




DUAL EQUALIZER

E-232

	<p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK DO NOT OPEN</p>	
<p>CAUTION</p> <p>TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL</p>		

 THE LIGHTNING FLASH WITH ARROWHEAD WITHIN A TRIANGLE IS INTENDED TO TELL THE USER THAT PARTS INSIDE THE PRODUCT ARE A RISK OF ELECTRIC SHOCK TO PERSONS.


 THE EXCLAMATION POINT WITHIN A TRIANGLE IS INTENDED TO TELL THE USER THAT IMPORTANT OPERATING AND SERVICING INSTRUCTIONS ARE IN THE PAPERS WITH THE APPLIANCE.

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Please follow the instructions in this manual to obtain the optimum results from this unit. We also recommend that you keep this manual handy for future reference.

1. PRECAUTIONS

- Operating voltage is AC mains (50 / 60 Hz) $\pm 10\%$.
- If irregularities occur, first unplug the power cord from the wall outlet, then contact your nearest TOA dealer.

2. GENERAL DESCRIPTION

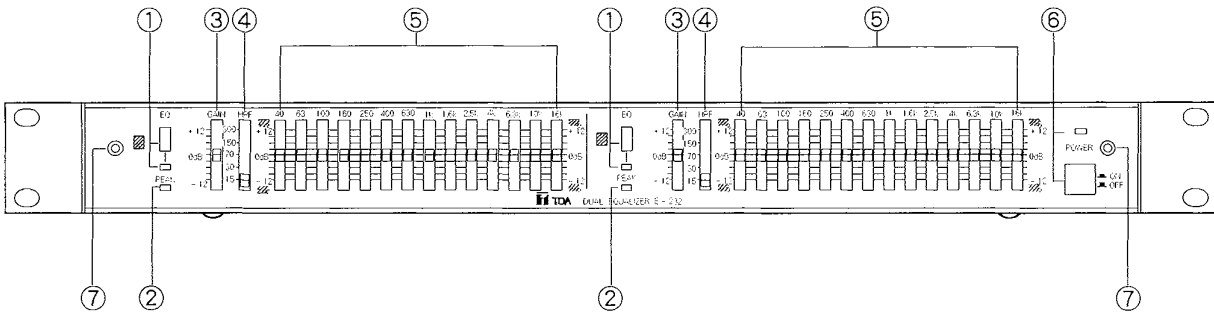
The TOA E-232 is a 19" rack mountable (1 unit size), dual-channel 2/3 octave graphic equalizer.

3. FEATURES

- Dual-channel construction. 14 filters per channel on 2/3 octave center frequencies from 40 Hz to 16 kHz.
- Allows fine audio adjustment because each bandwidth (Q) remains constant whatever the equalization amount is.
- Provides either 12 dB or 6 dB boost or cut per channel.
- Gain control (+12dB to -12dB), high-pass filter (-12 dB/octave and variable from 15 Hz to 300 Hz), EQ switch (ON / OFF) and peak indicator per channel.
- Automatic equalizer bypass function provides complete signal bypass of this equalizer in the event of an AC power loss, allowing the sound output to be maintained.
- Optional input and output transformers for I / O conversion to balanced type.
- Security cover is included.

4. NOMENCLATURE AND FUNCTIONS

[Front Panel]



① EQ ON / OFF button and EQ indicator [EQ]

Press this button to operate the equalizer. (The EQ indicator will light.) Press this button again to bypasses the unit. (The indicator is extinguished.)

② Peak indicator [PEAK]

This indicator lights when the input or output signal level comes within 3 dB of clipping. Adjust the input signal level so that the indicator lights only occasionally.

③ Gain control [GAIN]

This control adjusts the variable gain of -12 dB to +12dB depending on the input signal level.

④ HPF cut-off frequency control [HPF]

This control adjusts the cut-off frequency of a high-pass filter that rejects undesired low frequency components. The filter has a slope of -12 dB per octave and is variable from 15 Hz to 300 Hz.

