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2008

Bosch Public Address Databook

Public Address Databook



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Invented for life



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PA and Emergency Sound

1

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PLE-10M2-EU Plena Mixer



Features

- ▶ 6 microphone/line inputs, plus 3 music source inputs
- ▶ 100 V, telephone and a call station input with priority & VOX
- ▶ 2 zones and 2-channel operation
- ▶ Voice-activated emergency override
- ▶ 2-tone chime built in, 7 more chimes optional with call station
- ▶ Outputs for line out, music-only out, and insert point
- ▶ 24 V backup input with built in 24 V charger
- ▶ Separate tone controls for microphones and music sources

The Plena mixer is a high performance, professional public address mixer with modern state of the art features. Combined with the PLE-1P120-EU or PLE-1P240-EU amplifiers, you can build an easy-to-operate yet powerful and flexible public address system. All this without sacrificing features such as ducking, priority, and flexibility. The mixer fulfills a wide variety of public address requirements yet is surprisingly affordable.

Functions

Inputs

All Mic/line inputs can be switched between microphone level and line level sensitivity. The inputs are balanced and can also be used unbalanced. Phantom power can be switched on to provide power to condenser microphones.

Input channels 1 and 2 can take priority over all other microphone and music inputs:

- Input 1 can be activated by contact closure on the PTT (push to talk) input, or the input can be switched automatically if a signal is fed to the input, i.e. if someone speaks into the microphone (VOX activation). A 2-tone chime can be configured to precede an announcement

- Input 2 also has a VOX possibility. When one or both inputs are configured for priority, the attenuation (reduction) of the cinch input can be set between -2 dB (little attenuation) and -∞ dB (mute). This provides a talk-over or voice-over function.

Input channels 1 and 2 also feature selectable speech filters to enhance the clarity of announcements.

Labels and colored pins

More unique features are available such as a detachable label where the user can write the names for inputs, music sources and zones. These labels can then be mounted on the front, protected by the clear window.

Another useful feature is to indicate preferred settings on the front panel by inserting colored pins at the preset levels of all knobs. You can then instruct a user to set all the controls to the green pins to configure the system for their particular use. A second user can set all controls to the red pins for their configuration.

Unique features

Separate music inputs are available with their own input selector, volume control and tone control. The user can choose a music source such as a CD player or radio (like the PLN-DVDT), and set the music level. A desired sound for the music source can be set separate from the mic/line inputs. So if the music requires boosted low frequencies, the microphone voices will still be clear – a truly unique feature in its class.

The tone controls also have the following unique features:

- The mixer features separate tone controls for mic/line inputs and music inputs so the microphone voice can be specifically optimized for excellent speech or singing
- The tone controls for music enable the most suitable music reproduction

In addition, the tone controls are not standard bass and treble controls; our experience has enabled us to develop a tone control that can be used as a traditional tone control with high and low control, but with a powerful contour that addresses the problems that are found in real situations.

The tone control for the microphone and line inputs:

- boosts warmth in voices without boosting rumble, and cuts rumble without losing warmth in the low frequencies
- boosts sparkle without adding sharpness in the high frequencies when boosting, and reduces harshness and sharpness without reducing clarity when cutting

The tone control for the music inputs:

- boosts deep bass first without making the sound hollow or boomy, and cuts rumble without losing warmth in the low frequencies
- boosts sparkle without adding sharpness in the high frequencies, with slightly different frequencies to suit music reproduction

Integration

A telephone / 100 V emergency input with VOX activation is provided for easy integration with another PA system or a telephone paging system. It has its own preset volume control and overrides all other inputs, including call station and inputs 1 and 2.

