

# Control® 16C-VA

Professional Series – Two-Way 6.5" Coaxial Ceiling Loudspeaker for EN54-24 Applications



## Key Features:

- Components:
  - 165 mm (6.5 in) high output driver with polypropylene cone and butyl rubber surround
  - 19 mm (0.75 in) soft-dome liquid cooled tweeter
- EN54-24 compliant
- Blind-mount backcan for quick and easy install
- Combined 70V/100V and low impedance direct operation:
  - 50W at 8Ω nominal setting
  - 30W multi-tap at 70V/100V
- 62 Hz – 20 kHz bandwidth with wide 110° coverage
- High 91 dB sensitivity for high maximum SPL



Included grille not shown

## Description:

Control 16C-VA is a full-range, EN54-24 certified ceiling speaker consisting of a 165 mm (6.5 inch) high-tech cone driver and a 19 mm soft-dome liquid cooled tweeter mounted in a vented, paintable baffle made of UV resistant UL94-V0 and UL94-5VB flammability-rated material, with a pre-attached blind-mount backcan for quick and easy installation. The speaker is designed to provide excellent sound quality for a wide variety of medium to high volume applications such as music cafes, business music systems, retail stores, music/paging systems, airports, reception/waiting rooms, lounges, courtrooms, convention centers, hotels, educational facilities, and more. The speaker delivers consistent sound quality for listeners located both off and on axis.

The high-technology low frequency driver is designed with a lightweight, high-temperature anodized aluminum voice coil former and high-temperature-grade voice coil for stable performance and reliability under long-term/high-power working conditions. The butyl rubber surround provides long-term durability and excellent sonic damping while the polypropylene cone is water and humidity resistant. The FEA-optimized motor construction and cone geometry, along with linear suspension spider design, allow for a smooth frequency response

and more consistent off-axis performance. The high frequency driver features a highly damped-treated silk dome for clear and warm sound, a lightweight Kapton™ voice coil for better high frequency response and excellent reliability, low viscosity liquid cooling for power handling and reliability, and a wide dispersion waveguide design to produce wide coverage and smooth frequency response.

A high-temperature ceramic input connector with brass inserts secures bare wire terminations for +, -, and case ground connections, complying with the BS5839 Part 8 requirements for voice alarm systems for buildings. The included gland nut fitting forms a water-tight seal with round jacketed cable, and the highly water resistant terminal cover prevents ingress of water to a minimum of IP-21, per IEC529/60529.

Ideal for a wide variety of projects, the Control 16C-VA is switchable for use as either an 8 ohm low-impedance speaker or as part of a 70V or 100V distributed loudspeaker system with a 30W multi-tap transformer. Each speaker comes complete with gland nut, two tile rail supports, one C-ring support backing plate, cutout template, paint shield, and grille. A safety seismic attachment ring is provided on the terminal cover.

## Specifications:

System	
Frequency Range (-10 dB) <sup>1</sup>	62 Hz – 20 kHz
Frequency Response (±3 dB) <sup>1</sup>	96 Hz – 15 kHz
Power Capacity (at low-Z) <sup>2</sup>	100W Continuous Program Power 50W Continuous Pink Noise
Rated Noise Power	30W (30W tap)
Rated Noise Voltage	70V/100V (with 70V/100V tap settings)
Nominal Sensitivity <sup>3</sup>	91 dB: 8 ohm tap
EN54 Sensitivity (@ 4m) <sup>4,5</sup>	77 dB (per EN54-24 spectrum and measurement conditions at 4 meters)
Coverage Pattern <sup>3</sup>	110° conical coverage (1 kHz – 16 kHz)
Coverage Angles (by Frequency)	500 Hz    1000 Hz    2000 Hz    4000 Hz
Conical (Vertical & Horizontal)	160°    160°    155°    92°
Reference Axis <sup>4</sup>	Specification and measurement reference is directly on-axis vertically and horizontally, directly below the speaker installed in the horizontal ceiling plane
Directivity Factor (Q) <sup>3</sup>	7.8
Directivity Index (DI) <sup>3</sup>	8.2 dB

