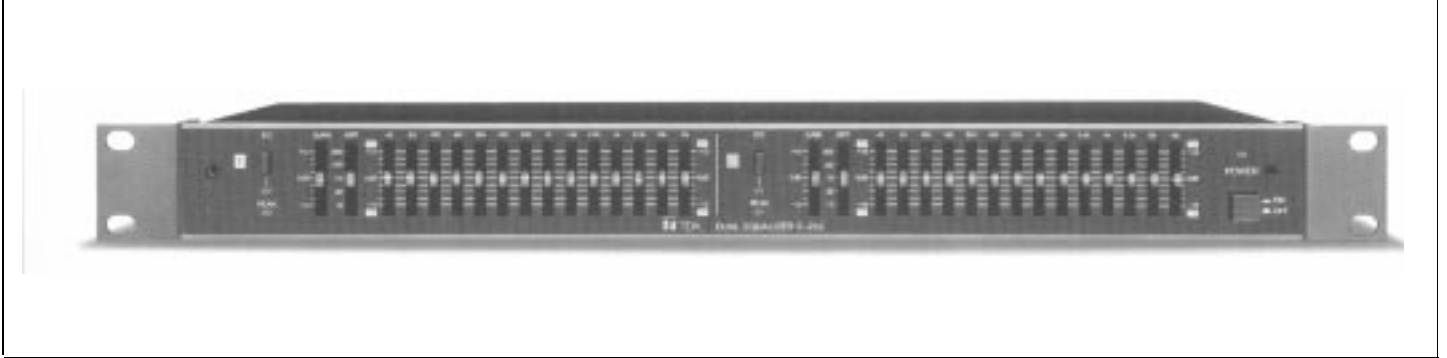


TOA PROFESSIONAL SOUND SYSTEM

2/3 OCTAVE GRAPHIC EQUALIZER

E-232



DESCRIPTION

The TOA E-232 is a dual-channel 14-band, 2/3-octave equalizer, designed to provide clean and accurate audio equalization for permanent installations. The E-232 provides 6dB or 12dB of boost or cut at each of its 14 frequencies, all of which are centered at ISO 2/3-octave increments from 40Hz to 16kHz. The E-232 comes with active bandpass/bandreject filters that are designed for minimum phase shift. Slide controls feature a precision-calibrated linear scale, noiseless operation, and center detents for easy and accurate adjustment. Filters are summed in parallel for reliability, so that the failure of one filter does not interrupt operation of the others.

A unique feature of the E-232 is the ability to set the boost range and the cut range independently on each channel. A switch for each channel selects 6dB or 12dB for the boost and another for the cut. For example, ranges of 6dB boost and 12dB cut can be set on one channel and 12dB boost and 6dB cut on the other. The 6dB positions spread the adjustment over the full boost or cut portion of the sliders' travel. This, along with the calibrated linear scale, allows precise, repeatable adjustments to fractions of a dB in spite of the unit's one rack size. This feature also allows accurate matching of the equalization between the left/right channels in stereo program systems.

A continuously variable highpass filter offers an exceptionally wide control range. The highpass filter has a slope of 12dB per octave and is variable from 15Hz to 300Hz. An EQ In/Out switch and an automatic EQ bypass function (in the event of an AC power loss) provide a complete signal bypass of the unit. An output muting circuit suppresses turn-on/turn-off transients.

The input level control has a ± 12 dB adjustment range, to allow for a wide variety of input levels/sources. An LED indicator monitors both input and output levels and illuminates when either comes within 3dB of clipping. The inputs and outputs are unbalanced and utilize terminal strip connectors and 1/4" phone jacks. High-quality, low-distortion input and output transformers providing 30Hz-20kHz response (± 0.15 dB) are optional, and installation requires no soldering.

A security cover is included with the E-232 to guard against disturbance or tampering. The E-232 occupies one standard EIA rack space.

