CB259z/259zx Specifications

group • C

DESCRIPTION

The CB259z high power, full range 2-way stage/screen loudspeaker system fills theaters with all the high impact, full-range sound encoded on today's digital soundtracks while reproducing voices clearly and naturally.

The two component system includes a BV253z vented dual 15-in low frequency unit and a HK259z high frequency system - a medium format 90° x 45° HF horn loading a large diaphragm 2-in exit compression driver. The HK259z's constant directivity horn assures even distribution of high frequency information to every seat in the house. Its shortened horn throat minimizes horn throat distortion, eliminating the 700Hz "honk" that has plagued cinema HF horns.

The BV253z's optimally vented enclosure uses enclosure resonance to increase LF response while limiting driver excursion. This method produces less distortion and minimizes driver strain while extending LF response to the lowest octaves of human hearing. Its shallow enclosure dimensions allow convenient placement behind the screen.

The adjustable steel bracket attaching the horn to the LF enclosure can be positioned at one of four mounting points for optimum front/rear HF horn placement. The bracket allows the HF horn to be aimed independently of the LF section in both the horizontal and vertical planes and can be locked once it is positioned. The HF component comes completely pre-assembled from the factory to minimize assembly time.

The LF component's high power input signal requires the use of a two-terminal barrier strip input connector to create a gas-tight connection, minimizing corrosion and maximizing signal transfer. The barrier strip accommodates bare wire, tinned leads or spade lugs. The compression driver comes complete with wires long enough to connect to the LF section, allowing the user to connect both devices in the same location. Input connectors are located on the side of the LF enclosure for convenient access in cramped installation areas.

Users can convert the CB259z to the full range passive CB259zx by ordering and installing the optional passive crossover/filter kit. This allows the CB259zx to be powered by a single amplifier channel.

2-WAY FULL-RANGE LOUDSPEAKER SYSTEM 90° × 45°

See *NOTES TABULAR DATA* for details

CONFIGURATION

Subsystem:

	Transducer	*Loading*
LF	2× 15 in cone	Vented
HF	1× 2 in exit, 3 in voice coil compression driver	Horn-loaded

Operating Mode:

	Amplifier Channels	*External Signal Processing*
Single-amp	LF/HF	High pass filter
Bi-amp	LF,HF	DSP w/2-way filters

PERFORMANCE [1]

Operating Range: 40 Hz to 20 kHz

Nominal Beamwidth: *(rotatable)*

Horz	90°
Vert	45°

Axial Sensitivity *(whole space SPL):*

LF/HF	99 dB	40 Hz to 20 kHz
LF	102 dB	40 Hz to 1500 Hz
HF	108 dB	800 Hz to 20 kHz

Input Impedance *(ohms):*

	Nominal	*Minimum*
LF/HF	4	4.3 @ 122 Hz
LF	4	4 @ 230 Hz
HF	8	7.5 @ 3000 Hz

High Pass Filter: High Pass =>44 Hz, 12 dB/octave Butterworth

Accelerated Life Test: [2]

LF/HF	63.3 V	1000 W @ 4 ohm
LF	63.3 V	1000 W @ 4 ohm
HF	28.3 V	100 W @ 8 ohm

Calculated Axial Output Limit *(whole space SPL):*

	Average	*Peak*
LF/HF	129 dB	135 dB
LF	132 dB	138 dB
HF	128dB	134 dB

ORDERING DATA

Description	**Part Number**
EAW HK294z Horn Kit	2037628-90
EAW BV253z LF Cabinet	2037548-90
Optional Accessories	
Passive Crossover Kit XK259zx	2037625-90

SYSTEM SPECIFICATION STANDARD

Eastern Acoustic Works • One Main Street • Whitinsville, MA 01588 • tel 800 992 5013 / 508 234 6158 • fax 508 234 8251 • www.eaw.com

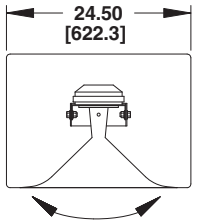
Part Number: RD0654 Rev A00 January 2012