⑤ Equalization controls

These controls provide equalization at each of 14 frequencies, all of which are centered at 2/3 octave increments from 40 Hz to 16 kHz.

Boost / cut range can be set for either 6 dB or 12 dB using an internal switch.

After setting completion, attach the supplied blind label to the unused range indication on the front panel, so that the set range can be known at a sight. Boost and cut are factory-preset for 12 dB. (Refer to p.5 "5. INTERNAL SWITCH SETTINGS.")

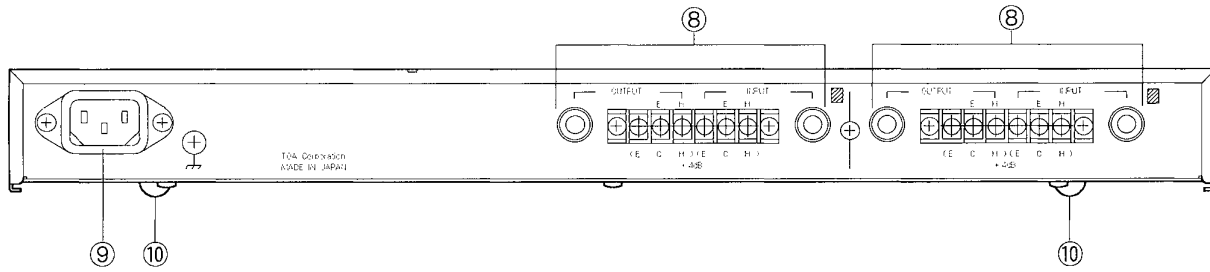
⑥ Power button and power lamp [POWER]

This button switches power on (the lamp lights) and off (the lamp is extinguished).

⑦ Security cover fixing holes

These holes are provided to fix the security cover which protects control settings from accidental change. Mount the cover after setting completion, and secure with the supplied screws.

[Rear Panel]



⑧ Input and output terminals [INPUT, OUTPUT]

These terminals are of unbalanced type. Phone jacks and screw terminals are connected in parallel. When using the screw terminals, "H" is hot and "E" is a grounding point.

The inputs and outputs can be converted into balanced type by installing an optional transformer in the unit.

To make a balanced connection, be sure to use the screw terminals (H : Hot, C : Cold, and E : Ground).

For details, refer to p.6 " 6. OPTIONAL TRANSFORMER ".)

[Input/output specifications]

		Rated level	Maximum level	Impedance
INPUT	GAIN : +12	- 8 dB	+ 8 dB	30 kΩ
	GAIN : 0	+ 4 dB	+ 20 dB	
	GAIN : -12	+ 16 dB	+ 32 dB	12 kΩ
OUTPUT		+ 4 dB	+ 20 dB	1 kΩ

0dB=0.775Vrms

⑨ AC inlet

Connect this inlet to the wall outlet via the supplied power cord.

⑩ Rubber feet (standard accessories)

Depending on the installation conditions, attach the supplied rubber feet to the bottom of chassis. (4 places)

5. INTERNAL SWITCH SETTINGS

[CAUTION]

THESE SERVICING INSTRUCTIONS ARE FOR USE BY QUALIFIED PERSONNEL ONLY. TO AVOID ELECTRIC SHOCK DO NOT PERFORM ANY SERVICING OTHER THAN THAT CONTAINED IN THE OPERATING INSTRUCTIONS UNLESS YOU ARE QUALIFIED TO DO SO. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

The E-232 enables the following functions by setting the internal switches.

(1) Equalization range setting

Boost (amplification) or cut (attenuation) can be set for either 6 dB or 12 dB per channel.

