



Specifications: CM590i

Tile bridge included

System Type	5.25-inch, coax, high-SPL, in-ceiling, ported (33-watt transformer for 25/70.7/100-volt or voice coil direct)
Impedance (nominal) ¹	8 ohm
Sensitivity dB @ 2.83 V / 1 m	87.5 dB
Sensitivity dB @ 1 W / 1 m ²	87.5 dB
Frequency Response (-3 dB) ³	83 Hz - 22 kHz
Frequency Response (-10 dB) ³	65 Hz - 22 kHz
Max. Program Power ⁴	160 W
Max. Continuous Power RMS ⁵	80 W
Max. Power SPL @ 1 m ⁶	106.5 dB
Coverage Angle (-6 dB @ 2 kHz)	95°
Coverage Angle (-6 dB @ 10 kHz)	55°
Coverage Angle (averaged from 2 to 10 kHz)	85°
Directivity Factor (Q)	6.2 (averaged 100 Hz - 10 kHz); 7.9 (2 kHz)
Directivity Index (DI) dB	6.5 dB (averaged 100 Hz - 10 kHz); 9.0 dB (2 kHz)
Tap Selector	Six-position tap switch with voice coil direct
Transducer - Low-Frequency Driver	133 mm (5.25 in.) Polypropylene cone, butyl rubber surround
Transducer - High-Frequency Driver	25 mm (1.00 in.) Convex aluminum horn-loaded tweeter
Low-Frequency Voice Coil	25.4 mm (1.00 in.)
Crossover Frequency	3.0 kHz
Network Type: Low Pass	N/A
Network Type: High Pass	12 dB per octave, 2nd order
Enclosure Material	Drawn aluminum backcan with ABS baffle
Motor-board	Cast aluminum
Grille	Steel with powder-coat finish
Inputs	Four-pin, 5 mm Euroblock for individual or daisy chain connection
Colors	Black or white
Backcan Diameter	219.2 mm (8.63 in.)
Backcan Height	196.9 mm (7.75 in.)
Visible Diameter	272.0 mm (10.71 in.)
Visible Height	24.4 mm (0.96 in.)
Mounting Hole Diameter	228.6 mm (9.00 in.)
Min - Max Ceiling Thickness	6.4 mm (0.25 in.) – 42.9 mm (1.69 in.)
Weight	3.4 kg (7.5 lbs.)
Shipping Weight	10.7 kg (23.5 lbs.)
Packaging	Two per box
Included Accessories	Tile bridge, conduit plate, Euroblock connector and installation aid
Optional Accessories	Pre-construction bracket (AC-CM5-PCB), junction box (AC-CM5-JBOX)
Regulatory - CE	Approved

Transformer Taps

70.7 V Output	100 V Output	25 V Output
33 W 102.5 dB	33 W 102.5 dB	5 W 94.5 dB
17 W 100.0 dB	17 W 100.0 dB	2.5 W 91.5 dB
9 W 97.0 dB	9 W 97.0 dB	1.3 W 88.5 dB
6 W 95.5 dB	6 W 95.5 dB	0.63 W 85.5 dB
3 W 92.5 dB		

¹ Impedance listed per IEC 60268-5 with a minimum less than 80% the nominal impedance

² 1 W 1 m sensitivity determined using nominal impedance

³ Frequency response measured in half or full space as dictated by speaker mounting configuration

⁴ Max program power is 3 dB above max continuous power

⁵ Continuous power rating, EIA-426-B test

⁶ Max output based on max continuous power

Key Features

- Patented BroadBeamHP® waveguide technology delivers a consistent dispersion pattern for maximum intelligibility and edge-to-edge coverage (up to 8 kHz, independently verified).
- High-power output (106.5 dB) for longer throw and higher SPL requirements.
- One 133 mm (5.25 in.) polypropylene woofer and one 25 mm (1.0 in.) horn-loaded convex aluminum dome tweeter mounted to a proprietary cast-aluminum HP5™ baffle and heat sink.
- Average sensitivity of 87.5 dB offers high output capabilities and reduced amplification costs.
- Rapid-installation, blind-mount, fixed-wing mechanism with constant-tension design affixing to ceiling thicknesses ranging from 6.4 mm (0.25 in.) to 42.9 mm (1.69 in.).
- Separate tool-free magnetic grille and bezel assembly with integrated safety/seismic cable for ease of install and in-field painting.
- Easy-access six-position selectable tap switch for 25-, 70.7- and 100-volt applications with a voice coil direct position simplifies ordering and inventory tracking.
- Steel grille with protective powder-coated finish for lasting durability.
- Included accessories: Tile bridge, Euro-block connector, installation aid, paint mask and conduit plate.
- Optional accessories: Color-coded (blue) pre-construction bracket and junction box.
- High quality black or white paint finish. Custom paint colors optional.