ENCLOSURE

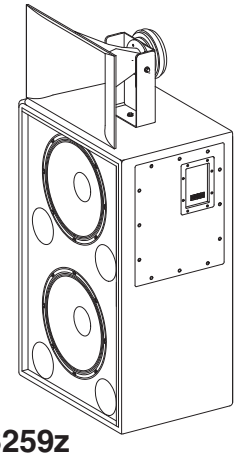
Material Medium density hardwood plywood
Finish Wear resistant black paint

REV	CHANGE NUMBER	DATE
A	ECOWHT8179	12/8/11

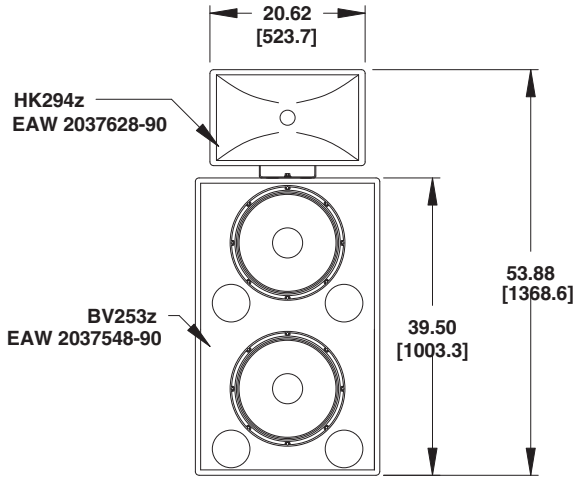
NOTES:
1. **WEIGHT APPROX:**
   2037628-90 (HK294z) 19.6 lb. [8.9 kg.]
   2037548-90 (BV253z) 96.6 lb. [43.8 kg.]
2. **SHIPPING WEIGHT APPROX:**
   2037628-90 (HK294z) 27.4 lb. [12.4 kg.]
   2037548-90 (BV253z) 108.6 lb. [49.3 kg.
3. **EACH PRODUCT SHIPS SEPARATELY.**



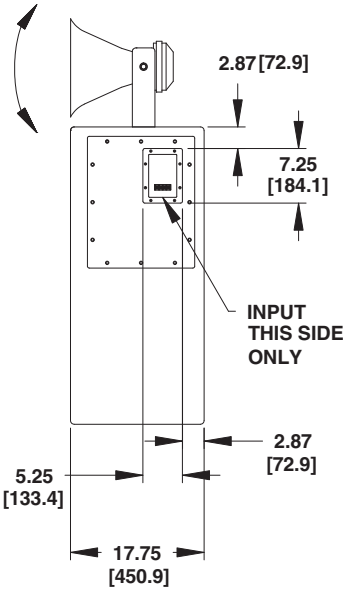
TOP



CB259z



FRONT



RIGHT SIDE

THIRD ANGLE PROJECTION

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UNLESS OTHERWISE SPECIFIED:
ALL DIMENSIONS ARE IN INCHES
DUAL [MM] DIMENSIONS
FOR REF ONLY

TOLERANCES
LINEAR ± 0.13 in/ ± 3.3 mm
ANGLES ±1°

(X.XX) = REF DIMS
NO TOLERANCE IMPLIED

TSC=THEORETICAL SHARP CORNER

DIMENSIONS ACROSS CENTERLINES TO BE SYMMETRICAL

EAW www.eaw.com

TITLE: DWG CUSTOMER CB259z [MECHANICAL SPECIFICATION]

A | SHEET 1 OF 1 | SCALE: 1 TO 16

DRAWING NUMBER: 2037632-CD | REVISION: A

VELLUM

NOTE: This drawing has been reduced. Do not scale.