Zones

The mixer has two zone outputs. The music can be switched on and off in the zones via the front panel and optional wall panel. Announcements from the PLE-2CS two-zone call station can be routed to zone 1 or zone 2, or both. Announcements from the tel/100 V input or inputs 1 & 2 are routed to both zones. Input 1 can be used for a PLE-1CS all-call call station or any other microphone or call station with a PTT contact. The unit also has a line output to connect the pre-amplifier output before zone selection, making it possible to create a third zone. This output can be switched to music only, for example, so that music on hold can be provided for the telephone system. Loop-through input and output connections enable external sound processing equipment (e.g. an equalizer or Plena feedback suppressor) while maintaining a balanced connection to the amplifiers.

Output status

An LED VU meter monitors the master output. A headphone socket, below the VU meter, provides the mixer output before zone selection so you can listen to the output before the signal is sent to the zone.

Controls and indicators

Front

- On/off switch
- Power on LED
- LED VU meter for master output (LEDs for -18, -12 -6, -3, 0 dB)
- Master volume knob
- Six volume knobs for microphone inputs
- Knob for treble level
- Knob for bass level
- Headphone socket
- Two zone selector buttons
- Background music button

Back

- Dip switches
- Chime level
- Ducking level
- Tel/100 V volume control

Interconnections

See Technical Specifications.

Certifications and Approvals

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2

Installation/Configuration Notes



Rear view

Parts Included

Quantity	Components
1	PLE-10M2-EU Plena Mixer
1	Power cord
1	Manual
1	Set of 19" mounting brackets

Technical Specifications

Electrical

Mains power supply

Voltage	115 - 230 VAC $\pm 10\%$, 50/60 Hz
Power consumption	24 VA

Battery power supply

Voltage	24 VDC $\pm 15\%$
Current	1 A
Power consumption (maximum)	1 A

Performance

Frequency response	50 Hz to 20 kHz (+0/-3 dB)
Distortion	<0.1% @ rated output power, 1 kHz
Low Control	Max -12/+12 dB (frequency is setting dependent)
Hi Control	Max -12/+12 dB (frequency is setting dependent)

RJ-45 input

2 x

Call station input	For PLE-2CS(MM)
Wall panel input	For PLE-WP3S2Z

Mic/line input

6 x

Input 1 (Push-to-talk contact with ducking functionality)	5-pin Euro style, balanced, phantom 3-pin XLR, balanced, phantom
Input 2-6 (VOX with ducking functionality on input 2)	3-pin XLR, balanced, phantom
Sensitivity	1 mV (mic); 200 mV (line)
Impedance	>1 kohm (mic); >5 kohm (line)
Dynamic range	100 dB

Mic/line input	6 x
S/N (flat at max volume)	>63 dB (mic) >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR (mic)	>40 dB (50 Hz to 20 kHz)
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm (mic)
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
VOX (input 1 & 2)	attack time 150 ms; release time 2 s
Music inputs	3 x
Connector	Cinch, stereo converted to mono
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB
Emergency / telephone	1 x
Connector	7-pin Euro style pluggable screw terminal
Sensitivity telephone input	1 V – 10 V adjustable
Sensitivity emergency input	100 V adjustable
Impedance	>10 kohm
S/N (flat at max volume)	>65 dB
VOX	Threshold 50 mV; attack time 150 ms; release time 2 s
Insert	1 x
Connector	Cinch
Nominal level	1 V
Impedance	>10 kohm
Zone/Master/Music output	3 x
Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm
Mechanical	
Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Mounting	Stand-alone, 19" rack
Color	Charcoal
Weight	Approx. 4.5 kg
Environmental	
Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%

Ordering Information**PLE-10M2-EU Plena Mixer****PLE-10M2-EU**

PLE-2MAxx0-EU Plena Mixer Amplifier



Features

- ▶ **6 microphone/line inputs plus 3 music source inputs**
- ▶ **100 V, telephone and a call station input with priority & VOX**
- ▶ **2 zones and announcement only output**
- ▶ **Voice activated emergency override**
- ▶ **High output power 120 and 240 Watts**
- ▶ **2-tone chime built in (7 more chimes optional with call station)**
- ▶ **Outputs for line out, music only out and insert point**
- ▶ **24 V backup input with built in 24 V charger**
- ▶ **Separate tone controls for microphones and music sources**

These Plena mixer amplifiers are high performance, professional public address units with modern state of the art features. They are easy to use, taking the complexity away from the user and putting it where it belongs, inside the equipment. Providing a crisp call or clear music is as easy as turning on the radio.