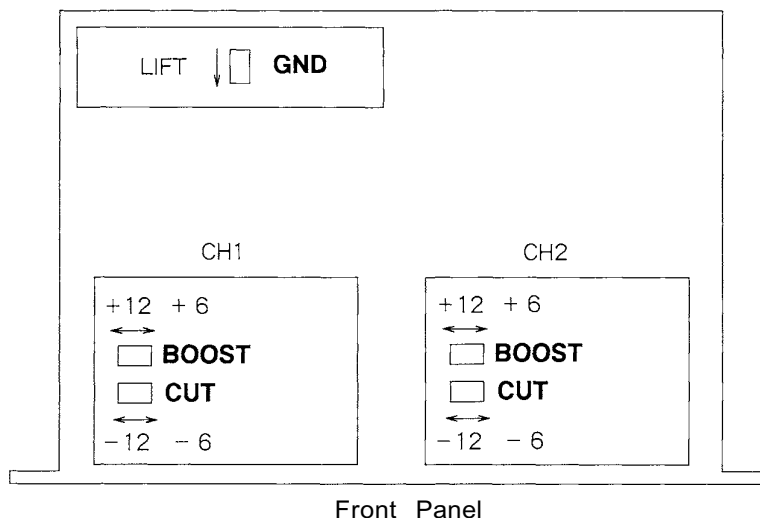
(2) Ground loop cut [GND switch]

Depending on connected equipment, a ground loop that generates hum noise may be created. In such a case, set the GND switch to "LIFT" position to cut the ground loop.

How to open the unit's case

1. Set the power switch to OFF , and unplug the power cord from the wall outlet.
2. Remove case fixing screws (10 places).
 - 4 per mounting bracket on both sides = 8
 - 1 each on both side panels = 2
3. Remove the case.
4. Replace the case after setting change completion.

<Location of switches>



[Precautions]

- To avoid electrical shocks and equipment failure, do not touch the unit's internal components other than switches.
- Each internal switch is factory-preset as follows.
 - GND switch : Position opposite to that indicated by the arrow
 - Boost switch : +12 dB (both channels)
 - Cut switch : -12 dB (both channels)

6. OPTIONAL TRANSFORMER

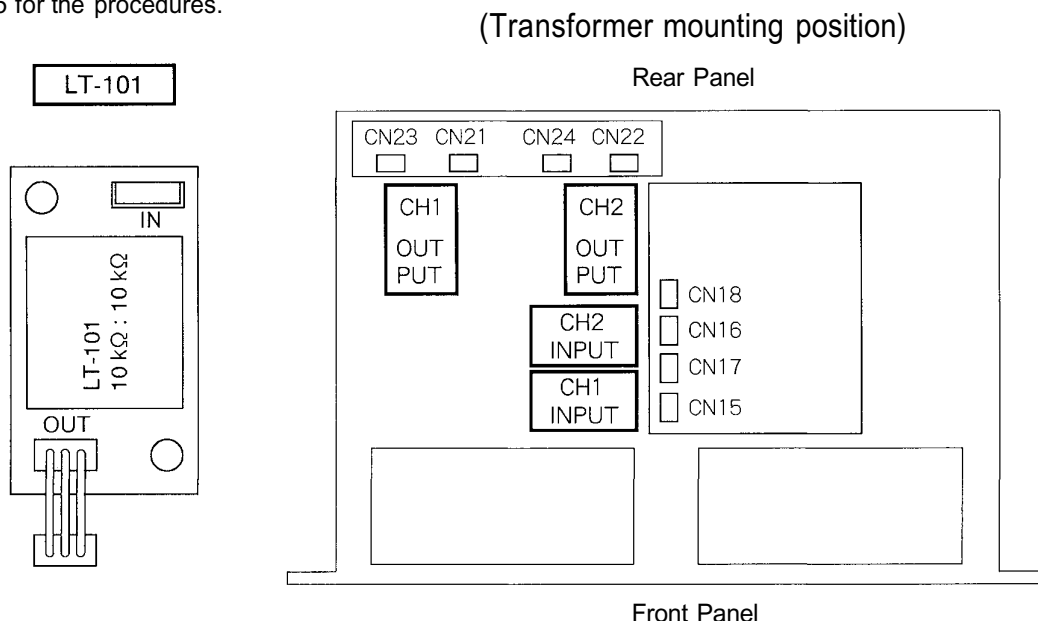
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The unbalanced inputs and outputs can be made balanced type by using the optional transformer LT-101.