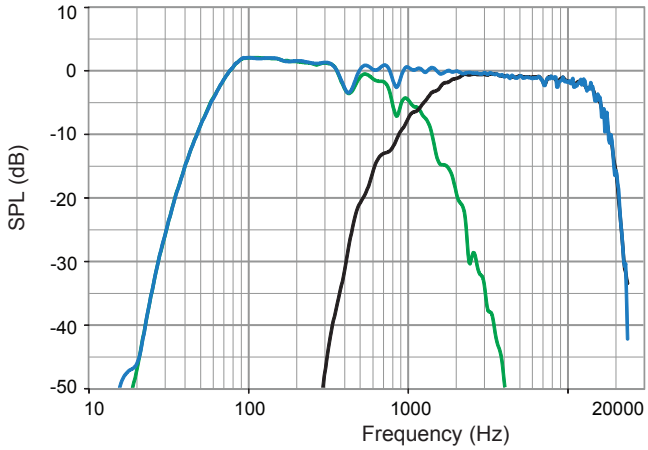
SYSTEM SPECIFICATION STANDARD

PERFORMANCE DATA

See *NOTES GRAPHIC DATA* for details

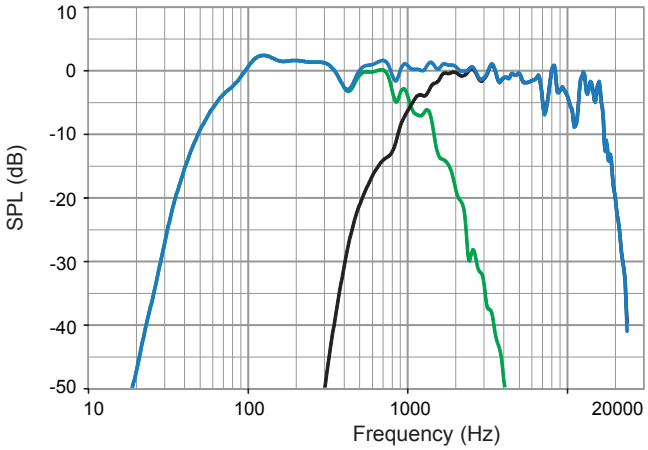
Frequency Response: Processed - Focused

LF = green, HF = black, Complete = blue



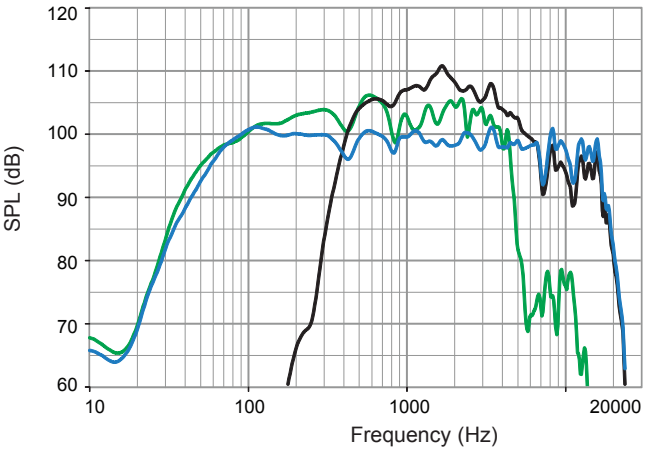
Frequency Response: Processed

LF = green, HF = black, Complete = blue



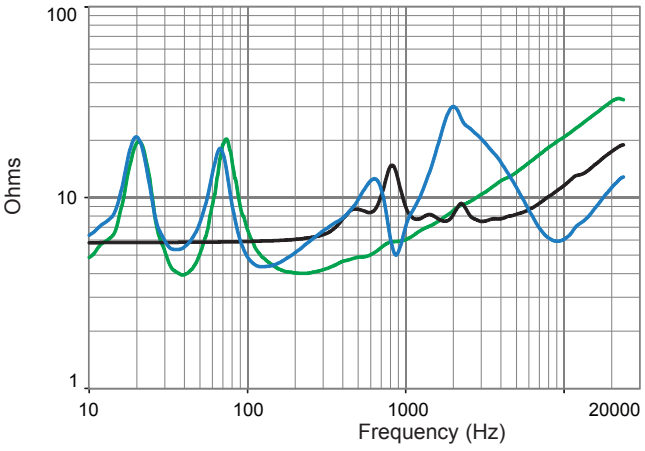
