

MCS 3500 Modular Ceiling Loudspeaker System



Security Systems



- Innovative tri-cone loudspeaker
- Excellent speech and music reproduction
- No compromise between acoustics and aesthetics
- Constant directivity with wave guide grille
- Predictable sound quality with (optional back box)
- Metal fire dome (DIN 4102 certified)
- Installation friendly
- BS5839 part 8 compliant

The MCS 3500 Modular Ceiling Loudspeaker System removes the need to compromise between acoustic performance and aesthetic appeal. Three high-quality loudspeaker units can be fitted with the metal wave-guide grille finished in a neutral RAL white colour. There is a standard 6 W model, a high-performance 12 W model and a powerful 24 W model. They are suitable for excellent speech and music in indoor public address applications. The range also includes a metal fire dome, and surface mounting box. The loudspeaker units and back box include provision for mounting the optional line/loudspeaker supervision board.

Functions

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal evacuation announcements is governed by regulations. The MCS 3500 range is designed for use in voice alarm systems and is compliant with British Standard BS5839 part 8.

The loudspeaker has built-in protection to ensure that, in the event of a fire, damage to the loudspeaker does not result in failure of the circuit to which it is connected. In this way, system integrity is maintained, ensuring loudspeakers in other areas can still be used to inform people of the situation. The loudspeaker has a ceramic terminal block, thermal fuse and heat-resistant, high-temperature wiring. It can also be fitted with an optional fire-dome to increase protection of the cable termination.

The MCS 3500 loudspeaker units are equipped with dynamic tri-cone loudspeakers with exceptional audio performance in prestigious 'Prosound' applications.

The transducer frame is made from high-impact glass reinforced thermosetting polyester material for maximum rigidity and excellent sound quality free from unwanted vibrations. The frame includes a bass reflex port for improved low frequency response.

Parts Included

Quantity	Component
1	MCS 3500 Modular Ceiling Loudspeaker
1	Circular template 255 mm

Certifications and Approvals

All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated power for short durations. This ensures extra reliability under extreme conditions, leading to higher customer satisfaction, longer operating life, and much less chance of failure or performance deterioration. All plastic parts are self extinguishing according to UL94V0.

Safety	EN 60065
EVAC compliant acc. to	BS5839 part 8

Installation/Configuration Notes

Installation

The MCS 3500 series is very installation friendly. A cutting template is supplied with each unit, and the loudspeaker frame is secured in ceilings up to 50 mm (2 inch) thick using three integral screw clamps. A safety cord allows the installer to temporarily hang the loudspeaker unit on the ceiling support frame during installation. This ‘third hand’ is particularly useful when working on ladders or in confined areas. It also provides extra reassurance after installation.

Terminal block

Connections are made using a screw terminal block on the frame. This block enables loop-through wiring. Cables are fed through a channel in the loudspeaker frame, enabling wiring to be carried out from the front once the loudspeaker assembly has been mounted. Power tapping on the 100 V matching transformer allows selection of full-power, half-power or quarter-power radiation. A switch at the front of the frame simplifies selection of power setting.

LBC 3603/01 Wave Guide Grille

The LBC 3603/01 wave guide grille is a breakthrough in ceiling loudspeaker technology. It ensures a wide and equal spread of the important frequency octaves for speech intelligibility and music clarity, giving the MCS 3500 constant directivity. Fewer loudspeakers are needed to cover a given area, and the noticeable ‘fading’ that can occur as a listener walks from one loudspeaker to another area is eliminated. The wave guide grille can be applied on all loudspeaker units, although it is acoustical optimized for the LBC 3530/40.

The LBC 3603/01 wave guide grille is supplied with the wave guide. The grille features quick bayonet fittings for securing to the loudspeaker frames.

LBC 3665/00 Back Box

The LBC 3665/00 back box can be secured onto the back of the loudspeaker frame (fitted as standard on the 24 W LBC 3530/40). This results in a bass reflex enclosure for very predictable sound quality. The better controlled cone excursion gives less distortion of low frequencies at higher power. It also prevents sound traveling via the ceiling cavity to adjacent areas, fully protects the loudspeaker from dust and makes the unit vermin proof.

LBC 3650/00 Metal Fire Dome

The LBC 3650/00 metal fire dome fits over the back of the loudspeaker unit, but is secured to the ceiling panel for a better seal around the cut-out made for the loudspeaker. The fire dome combined with the highly fire resistant thermosetting material used for the loudspeaker frame means the MCS 3500 system is certified as F30 according to DIN 4102.