The amplifier is also surprisingly affordable, without sacrificing features such as ducking, priority and flexibility.

Functions

Microphone and line inputs

All Mic/line inputs can be switched between microphone level and line level sensitivity. The inputs are balanced but can be used unbalanced. Phantom power can be switched on to provide power to condenser microphones.

Input channels 1 and 2 can take priority over all other microphone and music inputs:

- Input 1 can be activated by contact closure on the PTT (push to talk). A 2-tone chime can be configured to precede an announcement.

- Input 2 can be switched automatically if a signal is fed to the input i.e. if someone speaks into the microphone (VOX activation).

When one or both inputs are configured to have priority, the amount of attenuation (reduction) of the cinch inputs, can be set between -2 dB (little attenuation) or $-\infty$ dB (mute). This provides a talk-over or voice-over function. Input channels 1 and 2 also feature selectable speech filters to enhance the clarity of announcements.

Music inputs

Separate music inputs are available with their own input selector and volume control. The user can choose a music source like a CD player or radio (like the PLN-DVDT), and set the level of music.

You can set the desired sound for the music source separate from the mic/line inputs. So if the music needs boosted low frequencies, this does not lead to muddy sounding voices from the microphones. A truly unique feature in its class.

Personalized settings

More unique features are available such as detachable labels where the user can write the names for inputs, music sources and zones. These labels can then be mounted on the front, protected by the clear window.

Another useful feature is to indicate preferred settings on the front panel by inserting colored pins at the preset levels of all knobs. You can then instruct a user to set all the controls to the silver pins to configure the system for their particular use. A second user can set all controls to the red pins for their configuration.

Tone controls

The unique tone controls provide separate control for mic/line inputs and music inputs so that the voice on the microphones can be specifically optimized for excellent speech or singing. Correspondingly, the tone controls for background music provide the most appropriate music reproduction.

In addition, the tone controls are not standard bass and treble controls. Our experience has led us to develop a tone control that can be used as a traditional tone control with high and low control, but has a powerful contour that addresses the problems found in real situations.

The tone control for the microphone and line inputs boosts warmth in voices without boosting rumble and cuts rumble without losing warmth in the low frequencies. In the high frequencies, the tone control boosts sparkle without adding sharpness, but when cutting is first, cuts harshness and sharpness without reducing clarity.

The tone control for the music inputs boosts deep bass first without making the sound boomy, and cuts rumble without losing warmth in the low frequencies. In the high frequencies the tone control is similar to the microphone inputs, with slightly different frequencies to suit music reproduction.

For easy integration with another PA system or a telephone paging system, a telephone / 100 V emergency input with VOX activation is provided. It has its own preset volume control and overrides all other inputs, including call station and inputs 1 and 2. The unit also has a line output to add amplifiers for larger systems, with more output power, this output can be switched to music only so that for instance music on hold can be provided for the telephone system. Insert (loop through) input and output connections enable external sound processing equipment, such as an equalizer or the Plena feedback suppressor, to be connected between the preamplifier and the power amplifier stages.

Power

These Plena mixer amplifiers come in 120 and 240 Watts output power. This power is directly available on 100 V constant voltage connections and on a low impedance connection for an 8 ohm load. Moreover, the amplifiers have a separate 100 V call-only output channel for addressing areas where only priority announcements are required. The call-only output can also be used for 3-wire remote, volume control override.

Zones

The mixer amplifier has two zone outputs. The music can be switched on and off in the zones via the front panel and optional wall panel. Announcements from the PLE-2CS two-zone call station can be routed to zone 1 or zone 2, or both. Announcements from the tel/100 V input or inputs 1 & 2 are routed to both zones. Input 1 can be used for a PLE-1CS all-call call station or any other microphone or call station with a PTT contact.

