

These indicators light when the equalization is bypassed, allowing you to visually confirm whether equalization is octave or bypassed.

7 PEAK: Peak Indicators

The Peak Indicators light when the equalization is peaked. The Peak Indicator lights at -6 dB of the clipping level.

8 LEVEL: Level Control Knob

This knob adjusts the volume difference between the equalized and bypassed signals. It allows you to boost (increase) or cut (decrease) the equalized signal over a range of +/- 12 dB (+/- 6 dB).

9 LOW CUT: Low-Cut Filter Control Knob (only EQ-231)

This knob sets the cutoff frequency (10 Hz - 250 Hz: the frequency at which the effect starts) for the low-cut filter. This will be cut -12 dB/octave.

10 HIGH CUT: High-Cut Filter Control Knob (only EQ-231)

This knob sets the cutoff frequency (3 kHz - 40 kHz: the frequency at which the effect starts) for the high-cut filter. This will be cut -12 dB/octave.

2 Rear Panel

<EQ-131>

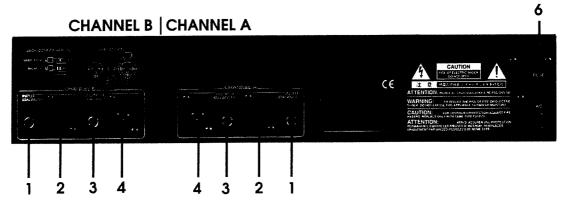


<EQ-215>



CHANNEL B | CHANNEL A

<EQ-231>



1 INPUT: Input Jacks

These inputs are stereo phone jacks compatible with balanced input. (Rated Input Level = +4 dBm)

* In case of unbalanced input by phone jack, output level drop 6 dB.

2 INPUT: Input Connectors

These inputs are XLR connectors compatible with balanced input. (Rated Input Level = +4 dBm)

3 OUTPUT: Output Jacks

These outputs are stereo phone jacks compatible with balanced output. (Rated Output Level = +4 dBm)

4 OUTPUT: Output Connectors

These outputs are XLR connectors compatible with balanced output. (Rated output Level = +4 dBm)

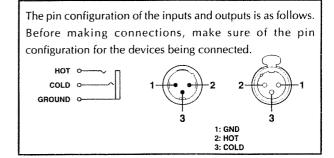
5 LOW CUT: Low Cut Filter Control Knob (only EQ-131/215)

This knob sets the cutoff frequency (10 Hz - 250 Hz: the frequency at which the effect starts) for the low-cut filter. This will be cut -12 dB/octave.

6 FUSE: Fuse Holder

* When replacing the fuse, use only the specified type and size (0.5 A/250 V). And always turn the unit off and unplug the power cord before replacing the fuse.



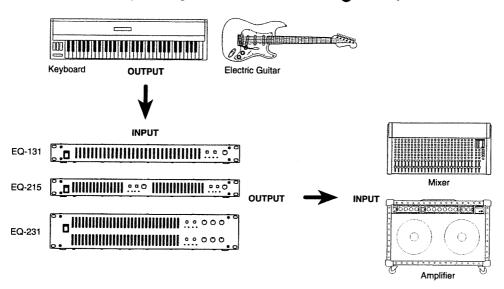


(3) Setup

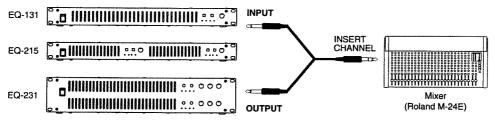
- * To prevent malfunction and/or damage to speakers or other devices, always turn down the volume, and turn off the power on all devices before making any connections.
- * Once the connections have been completed, turn on power to your various devices in the order specified. By turning on devices in the wrong order, you risk causing malfunction and/or damage to speakers and other devices.