Description

The CM590i is a high-powered, 5.25-inch, two-way loudspeaker in a ported in-ceiling enclosure design. The CM590i incorporates a low-profile grille, proprietary HP5™ motor-board and six-position tap switch with a voice coil direct position. A tile bridge is included and the speaker features a fast and secure constant-tension, fixed-wing mounting system for easy and secure installation.

Applications

Engineered for high SPL and effective low-end response (65 Hz at -10 dB), the CM590i delivers consistent high-performance music and paging for applications requiring longer throw or higher volume above the existing ambient noise level. The CM590i is ideal for in-ceiling sound reinforcement/PA applications with



high ambient noise levels including casinos, warehouses, airports, transportation and shipping centers, schools, gyms, arenas and stadiums. For additional bass down to 41 Hz (-10 dB) the CM1001d-T subwoofer may be used.

BroadBeamHP[®] Wide Dispersion Technology

SoundTube's proprietary Broad-BeamHP[®] technology incorporates a 1-inch aluminum dome tweeter with a waveguide mated to a polypropylene woofer. Broad-BeamHP[®] technology delivers a consistent dispersion pattern across the upper registers of the frequency spectrum (up to 10 kHz, independently verified). The result is an audio system with fewer speakers, reduced power needs, shorter installation time and cost savings on shipping and labor.

Patented SoundTube Technologies

SoundTube Entertainment and the MSE Audio Group constantly develop new technologies which enhance audio product performance. SoundTube Entertainment innovations are protected by multiple U.S. and international patents, which explicitly cover SoundTube dome, enclosure and dispersion technologies. The MSE Audio Group actively defends its patents in order to protect SoundTube resellers and end-users.

Technical Data and Specification Tools

Technical Data

SoundTube Entertainment strives to provide complete and effective technical information and data to dealers, engineers and designers. All data are available from SoundTube Entertainment or at www.soundtube.com.

Technical data and downloads include:

EASE[™] data – 3-D polar plots.

EASE[™] Address – 2-D modeling for distributed systems

Autodesk[®] Revit[®] software

Tech Sheets – Technical information and architectural specs for system engineers

SoundTubeSPEC[™] – Proprietary speaker

placement software

Acquisition and Verification

All data for SoundTube speakers are independently collected from and verified by NWAALabs (www.nwaalabs.com) using their proprietary MACH testing system. All data are collected and analyzed according to ASTM, ISO and AES standards using EASERA, TEF and MLSSA. Full balloon data including both phase and magnitude is compiled into a variety of formats including EASE 4.x, GLL and CLF.

Architectural Specifications

The loudspeaker shall consist of a 133 mm (5.25 in.) low-frequency transducer and a 25 mm (1.0 in.) high-frequency transducer with a frequency-dividing network installed in a ported enclosure. The low-frequency voice coil diameter shall be 25 mm (1.0 in.).

Performance specifications of a typical production unit shall be as follows: Useable frequency response shall extend from 65 Hz – 22 kHz (-10 dB, half space). Measured sensitivity (2.83-volt input, 1 meter) shall be at least 87.5 dB. The speaker shall have a nominal impedance of 8 ohms. The speaker shall be available for 25-, 70.7- and 100-volt modes and shall include a six-position tap switch with a voice coil direct position. The frequency-dividing network shall have a crossover frequency of 3 kHz with a slope of 12 dB per octave (2nd order) for the high-pass filter. Rated power capacity shall be at least 80 watts continuous (RMS), and conform to EIA-426-B testing. Maximum continuous output at 1 meter shall be 106.5 dB.

The low-frequency transducer shall have a polypropylene cone with butyl rubber surround. The high-frequency transducer shall be constructed of aluminum material and incorporate a high-SPL horn.