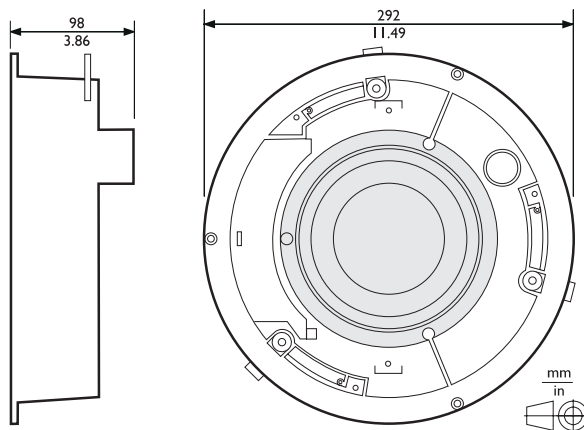
LBC 3660/01 Surface Mounting Box

For securing the loudspeakers to walls or hard ceilings, the LBC 3660/01 surface mounting box in the same white color as the grille is available.

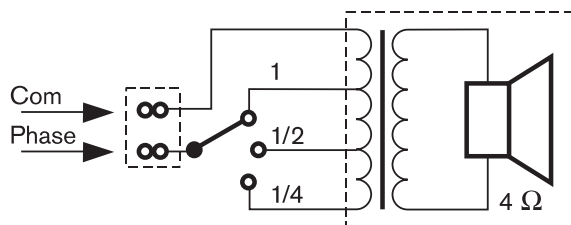
Type number overview

- LBC 3510/40 9/6 W loudspeaker unit
- LBC 3520/40 18/12 W loudspeaker unit
- LBC 3530/40 36/24 W loudspeaker unit
- LBC 3603/01 Circular wave guide grille (incl. wave guide)
- LBC 3650/00 Metal fire dome
- LBC 3660/01 Surface-mounting box
- LBC 3665/00 Back box