Output status

An LED VU meter monitors the master output. A headphone socket, below the VU meter, provides the mixer output before zone selection so that it is possible to listen to the output before the signal is sent to the zone. For total reliability and ease of use, a limiter is integrated into the output stage to restrict output if the user applies too much signal.

Controls and indicators

Front

- On/off switch
- Power on LED
- LED VU meter for master output (LEDs for -18, -12 -6, -3, 0 dB)
- Master volume knob
- Six volume knobs for microphone inputs
- Knob for treble level
- Knob for bass level
- Headphone socket
- Two zone selector buttons
- Background music button

Back

- Dip switches
- Chime level
- Ducking level
- Tel/100 V volume control

Interconnections

See Technical Specifications.

Certifications and Approvals

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2

Installation/Configuration Notes



Rear view

Parts Included

Quantity	Components
1	PLE-2MA120-EU / PLE-2MA240-EU Plena Mixer Amplifier
1	Power cord
1	Manual
1	Set of 19" mounting brackets

Technical Specifications

Electrical

Mains power supply

Voltage	115 - 230 VAC $\pm 10\%$, 50/60 Hz
Inrush Current PLE-2MA120-EU	8/16 A (230/115 VAC)
Inrush Current PLE-2MA240-EU	9/19 A (230/115 VAC)

Battery power supply

Voltage	24 VDC, $\pm 15\%$
Current PLE-2MA120-EU	6 A
Current PLE-2MA240-EU	12 A
Charge current	0.5 ADC
Charge float voltage	27.3 VDC

Power consumption

PLE-2MA120-EU (mains)	400 VA
PLE-2MA240-EU (mains)	800 VA

Performance

Frequency response	50 Hz to 20 kHz (+1/-3 dB @ -10 dB ref. rated output)
Distortion	<1% @ rated output power, 1 kHz
Low Control	Max -12/+12 dB (frequency is setting dependent)
Hi Control	Max -12/+12 dB (frequency is setting dependent)

RJ-45 input**2 x**

Call station input	For PLE-2CS(MM)
Wall panel input	For PLE-WP3S2Z

Mic/line input**6 x**

Input 1 (Push-to-talk contact with ducking functionality)	5-pin Euro style, balanced, phantom 3-pin XLR, balanced, phantom
Input 2-6 (VOX with ducking functionality on input 2)	3-pin XLR, balanced, phantom
Sensitivity	1 mV (mic); 200 mV (line)
Impedance	>1 kohm (mic); >5 kohm (line)
S/N (flat at max volume)	63 dB
S/N (flat at min volume/muted)	>5 dB
Dynamic range	93 dB
S/N (flat at max volume)	>63 dB (mic); >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR (mic)	>40 dB (50 Hz to 20 kHz)
Headroom	>17 dB
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm (mic)
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
VOX (input 1 & 2)	attack time 150 ms; release time 2 s

Music inputs**3x**

Connector	Cinch, stereo converted to mono
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Emergency / telephone**1 x**

Connector	7-pin, Euro style pluggable screw terminal
Sensitivity tel	1 V maximum
Sensitivity 100V	100 V maximum
Impedance	>10 kohm
S/N (flat at max volume)	>65 dB
VOX	threshold 50 mV; attack time 150 ms; release time 2 s

Insert**1 x**

Connector	Cinch
Nominal level	1 V
Impedance	>10 kohm

Master/music output**1 x**

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

Loudspeaker outputs 100 V*

Connector	Screw, floating
Max / rated PLE-2MA120-EU	180 W / 120 W
Max / rated PLE-1906/10	360 W / 240 W

Loudspeaker output 8 ohm*

Connector	Euro style pluggable screw terminal, floating
PLE-2MA120-EU	31 V (120 W)
PLE-2MA240-EU	44 V (240 W)

* Subtract 1 dB for 24 V battery operation.