Installation for the CM590i shall be by two-screw, blind-mount, constant-tension winged assembly and shall attach to ceiling thicknesses ranging from 6.4 mm (0.25 in.) to 42.9 mm (1.69 in.). The fixed-wing assembly shall be constructed of steel. The external wiring input connector shall be a four-pin, 5 mm Euroblock for 8 ohm or distributed systems and

shall accept from 10 – 22-gauge wire.

The grille shall be constructed of an ABS bezel and powder-coated steel for lasting performance. The affixed grille and bezel shall be mounted to the speaker enclosure (backcan) via neodymium magnets and included safety leash. Also included is a paint mask/installation aid for in-field painting (also serves as a hand-hold during installation).

The maximum backcan dimensions shall be no more than 197 mm (7.75 in.) in height by 219.2 mm (8.63 in.) in diameter. The maximum visible dimensions shall be no more than 24.5 mm (0.96 in.) in height by 271.9 mm (10.71 in.) in diameter. The backcan shall be constructed of aluminum and affixed to an ABS baffle.

The system shall include a 21-gauge galvanized steel support backing plate (tile bridge) to reinforce the ceiling material and tile support rails. The maximum tile bridge dimensions shall be no more than 600.1 mm (23.61 in.) in length by 323.9 mm (12.75 in.) in width and 11 mm (0.41 in.) in height with a 228.6 mm (9.0 in.) diameter cutout for speaker mounting.

The CM590i has an optional color-coded (blue) pre-construction bracket (AC-CM5-PCB) that shall be compatible with an optional junction box (AC-CMi-JBOX). A 2-foot, 18-gauge wire whip and Euroblock connector shall be included with the junction box. The maximum dimensions of the pre-construction bracket with junction box shall be no more than 635 mm (25.0 in.) in length by 381 mm (15.0 in.) in width and 128 mm (5.0 in.) height (includes affixed junction box) with a 228.6 mm (9.0 in.) cutout for speaker mounting.

The system shall be the SoundTube CM590i with mounting hardware for both low- and high-impedance applications.

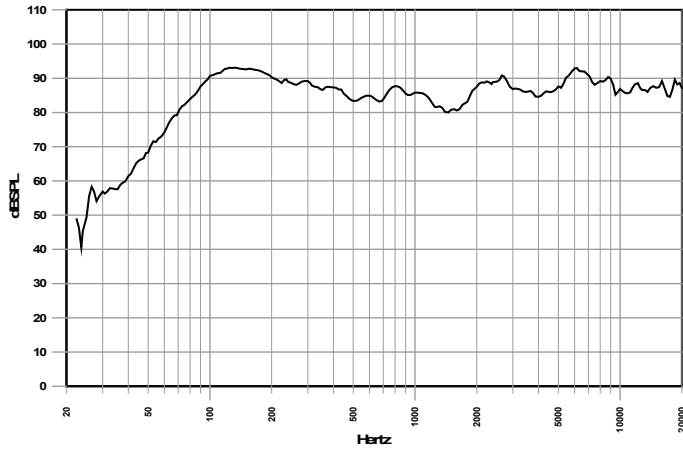
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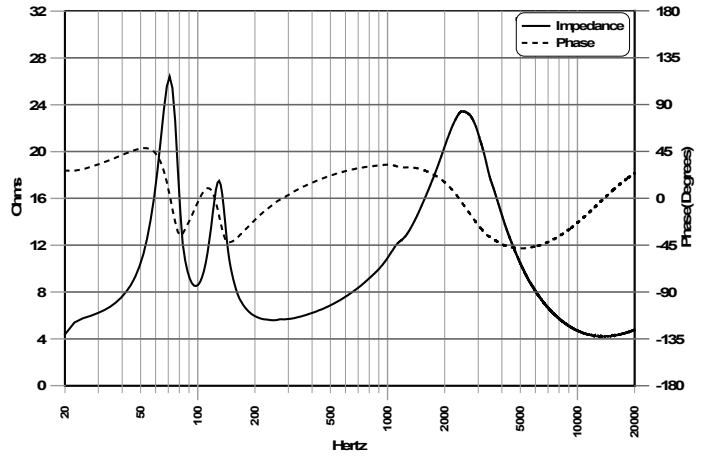
All SoundTube products come with a 5-year limited warranty.