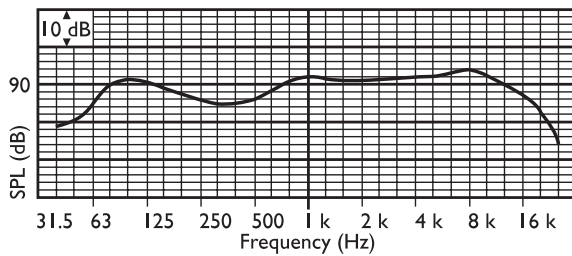
LBC 3510/40 Ceiling Loudspeaker



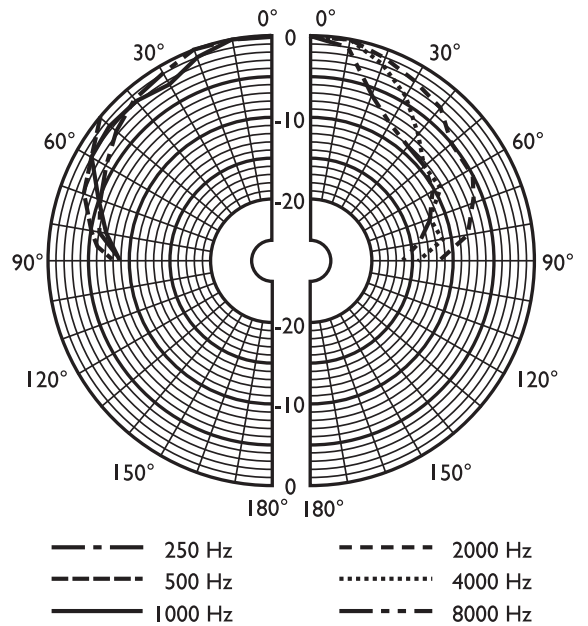
Dimensions



Circuit diagram



Frequency response

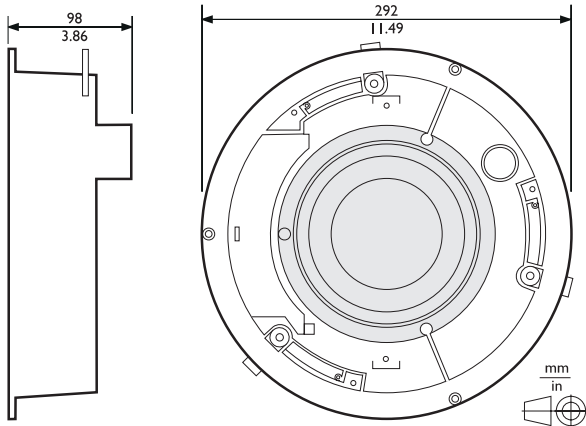


Polar diagram

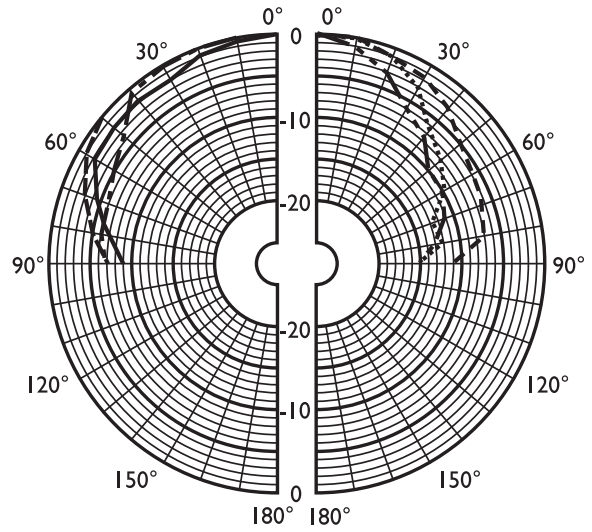
Octave band (Hz)	125	250	500	1k	2k	4k	8k
SPL 1.1	89	86	86	90	91	88	86
SPL max.	97	94	94	98	99	96	94
Q-factor	3.9	3.7	2.7	4	5.9	7.1	8.1
Efficiency	0.26	0.13	0.19	0.32	0.27	0.11	0.06
H. angle	160	160	180	150	120	120	120
V. angle	160	160	180	150	120	120	120

Quick reference table

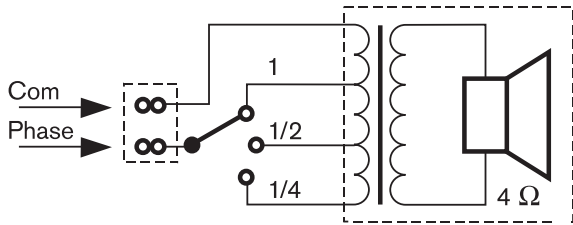
LBC 3520/40 Ceiling Loudspeaker



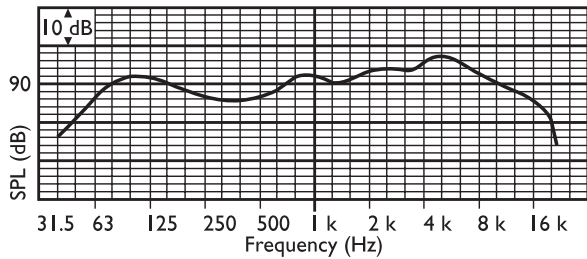
Dimensions



Polar diagram



Circuit Diagram

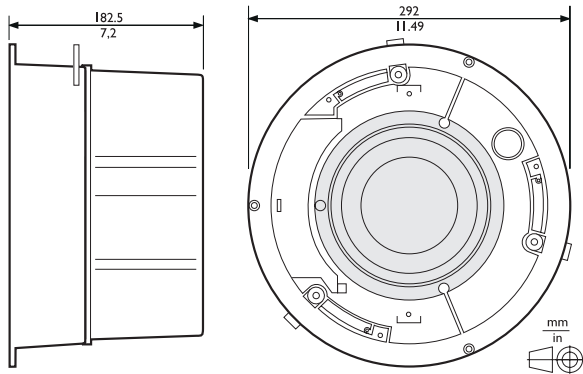


Frequency response

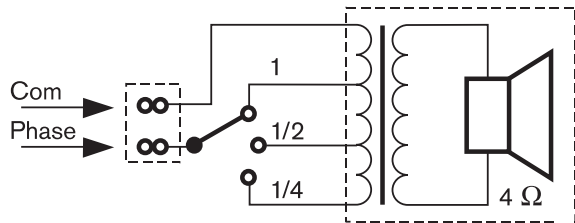
Octave band (Hz)	125	250	500	1k	2k	4k	8k
SPL 1.1	90	87	87	90	94	90	87
SPL max.	101	98	98	101	105	101	98
Q-factor	3.5	3.5	2.6	4.5	6.6	7.4	6.8
Efficiency	0.35	0.18	0.25	0.28	0.48	0.17	0.1
H. angle	160	160	170	150	120	120	120
V. angle	160	160	170	150	120	120	120