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Mounting	Stand-alone, 19" rack
Color	Charcoal
Weight (PLE-2MA120-EU)	Approx. 10.5 kg
Weight (PLE-2MA240-EU)	Approx. 12.5 kg

Environmental

Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%
Acoustic noise level of fan	<33 dB SPL @ 1 m temperature controlled

Ordering Information

PLE-2MA120-EU Plena Mixer Amplifier 120 W	PLE-2MA120-EU
PLE-2MA240-EU Plena Mixer Amplifier 240 W	PLE-2MA240-EU

PLE-1MAxx0-EU Plena Mixer Amplifier



Features

- ▶ 4 microphone/line inputs, plus 3 music source inputs
- ▶ 100 V and telephone input with priority & VOX
- ▶ Announcement only output, 3-wire volume override
- ▶ Voice-activated emergency override
- ▶ Wide range of power (30, 60 and 120 Watts)
- ▶ 2-tone chime
- ▶ Outputs for line out and music only out
- ▶ Unique easy-to-use intuitive tone controls

These Plena mixer amplifiers are high performance, professional public address units with modern state of the art features. They are easy to use, taking the complexity away from the user and putting it where it belongs, inside the equipment. Providing a crisp call or clear music is as easy as turning on the radio.

The amplifier is also surprisingly affordable, without sacrificing features such as ducking, priority and flexibility.

Functions

Microphone and line inputs

All Mic/line inputs can be switched between microphone level and line level sensitivity. The inputs are balanced but can be used unbalanced. Phantom power can be switched on to provide power to condenser microphones.

Input channels 1 and 2 can take priority over all other microphone and music inputs:

- Input 1 can be activated by contact closure on the PTT (push to talk). A 2-tone chime can be configured to precede an announcement.
- Input 2 can be switched automatically if a signal is fed to the input i.e. if someone speaks into the microphone (VOX activation).

When one or both inputs are configured to have priority, the amount of attenuation (reduction) of the cinch inputs, can be set between -2 dB (little attenuation) or $-\infty$ dB (mute). This provides a talk-over or voice-over function. Input channels 1 and 2 also feature selectable speech filters to enhance the clarity of announcements.

Music inputs

Separate music inputs are available with their own input selector and volume control. The user can choose a music source like a CD player or radio (like the PLN-DVDT), and set the level of music.

Personalized settings

More unique features are available such as detachable labels where the user can write the names for inputs, music sources and zones. These labels can then be mounted on the front, protected by the clear window.

Another useful feature is to indicate preferred settings on the front panel by inserting colored pins at the preset levels of all knobs. You can then instruct a user to set all the controls to the silver pins to configure the system for their particular use. A second user can set all controls to the red pins for their configuration.

Integration

A telephone / 100 V emergency input with VOX activation is provided for easy integration with another PA system or a telephone paging system. It has its own preset volume control and overrides all other inputs, including call station and inputs 1 and 2.

The unit also has a line output to add amplifiers for larger systems with more output power. This output can be switched to music only, for example, so that music on hold can be provided for the telephone system.

Power

The mixer amplifiers come in 30, 60 and 120 Watt output power. This power is directly available on 100 V constant voltage connections and on a low impedance connection for an 8 ohm load. Moreover, the amplifiers have a separate 100 V call-only output channel for addressing areas where only priority announcements are required. The call-only output can also be used for 3-wire remote, volume control override.

Output status

An LED VU meter monitors the master output. A headphone socket, below the VU meter, provides the mixer output. For total reliability and ease of use, a limiter is integrated into the output stage to restrict output if the user applies too much signal.

Controls and indicators

Front

- On/off switch
- Power on LED
- LED VU meter for master output (LEDs for -18, -12 -6, -3, 0 dB)
- Master volume knob
- Four volume knobs for microphone inputs
- Knob for treble level
- Knob for bass level

- Headphone socket
- Background music button

Back

- Dip switches
- Ducking level
- Tel/100 V volume control

Interconnections

See Technical Specifications.