Rated Maximum SPL	108 dB @ 1 m (3.3 ft) average, 116 dB peak
EN54 Max SPL (@ 4m) <sup>4,5</sup>	91 dB (per EN54-24 spectrum and measurement conditions, 30W tap, at 4 meters)
Nominal Impedance	» 8 ohms (in direct/bypass 8 ohm setting); EN54 nominal impedance 7 ohms (based on min Z of 5.7 ohms at 11.2 kHz) » 3.8W@70V; 7.5W@100V Tap: 1333Ω » 7.5W@70V; 15W@100V Tap: 667Ω » 15W@70V; 30W@100V Tap: 333Ω » 30W@70V; N/C@100V Tap: 166Ω
Transformer Taps	30W, 15W, 7.5W @ 70V or 100V (plus 3.8W @ 70V only)
Crossover Network	12 dB/oct (2nd order) low-pass to LF driver, 12 dB/oct (2nd order) high-pass to HF driver
Electrical	
Fuse	Thermal Fuse, open temperature 152 degrees C, Rating >= 10A @ 250VAC

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## Specifications (Continued):

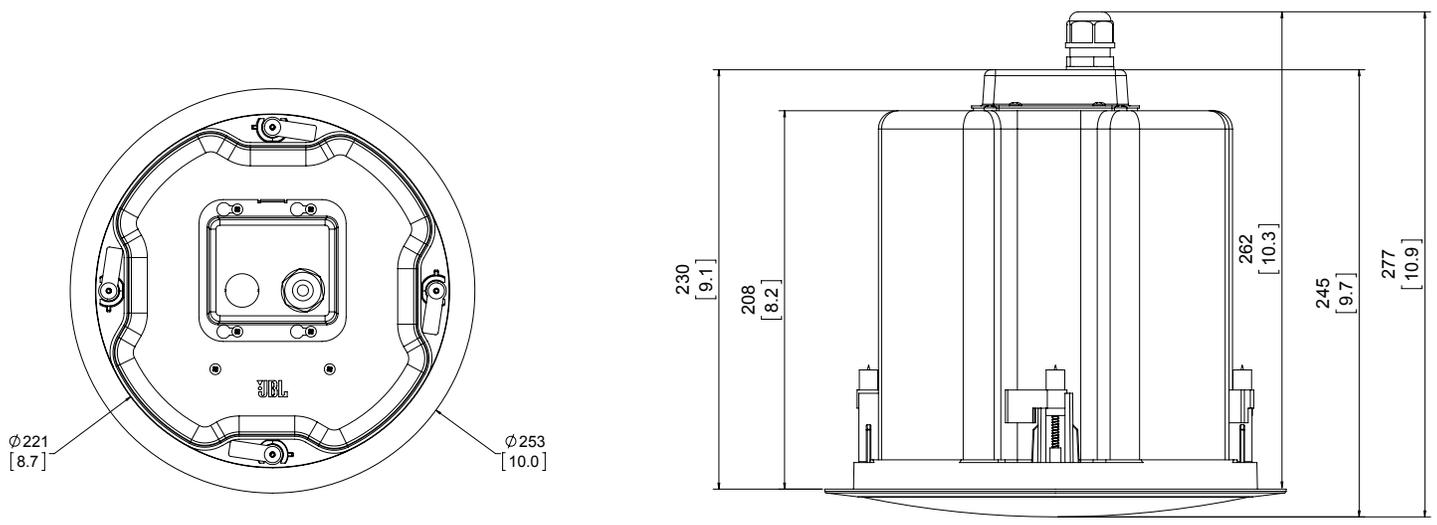
Transducers	
LF Driver	165 mm (6.5 inch) with polypropylene cone, butyl rubber surround, anodized aluminum voice coil former, high-temperature voice coil
HF Driver	19 mm (3/4 in), highly-damped treated-silk dome, Kapton™ voice coil, liquid cooling, wide dispersion waveguide
Enclosure	
Connections	Input +, Input -, Earth (connected to backcan); ceramic with brass inserts (3.2 mm/0.126 in opening); accommodates 2.5 sq mm/12 AWG wire
Gland Nut/Strain Relief	Accommodates round jacketed cables 4.0 mm (0.16 in) through 9.0 mm (0.36 in)
Materials	ABS baffle with UL94-V0 and UL94-5VB flame class fire rating; zinc-plated steel backcan
Safety Agency	EN54-24:2008 certified Type A (Certificate No. 0359-CPR-00485); compliant with BS5839/8; UL1480, UL2043, NFPA90 & NFPA70; suitable for use in air handling spaces, signaling speaker; rated IP-21 per IEC529/60529; transformer UL registered per UL1876; ROHS, C-tick N108, CE compliant; baffle meets UL94-V0 and UL94-5VB flammability rating; in accordance with IEC60849/EN60849 systems
Dimensions	253 mm diameter x 262 mm from back of baffle to back of gland nut (10.0 in diameter x 10.3 in depth)
Ceiling Cutout Size	Circular cutout with 223 mm (8.8 in) diameter (cardboard cutout template included)
Ceiling Thickness Range	Up to 38 mm (1.5 in) with stock dogears; MTC-TCD thick-ceiling dogears available for up to 60 mm (2.4 in) ceiling thicknesses
Safety Seismic Attachment	One point, top surface