Quick reference table

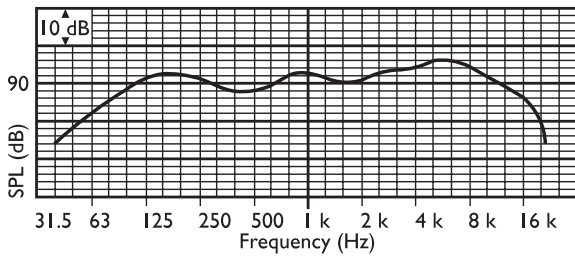
LBC 3530/40 Ceiling Loudspeaker



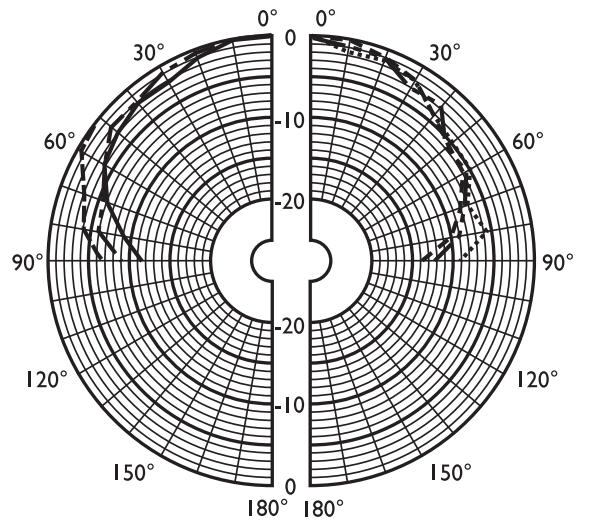
Dimensions



Circuit diagram



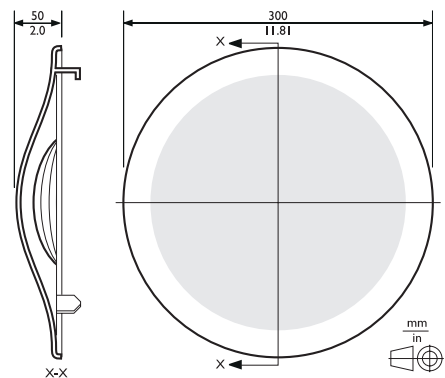
Frequency response



Polar diagram

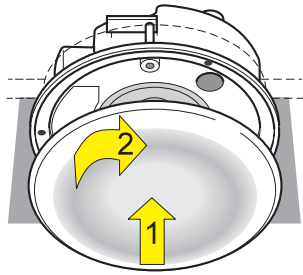
Octave band (Hz)	125	250	500	1k	2k	4k	8k
SPL 1.1	90	90	87	91	93	90	87
SPL max.	104	104	101	105	107	104	101
Q-factor	4.3	4.3	3	4.5	7.2	6.3	6.3
Efficiency	0.3	0.3	0.21	0.35	0.35	0.2	0.1
H. angle	160	160	170	145	130	130	130
V. angle	160	160	170	145	130	130	130