Certifications and Approvals

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2

Installation/Configuration Notes



Rear view

Parts Included

Quantity	Components
1	PLE-1MAxx0-EU Plena Mixer Amplifier
1	Power cord
1	Manual
1	Set of 19" mounting brackets

Technical Specifications

Electrical

Mains power supply

Voltage	230 VAC $\pm$ 10%, 50/60 Hz
Inrush current PLE-1MA030-EU	4.5 A
Inrush current PLE-1MA060-EU	5 A
Inrush current PLE-1MA120-EU	10 A

Power consumption

PLE-1MA030-EU	100 VA
PLE-1MA060-EU	200 VA
PLE-1MA120-EU	400 VA

Performance

Frequency response	50 Hz to 20 kHz (+1/-3 dB @ -10 dB ref. rated output)
Distortion	<1% @ rated output power, 1 kHz
Bass Control	Max -12/+12 dB (frequency is setting dependent)
Treble Control	Max -12/+12 dB (frequency is setting dependent)

RJ-45 input

1 x

Wall panel input	For PLE-WP3S2Z
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Mic/Line input

4 x

Input 1 (Push-to-talk contact with ducking functionality)	5-pin Euro style, balanced, phantom 3-pin XLR, balanced, phantom
Input 2-4 (VOX with ducking functionality on input 2)	3-pin XLR, balanced, phantom
Sensitivity	1 mV (mic); 200 mV (line)
Impedance	>1 kohm (mic); >5 kohm (line)
Dynamic range	93 dB
S/N (flat at max volume)	>63 dB (mic); >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR (mic)	>40 dB (50 Hz to 20 kHz)
Headroom	>17 dB
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm (mic)

Music input

3 x

Connector	Cinch, stereo converted to mono
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Emergency / telephone

1 x

Connector	7-pin Euro style pluggable screw connector
Sensitivity Tel	1 V maximum
Sensitivity 100V	100 V maximum
Impedance	>10 kohm
S/N (flat at max volume)	>65 dB
VOX	threshold 50 mV; attack time 150 ms; release time 2 s

Master/music output

1 x

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

Loudspeaker output 70/100 V

Connector	Euro style pluggable screw terminal, floating
Max / rated PLE-1MA030	45 W / 30 W
Max / rated PLE-1MA060	90 W / 60 W
Max / rated PLE-1MA120	180 W / 120 W

Loudspeaker output 8 ohm

Connector	Euro style pluggable screw terminal, floating
PLE-1MA030-EU	16 V (30 W)
PLE-1MA060-EU	22 V (60 W)
PLE-1MA120-EU	31 V (120 W)

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Mounting	Stand-alone, 19" rack
Color	Charcoal

Weight

PLE-1MA030-EU	Approx. 5 kg
PLE-1MA060-EU	Approx. 8.5 kg
PLE-1MA120-EU	Approx. 10.5 kg

Environmental

Operating temperature	-10 °C to +45 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%
Acoustic noise level of fan (PLE-1MA120-EU)	<33 dB SPL @ 1 m

Ordering Information

PLE-1MA030-EU Plena Mixer Amplifier 30 W	PLE-1MA030-EU
PLE-1MA060-EU Plena Mixer Amplifier 60 W	PLE-1MA060-EU
PLE-1MA120-EU Plena Mixer Amplifier 120 W	PLE-1MA120-EU

PLE-1Pxx0-EU Plena Amplifier



Features

- ▶ 120 and 240 W power amplifier in a compact housing
- ▶ 1 V line level balanced input
- ▶ 100 V and 8 ohm outputs
- ▶ 100 V input for slave operation on 100 V speaker line
- ▶ Temperature-controlled forced front to back ventilation (directly stackable)
- ▶ 24 VDC backup power with built in charger

The PLE-1P120-EU and PLE-1P240-EU are two high-power plug-and-play cost effective power amplifiers that deliver 120 and 240 Watts to constant voltage or 8 ohm loads. Built with premium quality and protections, they offer basic functionality at a budget price. The amplifiers offer straight 1 V and 100 V line in, and 100 V and 8 ohms out. They can extend the power of the PLE- series mixer amplifiers or be combined with the PLE-10M2-EU mixer, or work anywhere where more power on an existing 100 V line is needed or when a line level signal is provided.