Frequency Response: Unprocessed

LF = green, HF = black, Single-amp = blue



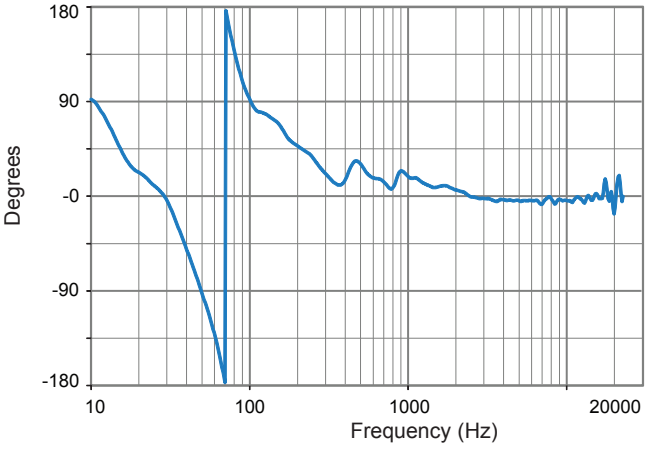
Impedance

LF = green, HF = black, Single-amp = blue



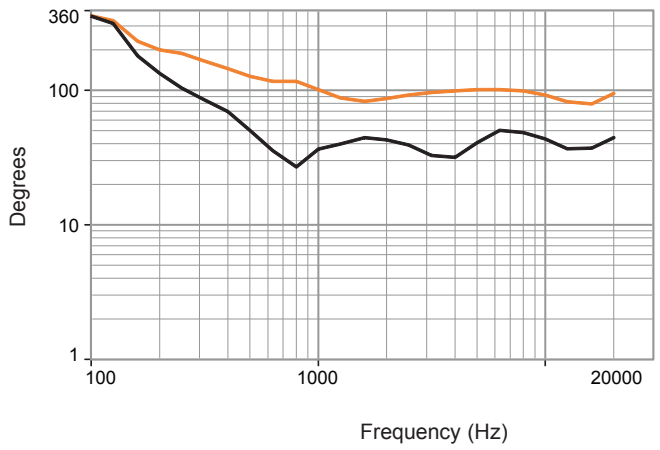
Phase Linearity

Complete = blue



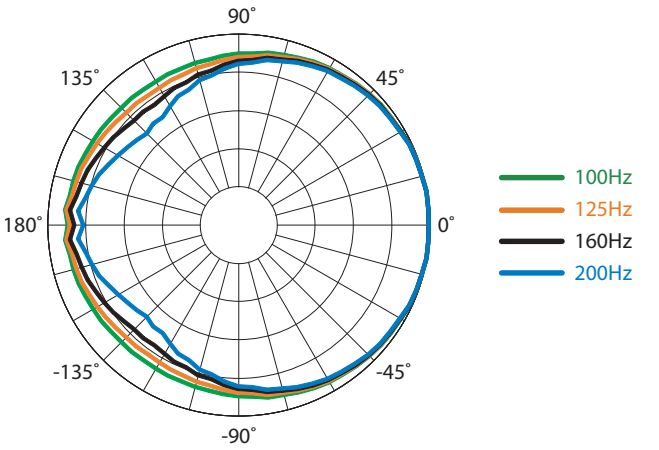
Beamwidth

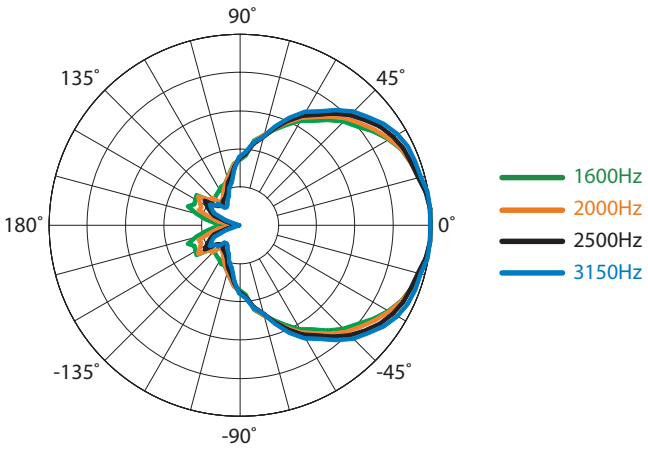
Horizontal = orange Vertical = black