 Sound Source EQ-131/215/231 Mixer Power Amp

1. Basic setup: keyboard, electric guitar, etc.

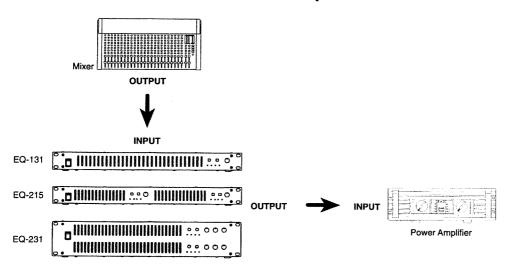


2. Connection to a specific channel of a mixer



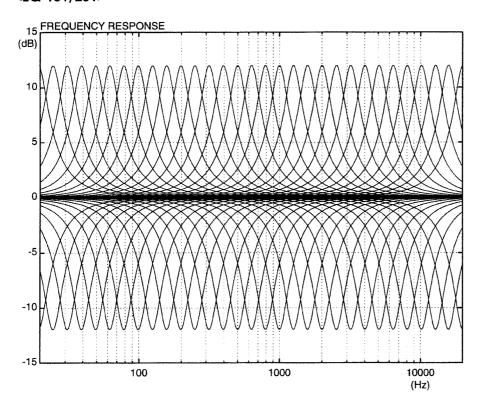
* An insertion cable (PCS-31: Optional) is required.

3. To adjust overall tone or compensate for room acoustics

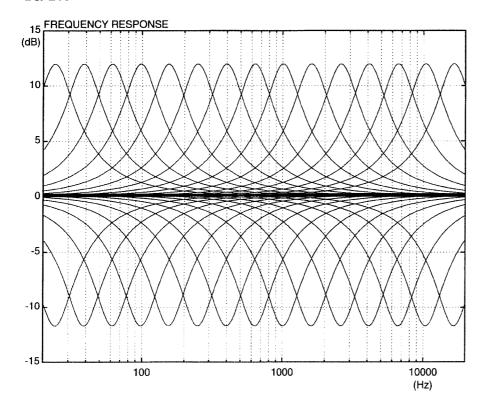


(4) Frequency Response

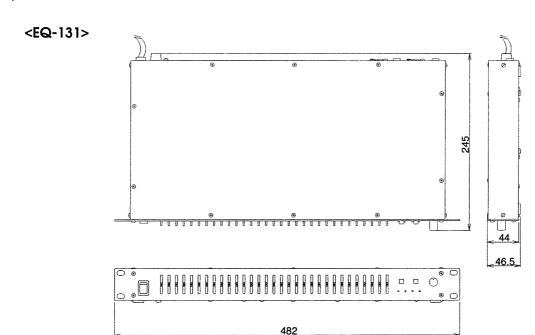
<EQ-131/231>

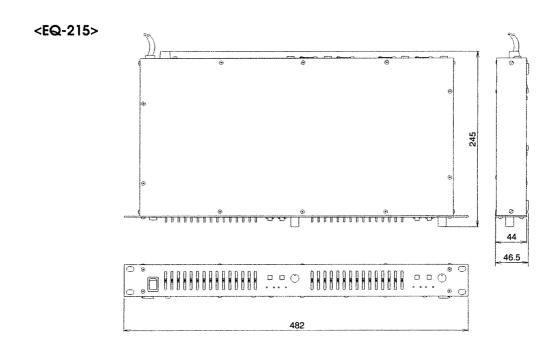


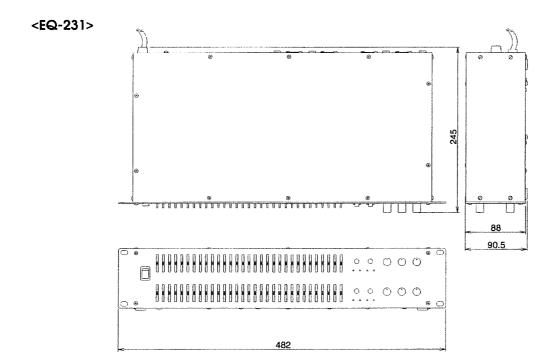
<EQ-215>



(5) Dimensions







(6) Specifications

• Input

Input Jack	Input Impedance	Nominal Input Level	Type of Connectors
INPUT (Balanced)	XLR type: 24 kΩ	4 40 (4 00 1/)	XLR Connector
	Phone: 24 kΩ	+4 dBm (1.23 V)	Stereo Phone Jack

(0 dBm = 0.775 V)

