

## TOA SPEAKER COMPONENT

# LOW-FREQUENCY LOUDSPEAKER

## HLS38UL-8/16



### DESCRIPTION

The HLS38UL is a 380mm (15 in.) low-frequency loudspeaker designed for professional applications in high level sound reinforcement environments such as studios, theaters, concert halls, auditoriums, discos and live sound reinforcement applications, where high efficiency, ultra-low-frequency response, and faithful reproduction are required. The HLS38UL offers high power handling capacity and a uniform frequency response from 30Hz to 3,000Hz. A crossover frequency of 1,000Hz or lower is recommended to obtain smoothest overall system response. Nominal impedance is 8 ohms for the HLS38UL-8, and 16 ohms for the HLS38UL-16. The loudspeaker employs a low-mass 72mm (2.8 in.) diameter voice coil of edgewound copper ribbon on an aluminum coil form, which operates in a flux density of 14,200 gauss. The voice coil is driven by double ferrite magnets, which are supported by a rugged diecast aluminum frame. The cone suspension is made of exceptionally high-compliance, damped-cloth surround.

### FEATURES

1. Smooth, extended ultra-low-frequency response.
2. High power handling capacity: 500 watts continuous pink noise (AES Standard).
3. High efficiency and linearity in ultra-low response.
4. Low distortion.
5. Voice coil of edgewound copper ribbon, with an aluminum coil form.
6. Powerful double ferrite magnet structure.
7. Rigid diecast aluminum construction.

## SPECIFICATIONS

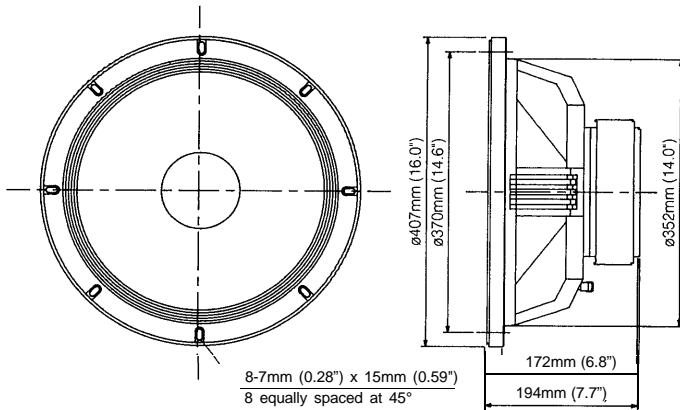
Nominal Diameter	380mm (15 in.)
Nominal Impedance	HLS38UL-8: 8 ohms HLS38UL-16: 16 ohms
Minimum Impedance above Fs	HLS38UL-8: 8.0 ohms $\pm 10\%$ (25°C) HLS38UL-16: 16 ohms $\pm 10\%$ (25°C)
Power Handling Capacity* <sup>1</sup>	500 watts continuous pink noise (AES standard)
Sensitivity* <sup>2</sup>	98dB SPL (1W/1m)
Frequency Range	30Hz to 3,000Hz
Highest Recommended Crossover Frequency	1,000Hz
Effective Piston Diameter	330mm (13 in.)
Displacement Limit (p-p)	40mm (1.6 in.)
Voice Coil Diameter	72mm (2.8 in.)
Voice Coil Material	Edgewound copper ribbon
Voice Coil Insulation	Aluminum
Voice Coil Winding Depth	25mm (1.0 in.)
Top-Plate Thickness	12mm (0.47 in.)
BI Factor	HLS38UL-8: 21.1 N/A HLS38UL-16: 27.3 N/A
Effective Moving Mass	0.090kg
Flux Density	14,200 gauss
Polarity	Positive voltage on plus (RED) terminal gives forward diaphragm motion.