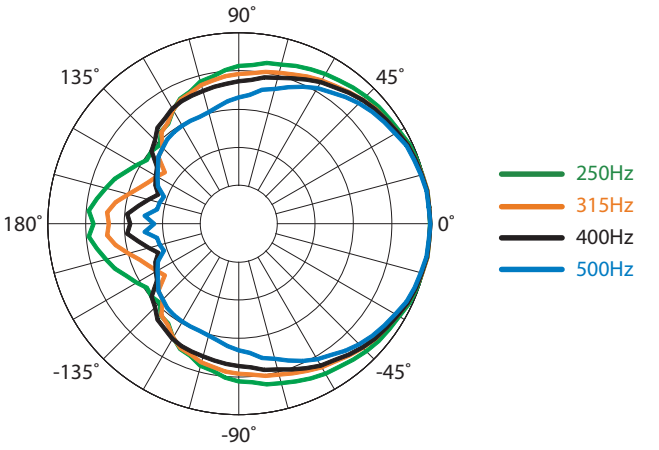


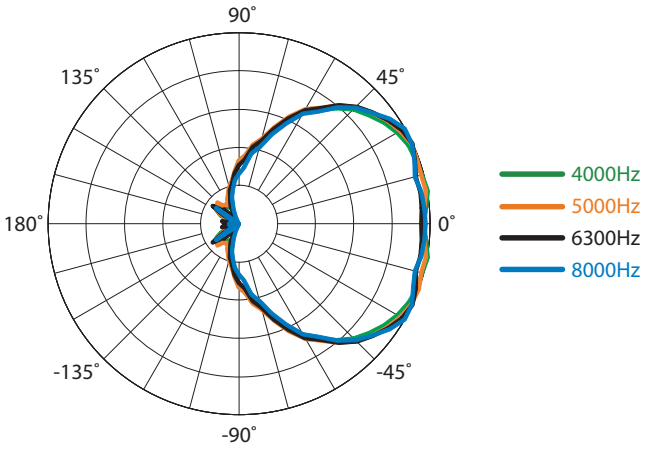
HORIZONTAL POLAR DATA

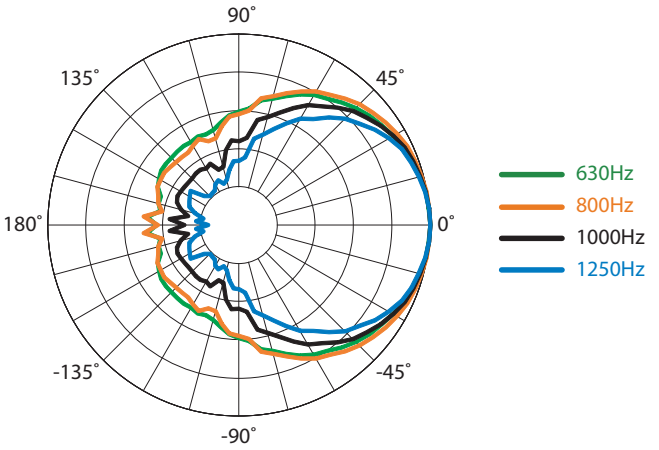
See *NOTES GRAPHIC DATA* for details

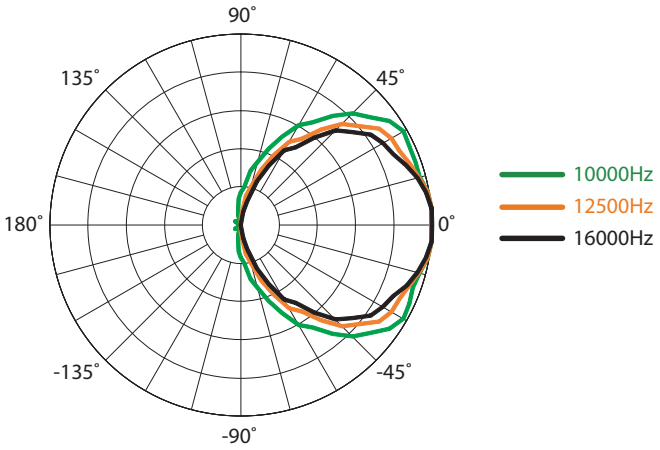






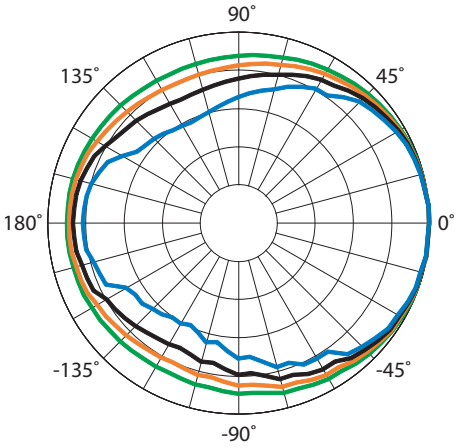


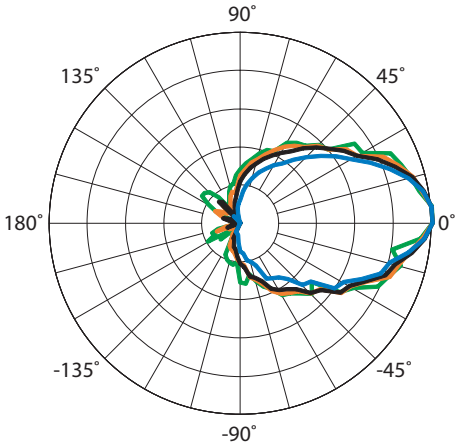


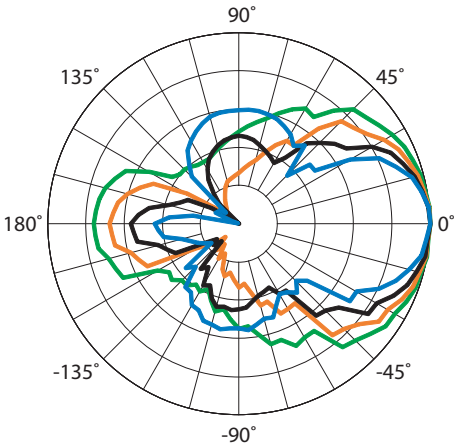


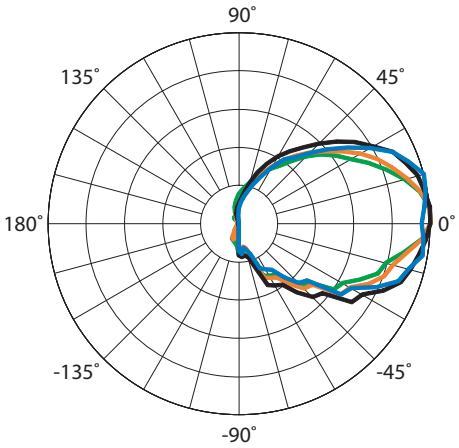
VERTICAL POLAR DATA