6.1 How to open the unit's case

Refer to p.5 for the procedures.



Fix the sleeves (supplied with LT-101) to the unit's chassis using screws from the other side of the chassis. Then, mount the LT-101 on the sleeves with screws.

6.2 Connections

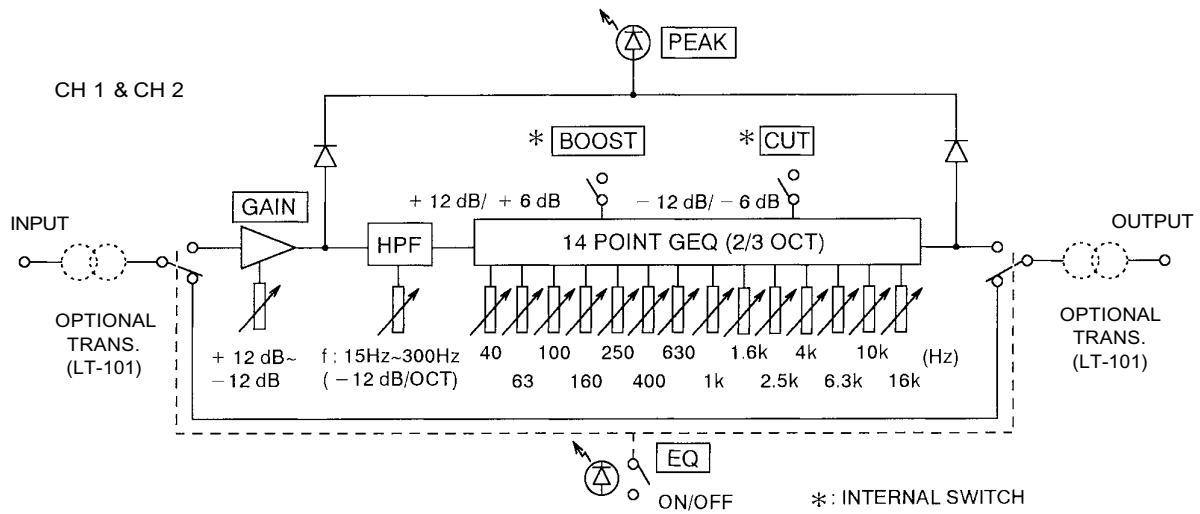
	Input	Output
CH1	CN23 → LT-101's "IN" LT-101's "OUT" → CN15	CN17 → LT-101's "IN" LT-101's "OUT" → CN21
CH2	CN24 → LT-101's "IN" LT-101's "OUT" → CN16	CN18 → LT-101's "IN" LT-101's "OUT" → CN22

6.3 LT-101's Specifications

	LT-101
Impedance Ratio	10 kΩ : 10 kΩ
Frequency Response	30 Hz -20 kHz ±0.15 dB
Constant Loss	Less than 1.5 dB at 1 kHz
Distortion	Less than 0.2% (+ 5 dB * / 50 Hz)