Output

0.45.4 15.5	0.4414		Load Impedance		Output Level		Tune of Connectors	
Output Jack	Output imp	output Impedance		ımpedance	Nominal Level	Non-Clip Max Level	Type of Connectors	
OUTPUT	XLR type:	600 Ω XLR type: More than 600 Ω		+4 dBm (1.23 V)	. 24 dPm (10 2 \/)	XLR Connector		
(Balanced)	Phone:	600 Ω	Phone:	More than 10 $k\Omega$	+4 ubm (1.23 V)	IBm (1.23 V) +24 dBm (12.3 V)	Stereo Phone Jack	

(0 dBm = 0.775 V)

Model	EQ-131	EQ-231	EQ-215			
Channel	1		2			
Frequency Response	20 Hz – 50 kHz +0/-2 dB	20 Hz – 40 kHz +0/-3 dB	20 Hz – 50 kHz +0/-2 dB			
Residual Noise	Less than -95 dBm (IHF-A) [Level Control / Equalizer Control: Flat]					
Maximum Voltage Gain	12 dB					
Crosstalk	— More than 70 dB (10 kHz)					
Total Harmonic Distortion	Less than 0.01 % [Level Control / Equalizer Control: Flat]					
Equalizer Controls	31 bands (1/3 octave)	31 bands (1/3 octave) x2	15 bands (2/3 octave) x2			
Center Frequency	20, 25, 31.5, 40, 50, 63, 80 315, 400, 500, 630, 800, 1 3.15k, 4k, 5k, 6.3k, 8k, 10k	25, 40, 63, 100, 160, 250, 400, 630, 1k, 1.6k, 2.5k, 4k, 6.3k, 10k, 16k (Hz)				
Variable Range	±12 dB / ±6 dB					
Total Level	±12 dB / ±6 dB					
Controls Level, Equalizer (31 bands), Low Cut Filter		Level x2, Equalizer (31 bands) x2, Low Cut Filter x2, Hi Cut Filter x2	Level x2, Equalizer (15 bands) Low Cut Filter x2			
Switches	Power, Bypass, Range	Power, Bypass x2, Range x2				
Jacks	Input (Stereo Phone, XLR type), Output (Stereo Phone, XLR type)	Input (Stereo Phone x2, XLR type x2), Output (Stereo Phone x2, XLR type x2)				
Indicators	Bypass, Range (6dB/12dB), Peak* Bypass x2, Range (6dB/12		dB/12dB) x2, Peak* x2			
Power	AC 117 V, 230 V					
Power Consumption	8 W	17 W	12 W			
Dimensions (WxHxD)	482 x 44 x 245 mm 19" x 1-3/4" x 9-11/16"	482 x 88 x 245 mm 19" x 3-1/2" x 9-11/16"	482 x 44 x 245mm 19" x 1-3/4" x 9-11/16"			
Weight	3.5 kg / 7 lb 12 oz	4.7 kg / 10 lb 6 oz	3.5 kg / 7 lb 12 oz			
Accessory	Owner's Manual					

^{*} This will light up 6 dB prior to the clipping level.

- For Europe

^{*} In the interest of product improvement, the specifications and/or appearance of this unit are subject to change without prior notice.



This product complies with the requirements of European Directive 89/336/EEC.

15

Information

When you need repair service, call your local Roland Service Station or the authorized Roland distributor in your country as shown below.

ARGENTINA

Instrumentos Musicales S.A. (1005) Buenos Aires ARGENTINA TEL: (01) 394 4029

BRAZIL

Roland Brasil Ltda. R. Coronel Octaviano da Silveira 203 05522-010 ao Paulo BRAZII TEL: (011) 843 9377

CANADA Roland Canada Music Ltd. (Head Office) 5480 Parkwood Way Richmond B. C., V6V 2M4 CANADA

Roland Canada Music Ltd. (Toronto Office) Unit 2, 109 Woodbine Downs Blvd, Etobicoke, ON M9W 6Y1 CANADA

TEL: (0604) 270 6626

TEL: (0416) 213 9707

MEXICO Casa Veerkamp, s.a. de c.v. Av. Toluca No. 323 Col. Olivar de los Padres 01780 Mexico D.F. MEXICO TEL: (525) 668 04 80

La Casa Wagner de Guadalajara s.a. de c.v. Av. Corona No. 202 S.J. Guadalajara, Jalisco Mexico C.P.44100 MEXICO

TEL: (03) 613 1414

PANAMA Productos Superiores, S.A. Apartado 655 - Panama 1 REP. DE PANAMA TEL: 26 3322