Graphs and Plots

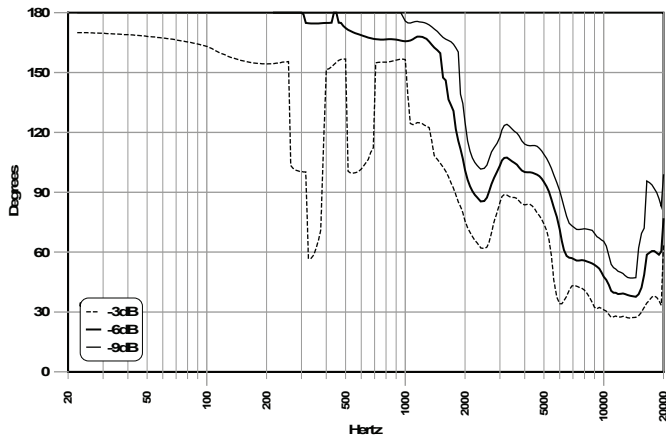
Frequency Response



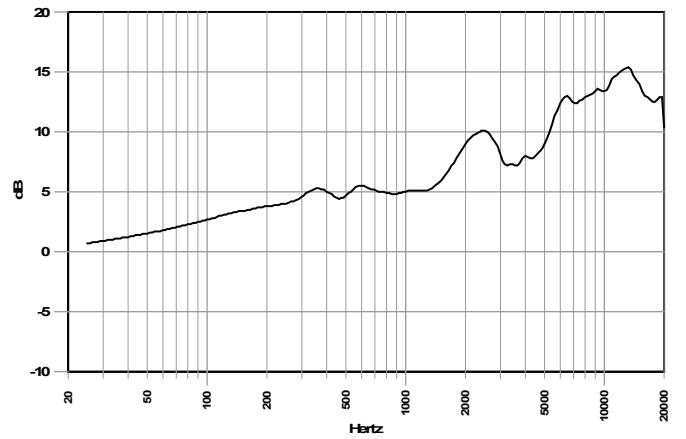
Phase/Impedance Response



Vertical Beamwidth (-6 dB)



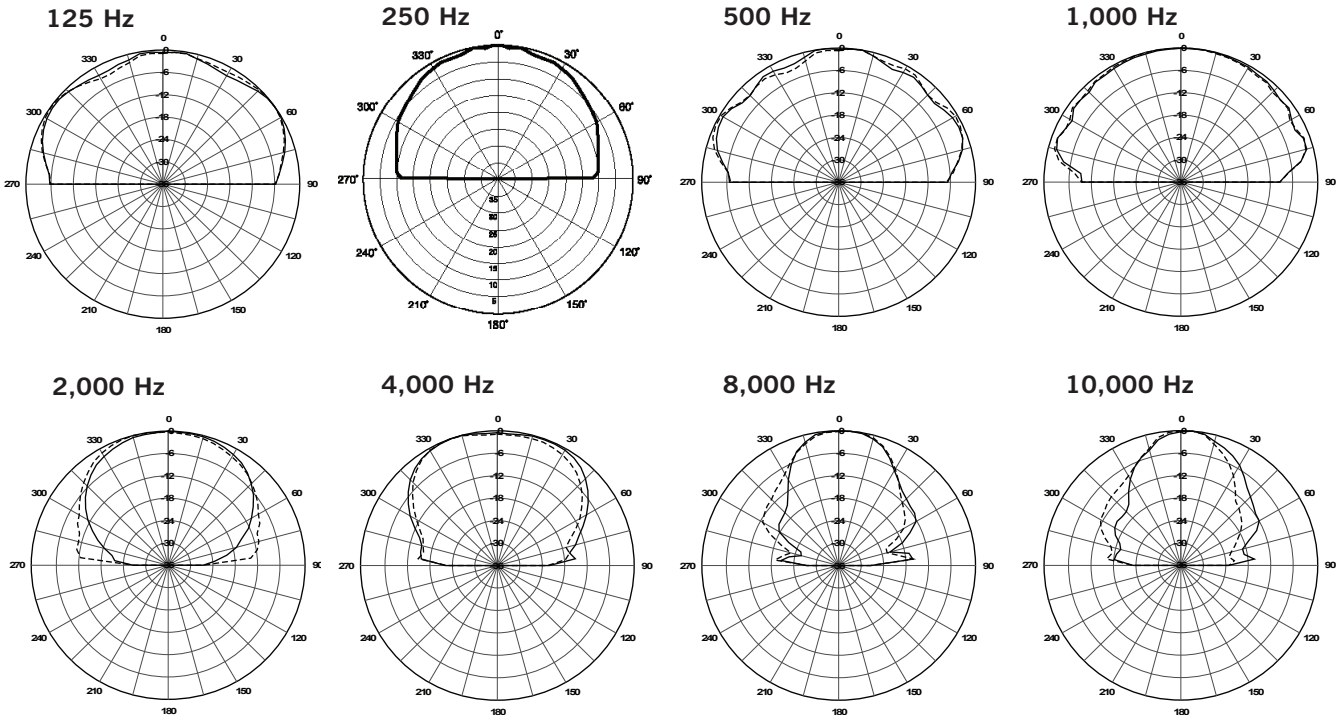
Directivity Index (DI)