Quick reference table

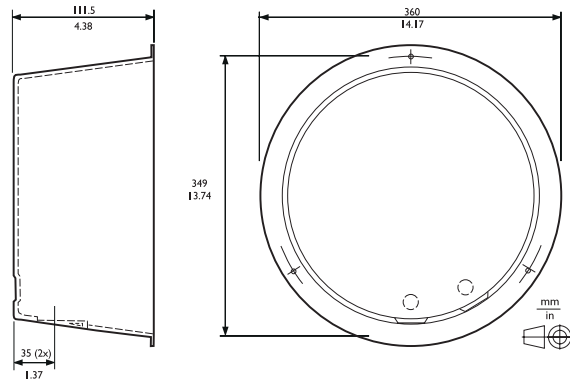


LBC 3603/01 grille incl. Wave guide

LBC 3665/00 back box



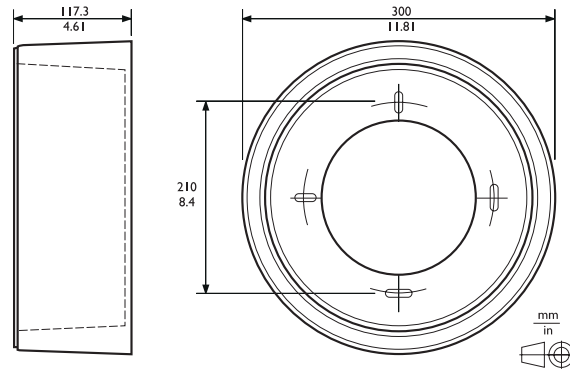
Bayonet grille fitting



LBC 3650/00 fire dome

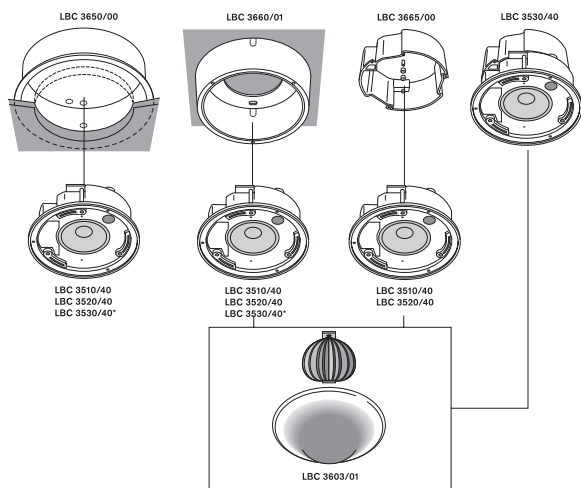
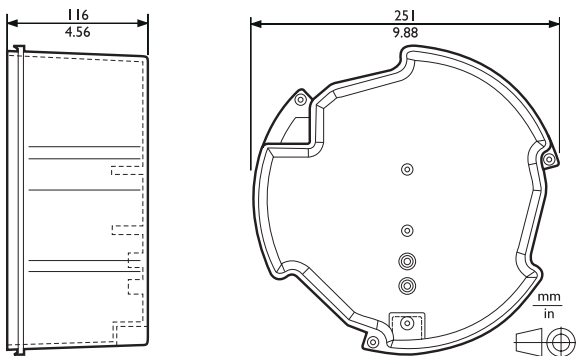


Loudspeaker unit without wave guide



Loudspeaker unit with wave guide

LBC 3660/01 surface mounting box



*) without back box

Technical Specifications			
Electrical*			
Loudspeaker Units	LBC3510/40	LBC3520/40	LBC 3530/40
Max. Power	9 W	18 W	36 W
Rated Power	6 W (6 - 3 - 1.5 W)	12 W (12 - 6 - 3 W)	24 W (24 - 12 - 6 W)
Sound pressure level at rated power/1 W (at 1kHz, 1m)	98dB / 90dB (SPL)	101dB / 90dB (SPL)	105dB / 91dB (SPL)
Effective frequency range (-10 dB)	60Hz - 20kHz		
Opening Angle (at 1 kHz/4 kHz, -6 dB)	150° / 120°		
With Wave	150° / 120°		145° / 130°
Guide Grille	100 V		
Rated Voltage	100 V		
Rated Impedance	1666 ohm	833 ohm	416 ohm
Mechanical			
Speaker Size	6 inch		
Magnet Weight	4.14 oz.	8.6 oz.	15.9 oz.
Connections	Screw-terminal block		
Dimensions (dia. x max. D)	292 x 98 mm (11.5 x 3.9 in)	292 x 182.5 mm (11.5x7.2 in)	
Mounting Cut-Out Dia.	255 mm (10.03 in)		
Max. Ceiling Thickness	50 mm		
Weight	1.2 kg (2.64 lb)	1.6 kg (3.52 lb)	2.6 kg (5.72 lb)

Environmental		
Ambient Temperature	25 to +55 °C (-13 to 131 °F)	
LBC 3603/01		
Description	Circular wave guide (metal)	
Dimensions (dia. X max. D)	300 x 50 mm (11.8 x 2.0 in)	
Color	RAL 9010 (white)	
Weight	440 g (0.96 lb)	
LBC 3660/01		
Description	Surface-mounting box	LBC 3665/00 Back Box
Dimensions (dia. x max. D)	300 x 117.3 mm (11.8 x 4.6 in)	251 x 116 mm (9.9 x 4.5 in)
Color	RAL 9010 (white)	Black
Weight	830 g (1.93 lb)	550 g (1.21 lb)
LBC 3650/00		
Description	Steel fire dome	
Dimensions (dia. x max. D)	360 x 112 mm (14.2 x 4.4 in)	
Certified F30	acc. to DIN 4102	
Color	yellow passivated	
Weight	2 kg (4.4 lb)	

*) Technical performance data acc. to IEC 60268-5

Ordering Information

Model & Description

LBC 3510/40 Ceiling Loudspeaker unit
9/6 W

LBC 3520/40 Ceiling Loudspeaker unit
18/12 W

LBC 3530/40 Ceiling Loudspeaker unit
36/24 W

Hardware Accessories

LBC 3603/01 Circular Wave Guide Grille

LBC 3650/00 Metal Fire Dome

LBC 3660/01 Surface-Mounting Box

LBC 3665/00 Back Box

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