Functions

Protection

The amplifier is protected against overload and short circuits. A limiter protects the amplifier and loudspeaker against accidental overdriving. A temperature-controlled fan ensures proper cooling without producing acoustic noise at lower output levels.

Power input and output

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover. The amplifier also has a built-in charger to charge the connected battery. The system has two balanced inputs that are summed together and a loop-through facility. This makes it easy to connect multiple

amplifiers. The secondary input is a 100 V line input to connect the amplifier to a 100 V loudspeaker line to provide more power in remote locations.

Gain or level control is located on the rear of the unit to avoid accidental setting change. A meter with LED bar shows the output level.

The amplifier has a 100 V output for constant voltage loudspeaker systems, and a low impedance output for 8 ohm loudspeaker loads.

Controls and indicators

Front

- Power on LED
- LED VU meter for master output (LEDs for -18, -12 -6, -3, 0 dB)
- On/off button

Back

- Level control

Interconnections

See Technical Specifications.

Certifications and Approvals

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2

Installation/Configuration Notes



Rear view

Parts Included

Quantity	Components
1	PLE-1P120-EU or PLE-1P240-EU Plena Mixer Amplifier
1	Power cord
1	Manual
1	Set of 19" mounting brackets

Technical Specifications

Electrical

Mains power supply

Voltage	115 - 230 VAC ±10%, 50/60 Hz
Inrush Current PLE-1P120-EU	4.5/9 A (230/115 VAC)
Inrush Current PLE-1P240-EU	9/18 A (230/115 VAC)
Power consumption PLE-1P120-EU	380 VA
Power consumption PLE-1P240-EU	760 VA

Battery power supply

Voltage	24 VDC ±15%
Current PLE-1P120-EU	5.5 A
Current PLE-1P240-EU	11 A
Charge current	0.5 ADC
Charge float voltage	27.3 VDC

Power consumption (PLE-1P120-EU)

Max power (mains)	227 W
-6dB (mains)	130 W
Idle (mains)	12 W
Max power (24 V)	7 A (150 W)
-6 dB (24 V)	4.4 A (194 W)
Idle (24 V)	0.3 A (7 W)

Power consumption (PLE-1P240-EU)

Max power (mains)	451 W
-6dB (mains)	244 W
Idle (mains)	16 W
Max power (24 V)	12 A (290 W)
-6 dB (24 V)	8.1 A (194 W)
Idle (24 V)	0.3 A (7 W)

Performance

Max / rated power PLE-1P120-EU	180 W / 120 W
Max / rated power PLE-1P240-EU	360 W / 240 W
Power reduction on backup power	-1 dB
Frequency response	50 Hz to 20 kHz (+1/-3 dB @ -10 dB ref. rated output)
Distortion	<1% @ rated output power, 1 kHz

Inputs

Connector 1	3-pin XLR, balanced
Sensitivity	1 V
Impedance	20 kohm
Connector 2	3-pin Euro style, balanced
Sensitivity	100 V
Impedance	300 kohm
Dynamic range	100 dB
CMRR (mic)	>40 dB (50 Hz to 20 kHz)

Loudspeaker outputs 100 V

Connector	Euro style pluggable screw terminals
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Loudspeaker output 8 ohm

Connector	Euro style pluggable screw terminals
PLE-1P120-EU	31 V (120 W)
PLE-1P240-EU	44 V (240 W)

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Mounting	Stand-alone, 19" rack
Color	Charcoal
Weight (PLE-1P120-EU)	Approx. 10.5 kg
Weight (PLE-1P240-EU)	Approx. 12.5 kg