FEATURES

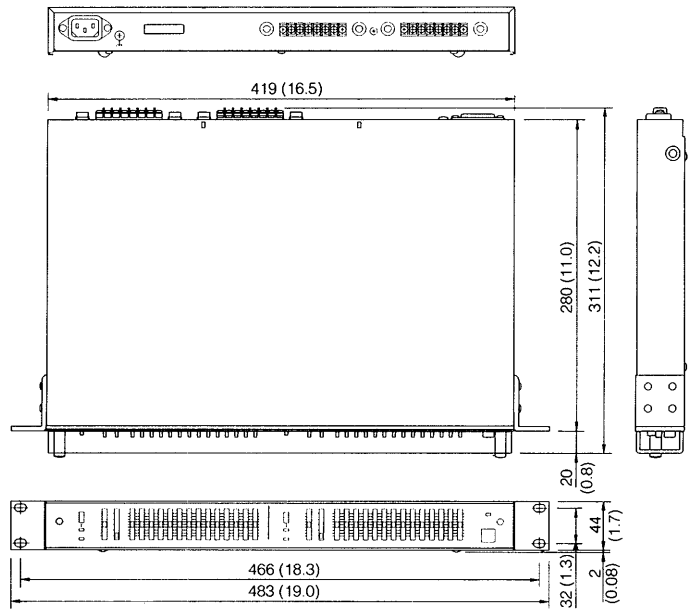
1. 14 filters on ISO 2/3-octave center frequencies from 40Hz to 16kHz.
2. Continuously variable 6dB or 12dB of boost or cut at each center frequency.
3. High-quality, minimum phase shift active filters.
4. Noiseless center-detent slide controls with precision-calibrated linear scales.
5. Continuously variable highpass filter with wide control range.
6. EQ In/Out switch for manually bypassing equalizer.
7. Automatic EQ bypass circuitry in case of AC power loss.
8. LED peak indicator monitors input and output levels, for proper gain structuring.
9. Variable input level control allows a variety of input levels and sources.
10. Optional isolation transformer (LT-101) for converting unbalanced inputs to balanced.
11. Security cover is included.

SPECIFICATIONS

PERFORMANCE:	
Frequency Response	20Hz to 20kHz (+1.0, -2.0dB)
Total Harmonic Distortion	Less than 0.01% at 1kHz, all sliders at 0 position, rated output
Hum and Noise	-98dB (EQ in, IHF-A, all sliders at 0 position)
INPUT & OUTPUT:	
Input	
Input Impedance	30k ohms (Input level control set at 0 position)
Rated Input Level	+4dB* (Input level control set at 0 position)
Maximum Input Level	+32dB (Input level control set at -12dB)
Output	
Output Impedance	1k ohm
Rated Output Level	+4dB*
Maximum Output Level	+20dB*
CONTROLS & PANEL FUNCTIONS:	
(Front Panel)	
Equalizer Sliders	
Bands	14
Center Frequencies	Standard ISO center frequencies from 40Hz to 16kHz
Boost	+6dB or +12dB (Selectable each channel)
Cut	-6dB or -12dB (Selectable each channel)
Input Level Control	±12dB
Highpass Filter	Adjustable -3dB frequency: 15Hz to 300Hz, 12dB per octave
Pre-Peak Indicator	Red LED (Lights when input or output reaches 3dB below clipping)
Power	On/Off push switch with green LED indicator
(Rear Panel)	
Input	Screw terminals (H=Hot, C=Cold, E=Ground), unbalanced 1/4" phone jacks
Output	Screw terminals (H=Hot, C=Cold, E=Ground), unbalanced 1/4" phone jacks
Ground	Signal Ground to Chassis Ground
POWER:	
Power Requirements	AC mains, 50/60Hz
Power Consumption	11 watts (120V version); 13 watts (220-240V version)
PHYSICAL:	
Finish	
Front Panel	Aluminum, black
Case	Steel, black
Dimensions (W x H x D)	483 x 44 x 311mm (19.0 x 1.7 x 12.2in.) EIA rack mount
Net Weight	3.8kg (8.4lbs.)
OPTIONAL ACCESSORIES:	LT-101 Input Transformer

* 0dB is referenced to 0.775V RMS

APPEARANCE AND DIMENSIONAL DIAGRAM



Unit: mm (in.)