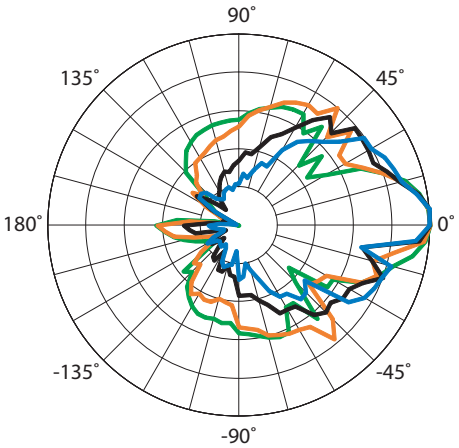
See *NOTES GRAPHIC DATA* for details

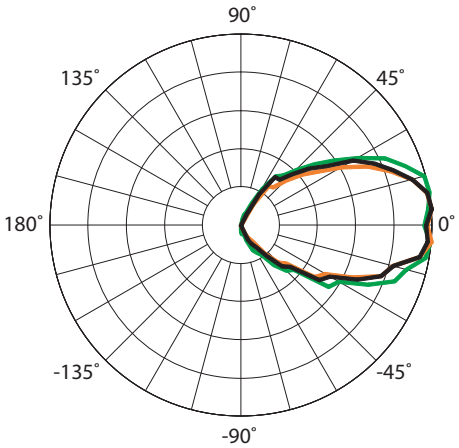




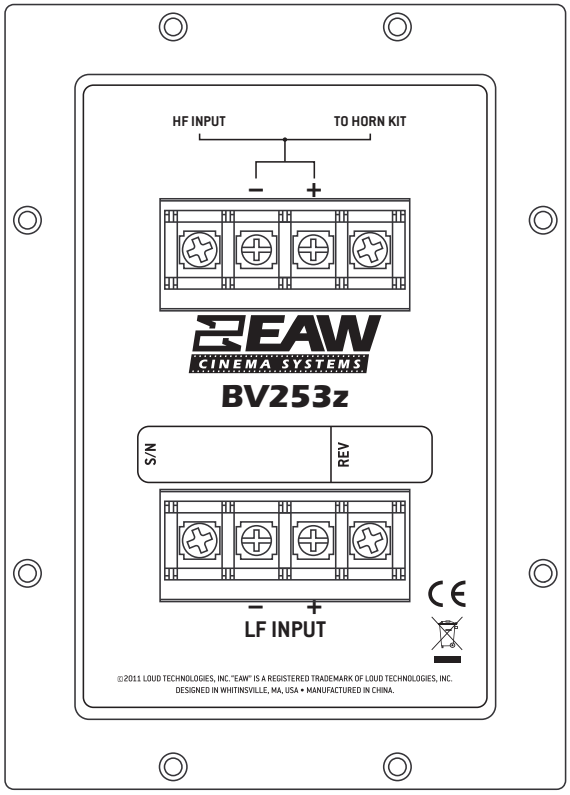




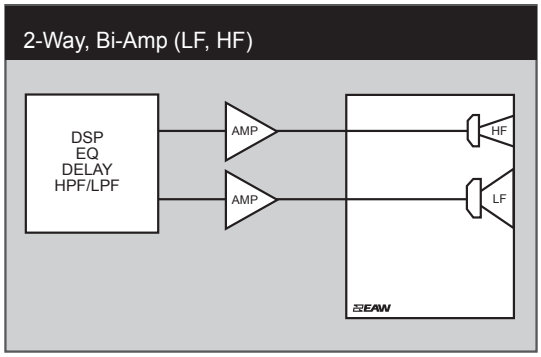




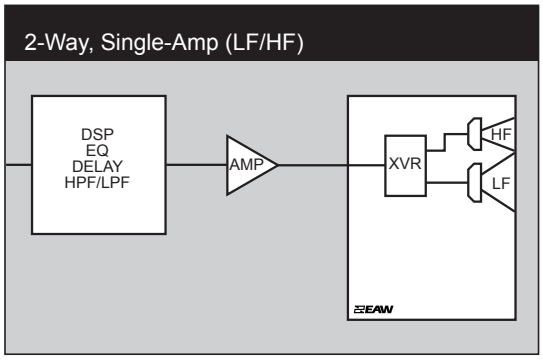
INPUT PANEL



SIGNAL DIAGRAM



OPTIONAL SIGNAL DIAGRAM



LEGEND

DSP:	EAW UX8800 Digital Signal Processor –or– Integral Digital Signal Processing for NT products.
HPF:	High Pass Filter for crossover –or– Recommended High Pass Filter.
LPF:	Low Pass Filter for crossover.
LF/MF/HF:	Low Frequency / Mid Frequency / High Frequency.
AMP:	User Supplied Power Amplifier –or– Integral Amplifier for NT products.
XVR:	Passive LPFs, HPFs, and EQ integral to the loudspeaker.
EAW Focusing:	Digital Signal Processor capable of implementing EAW Focusing.