U. 5. A.

Roland Corporation U.S. 7200 Dominion Circle Los Angeles, CA. 90040-3696, TEL: (0213) 685 5141

VENEZUELA

Musicland Digital C.A. Av. Francisco de Miranda, Centro Parque de Cristal, Nivel C2 Local 20 Caracas VENEZUELA TEL: (02) 285 9218

AUSTRALIA Roland Corporation

Australia Pty. Ltd. 38 Campbell Avenue Dee Why West. NSW 2099 AUSTRALIA TEL: (02) 982 8266

NEW ZEALAND

Roland Corporation (NZ) Ltd. 97 Mt. Eden Road, Mt. Eden, Auckland 3, NEW ZEALAND TEL: (09) 3098 715

HONG KONG

Tom Lee Music Co., Ltd. Service Division 22-32 Pun Shan Street, Tsuen Wan, New Territories, HONG KONG TEL: 2415 0911

INDONESIA PT CITRARAMA BELANTIKA

Kompleks Perkantoran Duta Merlin Blok F No.6-7 Jl. Gajah Mada No.3—5, Jakarta 10130, INDONESIA TEL: (021) 3850073

KOREA

Cosmos Corporation Service Station 261 2nd Floor Nak-Won Arcade Jong-Ro ku, Seoul, KOREA TEL: (02) 742 8844

MALAYSIA

Bentley Music SDN BHD No.142, Jalan Bukit Bintang 55100 Kuala Lumpur, MALAYSIA TEL: (03) 2443333

PHILIPPINES G.A. Yupangco & Co. Inc. 339 Gil J. Puyat Avenue
Makati, Metro Manila 1200,
PHILIIPPINES
TEL 1001 BOX COST TEL: (02) 899 9801

SINGAPORE Swee Lee Company BLOCK 231, Bain Street #03-23 Bras Basah Complex, SINGAPORE 0718 TEL: 3367886

CRISTOFORI MUSIC PTE

LTD 335, Joo Chiat Road SINGAPORE 1542

TEL: 3450435

TAIWAN Siruba Enterprise (Taiwan)

Co., LTD. Room. 5, 9fl. No. 112 Chung Shan N.Road Sec.2 Taipei, TAIWAN,

TEL: (02) 561 3339

THAILAND

Theera Music Co., Ltd. 330 Verng Nakorn Kasem, Soi 2, Bangkok 10100, THAILAND TEL: (02) 2248821

BAHRAIN

Moon Stores Bad Al Bahrain Road, P.O.Box 20077 State of BAHRAIN TEL: 211 005

IRAN

TARADIS Mir Emad Ave. No. 15, 10th street P. O. Box 15875/4171 Teheran, TEL: (021) 875 6524

ISRAEL

Halilit P. Greenspoon & 8 Retzif Ha'aliya Hashnya St. Tel-Aviv-Yafo ISRAEL TEL: (03) 6823666

JORDAN

AMMAN Trading Agency Prince Mohammed St. P. O. Box 825 Amman 11118 JORDAN TEL: (06) 641200

KUWAIT

Easa Husain Al-Yousifi P.O. Box 126 Safat 13002 KUWAIT TEL: 5719499

LEBANON

A. Chahine & Fils P.O. Box 16-5857 Gergi Zeidan St. Chahine Building, Achrafieh Beirut, LEBANON TEL: (01) 335799

OMAN

OHI Electronics & Trading P. O. Box 889 Muscal Sultanate of OMAN TEL: 706 010

QATAR

Badie Studio & Stores P.O.Box 62, DOHA QATAR TEL: 423554

SAUDI ARABIA

SAF Music Center AL-Khobar 31952, P. O. Box 1366 SAUDIARABIA TEL: (03) 898 3311

Abdul Latif S. Al-Ghamdi Trading Establishment Middle East Commercial Center Al-Khobar Dharan Highway W/hamood st. P. O. Box 3631 Al-Khober

SYRIA

Technical Light & Sound Center Khaled Ebn Al Walid St. P.O.Box 13520 Damascus - SYRIA TEL: (011) 2235 384

31952 SAUDIARABIA

TEL: (03) 898 2332

Barkat Sanayi ve Ticaret Siraselvier Cad. Guney Ishani No. 86/6 Taksim, Istanbul TURKEY TEL: (0212) 2499324

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