Net Weight	3.4 kg (7.4 lbs, one speaker)
Shipping Weight	11.2 kg (24.7 lbs, pair in master carton)
Included Accessories	<ul style="list-style-type: none"> <li>» C-ring support backing plate</li> <li>» 2 tile support rails (for 2 ft or 600 mm tile spans; optional MTC-48TR extension available for larger 4 ft or 1200 mm tile spans)</li> <li>» Cutout template</li> <li>» Paint shield</li> <li>» Grille</li> </ul>
Optional Accessories:	<ul style="list-style-type: none"> <li>» MTC-16WG high-humidity grille</li> <li>» MTC-26NC new construction bracket</li> <li>» MTC-26MR mud-ring construction bracket</li> <li>» MTC-TCD thick-ceiling dogears for ceiling thicknesses up to 60 mm (2.4 in, ordering one set = 24 dogears for 6 speakers)</li> <li>» MTC-48TR tile rail for 1200 mm (4 ft) tile spans</li> </ul>

- <sup>1</sup> Half-space (flush mounted in ceiling)
  - <sup>2</sup> Continuous Pink Noise Rating is IEC-shaped pink noise with a 6 dB crest factor for 100 hours continuously. Continuous Program Power is a conservative expression of the system's ability to handle normal speech and music program material, and is defined as 3 dB above the Continuous Pink Noise Rating.
  - <sup>3</sup> Half-space (in ceiling) average 1 kHz to 16 kHz
  - <sup>4</sup> EN54 acoustical loading baffle utilized for EN54 measurements
  - <sup>5</sup> Per EN54-24 Components of voice alarm system—loudspeakers: Input signal for Sensitivity and Max SPL has 2-to-1 peak-to-average ratio. Measurements taken at distance of 4 meters. Max SPL measured with 100V RMS input signal at top 100V tap.
- JBL continually engages in research related to product improvement. Changes introduced into existing products without notice are an expression of that philosophy.

## Mounting Dimensions:

Dimensions in mm (inches)

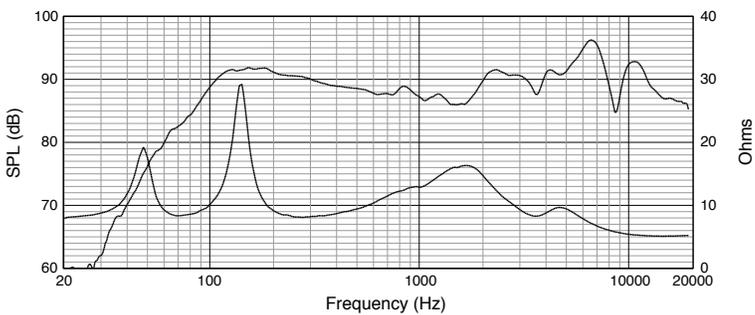


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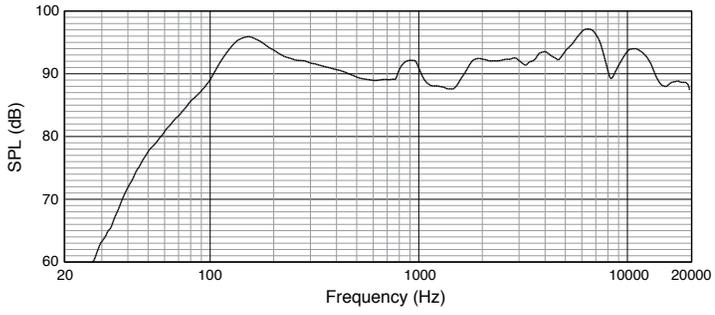
## Frequency Response, Impedance:



Frequency response in half-space (2pi, mounted in ceiling, 1W, 1m), impedance at 8Ω (low-impedance) setting

Contribution of each one-third octave frequency band when speaker is driven at full volume, measured at 4 meter distance (req'd in this manual by EN54-24):

Freq (Hz)	Value (dB)
500	62.5
630	62.3
800	63.7
1000	65.6
1250	62.2
1600	62.9
2000	63.8
2500	64.4
3150	63.7
4000	65.4



Frequency response chart (2pi, mounted in ceiling), 100V input on 30W tap, measured at 4 meters