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

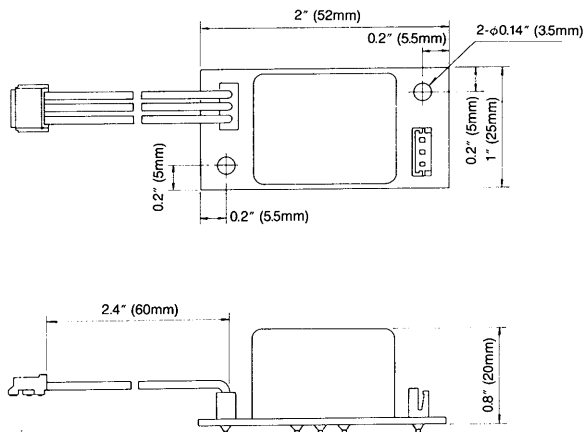
The dual-channel equalizer shall contain 14 filters on ISO center frequencies from 40Hz to 16kHz. Each filter section shall provide 6dB or 12dB of cut and boost at the center frequency, with linear slide control operation and a graphic display of the equalization curve. An internal switch shall allow independent selection of both the boost and the cut range for each channel. The filters shall be minimum-phase type. The equalizer shall contain a highpass filter having the following characteristics: -12dB/octave with -3dB point continually adjustable from 15Hz to 300Hz. The equalizer shall be provided with an EQ bypass switch to remove all equalizer and end-cut filters from the signal chain, with an LED indicator showing status. The input circuit shall be electronically unbalanced, and capable of driving a load of 1k ohm or higher. The unit shall accept optional LT-101 input transformer which shall be internally installed by means of standoffs and plug-in connectors. The unit shall contain a relay circuit which bypasses all internal electronics in the event of power failure. An output muting function shall be provided to suppress turn-on and turn-off transients. Barrier strip connectors and unbalanced 1/4" phone jacks shall be provided for input and output signal wiring. The unit shall be provided with a front panel power switch with an LED indicator showing Power On status. The input amplifier shall include a gain control with a ±12dB range. An LED indicator shall be supplied to monitor both input and output levels and shall illuminate when either comes within 3dB of clipping. The unit shall measure 483(W) x 44(H) x 311 (D)mm (19.0" x 1.7" x 12.2") with rack mount ears attached, and shall occupy one standard EIA rack space. A smoked plastic security cover shall be provided. The equalizer shall be the TOA E-232 2/3-octave graphic equalizer.