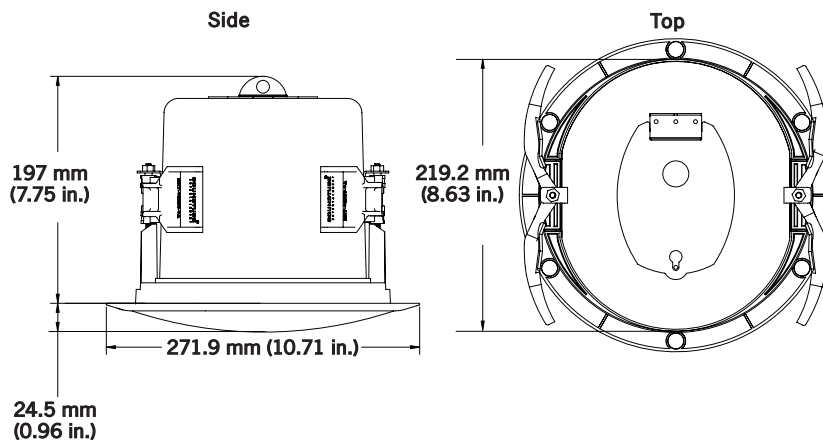
Polar Plots

— Horizontal
 - - - Vertical

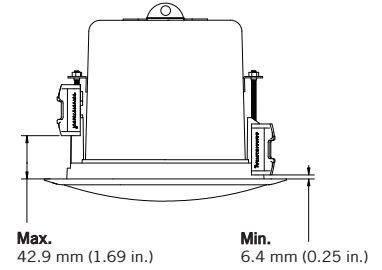


Technical data, EASE™ plots, SoundTubeSPEC™ software and product downloads available at www.soundtube.com

Mechanical Drawings



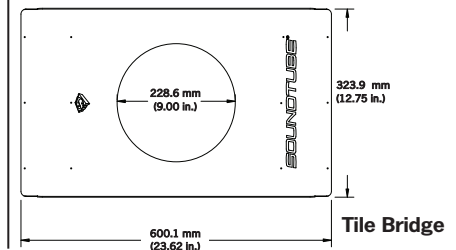
Minimum/Maximum Ceiling Thickness



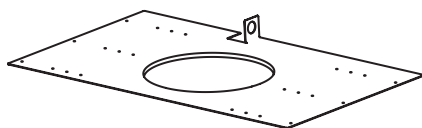
Included Accessories



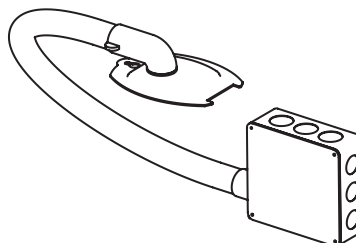
Paint Mask



Optional Accessories



Pre-Construction Bracket (AC-CMi-PCB)



Junction Box (AC-CMi-JBOX)

SoundTube Entertainment manufactures a complete line of speakers for:
Open-Ceiling • In-Ceiling • Surface-Mount • Outdoor • Sound-Focusing

All SoundTube products are designed and engineered in the USA.