* 0 dB=0.775Vrms

7. BLOCK DIAGRAM



8. SPECIFICATIONS

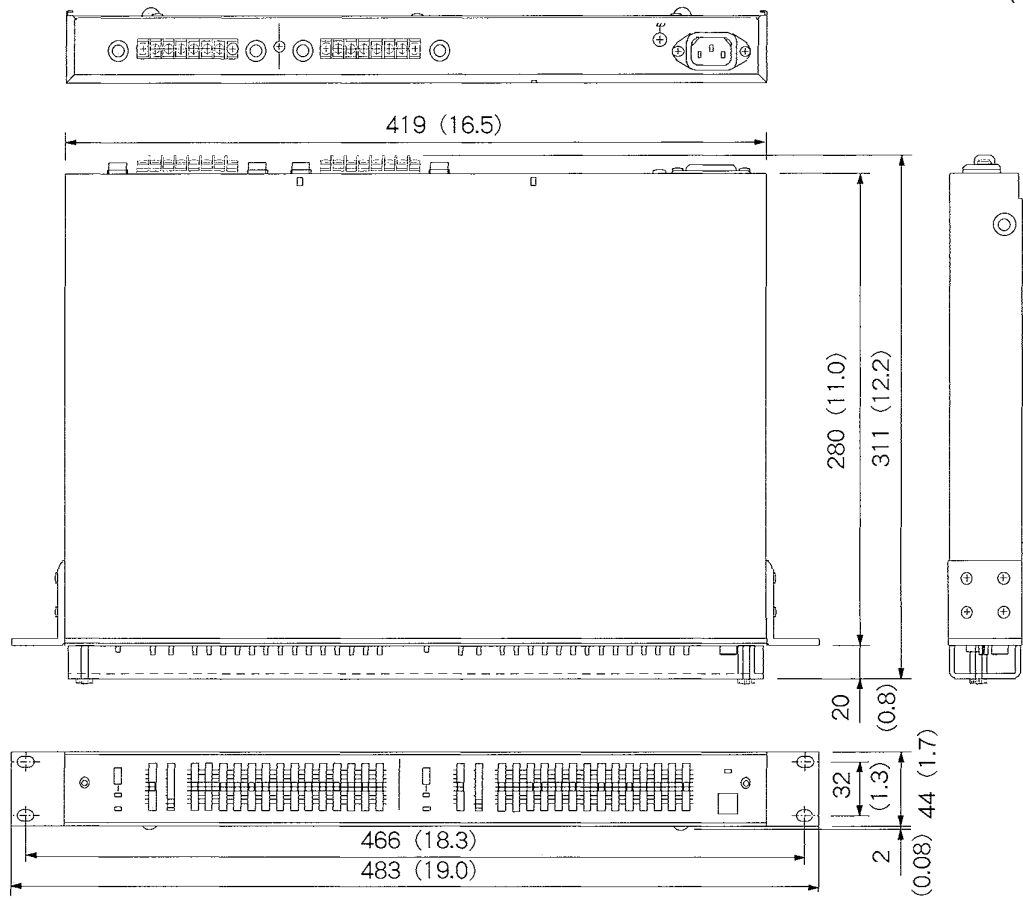
Frequency Response	20 Hz to 20 kHz +1, -2 dB			
Total Harmonic Distortion	Less than 0.01% (1 kHz rated input/output)			
Noise Level (IHF-A)	Less than -98 dB* (EQ : ON, all equalization controls : 0, GAIN : 0, HPF:15Hz)			
Input	+4 dB* ,30 kΩ (GAIN: 0)			
Output	+4dB* ,1 kΩ			
Gain	+12 dB to -12 dB adjustable			
Center Frequency (Hz)	40, 63, 100, 160, 250, 400, 630, 1 k, 1.6 k, 2.5 k, 4 k, 6.3 k, 10 k, 16 k			
Equalization Range	Boost: +12 dB or +6 dB, Cut: -12 dB or -6 dB (selectable by internal switches)			
Highpass Filter	-12 dB per octave (cutoff frequency : 15 Hz to 300 Hz variable)			
Power Requirements	120VAC/220-240VAC, 50/60Hz			
Power Consumption	11W(120VAC), 13W(220-240VAC)			
Color	Black			
Dimensions	483 (W) X 44 (H) X 311 (D) mm (19.0 X 1.7 X 12.2 in.)			
Weight	3.8 kg (8.4 lb.)			
Standard Accessories	Security cover	1	Operating instructions	1
	Security cover fixing screw	2	Blind label	1 sheet
	Rubber foot	4	Warranty card	1
	Rack mounting screw	4	(for USA and Canada)	

* 0 dB=0.775V rms

Specifications are subject to change without notice.

9. DIMENSIONAL DIAGRAM

Unit: mm (in.)



TOA Corporation

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