NOTES

TABULAR DATA

1. **Measurement/Data Processing Systems:** Primary - FChart: proprietary EAW software; Secondary - Brüel & Kjær 2012.
2. **Microphone Systems:** Earthworks M30; Brüel & Kjær 4133
3. **Measurements:** Dual channel FFT; length: 32 768 samples; sample rate: 48 kHz; logarithmic sine wave sweep.
4. **Measurement System Qualification** (includes all uncertainties)**:** SPL: accuracy +/-0.2 dB @ 1 kHz, precision +/-0.5 dB 20 Hz to 20 kHz, resolution 0.05 dB; Frequency: accuracy +/-1 %, precision +/-0.1 Hz, resolution the larger of 1.5 Hz or 1/48 octave; Time: accuracy +/-10.4 µs, precision +/-0.5 µs, resolution 10.4 µs; Angular: accuracy +/-1°, precision +/-0.5°, resolution 0.5°.
5. **Environment:** Measurements time-windowed and processed to eliminate room effects, approximating an anechoic environment. Data processed as anechoic or fractional space, as noted.
6. **Measurement Distance:** 7.46 m. Acoustic responses represent complex summation of the subsystems at 20 m. SPL is referenced to other distances using the Inverse Square Law.
7. **Enclosure Orientation:** For beamwidth and polar specifications, as shown in Mechanical Specification drawing.
8. **Volts:** Measured rms value of the test signal.
9. **Watts:** Per audio industry practice, "loudspeaker watts" are calculated as voltage squared divided by rated nominal impedance. Thus, these are not True Watt units of energy as defined by International Standard.
10. **SPL:** (Sound Pressure Level) Equivalent to the average level of a signal referenced to 0 dB SPL = 20 microPascals.
11. **Subsystem:** This lists the transducer(s) and their acoustic loading for each passband. Sub = Subwoofer, LF = Low Frequency, MF = Mid Frequency, HF = High Frequency.
12. **Operating Mode:** User selectable configurations. Between system elements, a comma (,) = separate amplifier channels; a slash (/) = single amplifier channel. DSP = Digital Signal Processor. IMPORTANT: To achieve the specified performance, the listed external signal processing must be used with EAW-provided settings.
13. **Operating Range:** Range where the processed Frequency Response stays within -10 dB SPL of the power averaged SPL within this range; measured on the geometric axis. Narrow band dips are excepted.
14. **Nominal Beamwidth:** Design angle for the -6 dB SPL points, referenced to 0 dB SPL as the highest level.
15. **Axial Sensitivity:** Power averaged SPL over the Operating Range with an input voltage that would produce 1 W at the nominal impedance; measured with no external processing on the geometric axis, referenced to 1 m.
16. **Nominal Impedance:** Selected 4, 8, or 16 ohm resistance such that the minimum impedance point is no more than 20% below this resistance over the Operating Range.
17. **Accelerated Life Test:** Maximum test input voltage applied with an EIA-426B defined spectrum; measured with recommended signal processing and Recommended Protection Filter.
18. **Calculated Axial Output Limit:** Highest average and peak SPLs possible during the Accelerated Life Test. The Peak SPL represents the 2:1 (6 dB) crest factor of the Life Test signal.
19. **High Pass Filter:** This helps protect the loudspeaker from excessive input signal levels at frequencies below the Operating Range.

GRAPHIC DATA

1. **Resolution:** To remove insignificant fine details, 1/12 octave cepstral smoothing was applied to acoustic frequency responses and 1/3 octave cepstral smoothing was applied to the beamwidth and impedance data. Other graphs are plotted using raw data.
2. **Frequency Responses:** Variation in acoustic output level with frequency for a constant input signal. Processed: normalized to 0 dB SPL. Unprocessed inputs: 2 V (4 ohm nominal impedance), 2.83 V (8 ohm nominal impedance), or 4 V (16 ohm nominal impedance) referenced to a distance of 1 m.
3. **Processor Response:** The variation in output level with frequency for a constant input signal of 0.775 V = 0 dB reference.
4. **Beamwidth:** Average angle for each 1/3 octave frequency band where, starting from the rear of the loudspeaker, the output first reaches -6 dB SPL referenced to 0 dB SPL as the highest level. This method means the output may drop below -6 dB SPL within the beamwidth angle.
5. **Impedance:** Variation in impedance magnitude, in ohms, with frequency without regard to voltage/current phase. This means the impedance values may not be used to calculate True Watts (see 9 above).
6. **Polar Data:** Horizontal and vertical polar responses for each 1/3 octave frequency band 100 Hz to 16 kHz or Operating Range.