OPTIONAL MATCHING TRANSFORMER

LT-101
Input Transformer



APPEARANCE AND DIMENSIONAL DIAGRAM LT-101



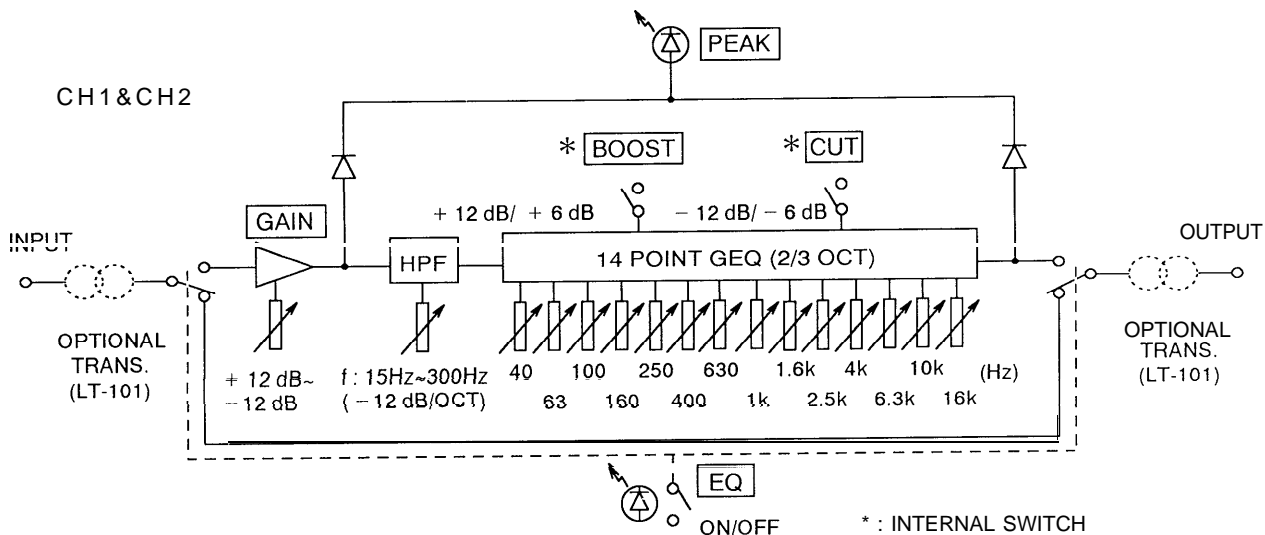
SPECIFICATIONS

Model No.	LT-101
Impedance	10k ohms: 10k ohms
Frequency Response	30Hz to 20kHz at ± 0.15 dB
Distortion	Less than 0.2% (50Hz, 5dB*)
Constant Loss	Within 1.5dB (at 1 kHz, 1V)
Weight	44g (0.1 lbs.)
Accessories	Sleeve (2), Screw (4)

* $0dB = 0.775V_{rms}$

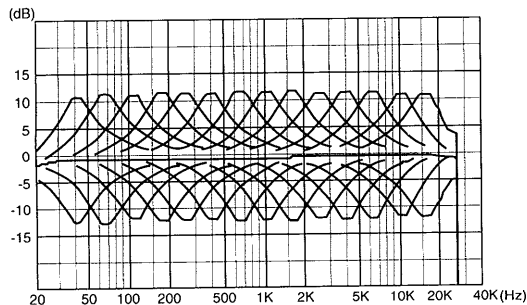
** The transformer mounts at predrilled chassis hole locations.
Transformer connections are made via plug-in multi-pin connectors
No soldering is required.

BLOCK DIAGRAM

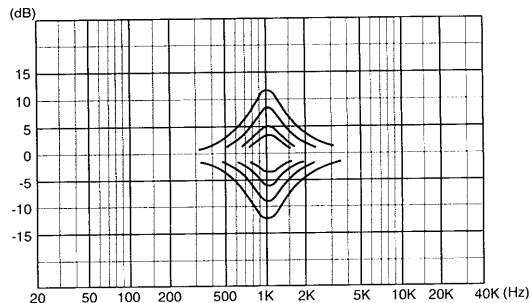


CHARACTERISTICS DIAGRAMS

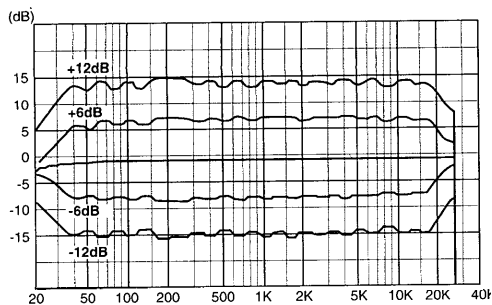
- Frequency Response (Each slider is set at a max. or min. position)



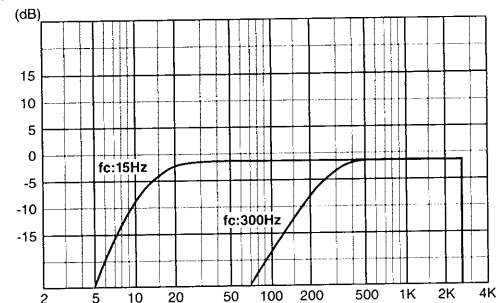
- Frequency Response (ex. 1kHz slider)



- Frequency Response (ex. All slider is set at a max. or min. position)



- Highpass Filter





* Specifications are subject to change without notice

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