THIELE-SMALL PARAMETERS	
fs	40Hz
Re	HLS38UL-8: 5.8 ohms HLS38UL-16: 11.6 ohms
Qts	0.26
Qms	2.3
Qes	0.29
Vas	180 lit. (6.36 ft <sup>3</sup> )
Sd	0.086m <sup>2</sup> (133 in <sup>2</sup> )
Xmax	7.7mm (0.30 in.)
Vd	660cm <sup>3</sup> (40.3 in <sup>3</sup> )
no (half space)	3.9%
Pe (Max)	500 watts continuous pink noise
MOUNTING DATA	
Overall Diameter	407mm (16.0 in.)
Bolt Pattern Diameter	370mm (14.6 in.)
Baffle Cutout Diameter	Front Mount: 354mm (13.9 in.) Rear Mount: 350mm (13.8 in.)
Depth	194mm (7.64 in.)
Loudspeaker Volume	6 lit. (0.21 ft <sup>3</sup> )
Weight	13kg (29 lbs.)
Standard Accessories	Mounting screws, washers and nuts: each 8

### Notes

- \* AES Standard is 60Hz to 600Hz continuous pink noise, at -12dB/Octave cut-off, and with a 6dB crest factor, measured for 2 hours, with the unit suspended in free air.
- \* Sensitivity is based on a band-limited (100 to 800Hz) pink noise signal.
- Specifications are subject to change without notice.

## APPEARANCE AND DIMENSIONAL DIAGRAM

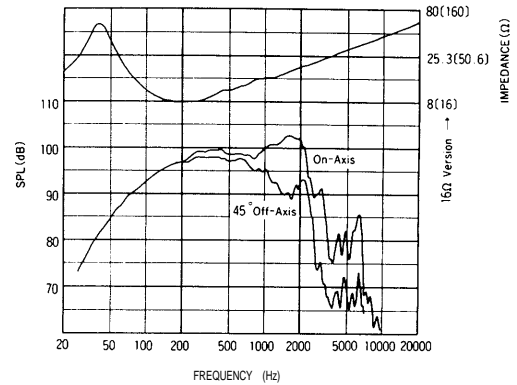


## ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The low-frequency loudspeaker shall be TOA Model HLS38UL-8/16 or approved equivalents. The loudspeaker shall have a 380mm (15 in.) nominal diameter, with a bolt pattern diameter of 370mm (14.6 in.), a weight of 13kg (29 lbs.), and a depth of 194mm (7.64 in.). The loudspeaker shall have a rigid diecast aluminum frame that shall permit front or rear mounting. The loudspeaker shall have a 500 watts, AES Standard power-handling capacity and a uniform frequency response from 30Hz to 3,000Hz, with a recommended crossover frequency of 1,000Hz or lower to obtain smoothest overall system response. Band-limited (100 to 800Hz) pink noise sensitivity shall be 98dB SPL (1W/1m). Nominal impedance shall be 8/16 ohms. The loudspeaker shall employ a low-mass 72mm (2.8 in.) diameter voice coil of edgewound copper ribbon of 25mm (1.0 in.) winding depth, on an aluminum coil form, operating in a flux density of 14,200 gauss. The voice coil shall be driven by double ferrite magnets. Effective moving mass shall be 0.090kg. The cone suspension shall be made of exceptionally high-compliance, damped-cloth surround

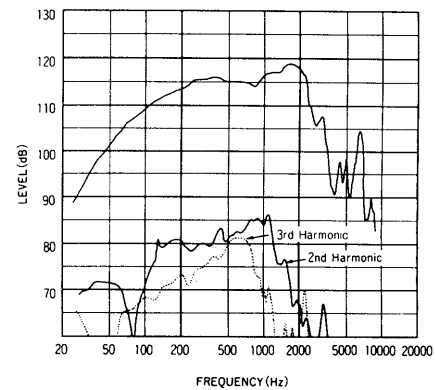
## CHARACTERISTIC DIAGRAMS

### •Frequency Response and Impedance Curve



Frequency response is measured in a spherical free-field environment, under 1 watt & 1 meter conditions, with a swept sine wave signal, while the speaker unit is mounted in an 120-liter sealed box. The impedance magnitude curve is measured while the speaker is suspended in free air, with its cone in the vertical plane

### •Distortion Response



Distortion response is measured with a swept sine wave signal, at 50 watts (-10dB power) & 1 meter, and while the speaker unit is mounted in an 120-liter sealed box.