Environmental

Operating temperature	-10 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%
Acoustic noise level of fan	<40 dB SPL @ 1 m temperature controlled

Ordering Information

PLE-1P120-EU Plena Amplifier
120 W

PLE-1P120-EU

PLE-1P240-EU Plena Amplifier
240 W

PLE-1P240-EU

PLE-2CS Plena Two-zone Call Station



Features

- ▶ **Modern two-zone call station for the PLE series**
- ▶ **Selectable gain**
- ▶ **Speech filter and limiter**
- ▶ **Output level control**
- ▶ **Loop-through option for up to 8 call stations**
- ▶ **LED indications for zone selection, busy, and power on**

The Plena two-zone call station is a modern, high-quality call station with a stable metal base design, a flexible microphone stem and a unidirectional condenser microphone. It can make calls to selected zones in a public address system built with the PLE series two-zone mixer and mixer amplifiers. In addition to tabletop use, the Plena design allows neat flush-mounting in desktops.

Functions

Gain, speech filter and intelligibility

This call station features selectable gain, a selectable speech filter, and a limiter for improved intelligibility.

Range

The call station has a balanced line level output, giving it a maximum range of 200 meters from the mixer, when using CAT-5 extension cables.

Loop-through

With the loop-through RJ-45 connector, it is possible to daisy chain multiple call stations.

Priority

The priority is automatic i.e. the call station nearest the mixer has priority and can override a call station further from the mixer. When a call is being made by a higher priority call station, a yellow light will display on the lower priority call stations.

Dip switches and status

DIP switches at the base of the call station select different microphone gain levels, chimes, and the speech filter. A service accessible rotary control provides microphone level attenuation. LEDs on the call station show which zones have been selected. An additional LED give visible feedback on the active state of the microphone and the system:

- Green flashing means standby (chime is sounding)
- Green indicates microphone active
- Amber indicates a higher priority call

Controls and indicators

- 2 x status LEDs
- PTT key
- 2 x zone selection keys
- 2 x zone selection LEDs
- All-call key
- DIP switches
- Rotary volume control

Interconnections

- 2 x RJ45 jacks

Certifications and Approvals

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Parts Included

Quantity	Components
1	PLE-2CS Plena two-zone call station
1	Cable terminated with a lockable CAT-5 connector

Technical Specifications

Electrical

Voltage range	24 VDC supplied by PLE mixer amplifier or mixer
Current consumption	<30 mA

Performance

Nominal sensitivity	85 dB SPL (gain preset 0 dB)
Nominal output level	700 mV
Input sound level (max)	110 dB SPL
Gain preset	-15 / 0 / +6 dB
Limiter threshold	2 V
Compression ratio limiter	1:20
Distortion	<0.6% (maximum input)

Input noise level (equiv.)	25 dB SPLA
Frequency response	100 Hz to 16 kHz
Speech filter	-3 dB at 315 Hz, high-pass, 6 dB/oct
Output impedance	200 ohm

Selections

Chimes	6
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Mechanical

Base dimensions (H x W x D) without microphone	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
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Stem length with microphone	390 mm (15.35 in)
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Cable length	5 m (16.4 ft)
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Weight	Approx. 1 kg (2.2 lb)
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Mounting	Standalone
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Color	Charcoal with silver
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

PLE-2CS Plena Two-zone Call Station

metal base design, a flexible microphone stem with a unidirectional condenser microphone and zone selection.

PLE-2CS

PLE-1CS Plena All Call Station



Features

- ▶ **PTT-key for calls for activation**
- ▶ **Momentary or toggle**
- ▶ **Green LED, indicating microphone active**
- ▶ **Stable metal base design with fixed 2 m cable and lockable Euro style connector**
- ▶ **Phantom powered by amplifier**

The Plena tabletop microphone is a stylish, high-quality tabletop unidirectional condenser microphone, intended for making calls in a public address system. Its heavy metal base and rubber feet ensure stability on any flat surface. The special design also allows the unit to be neatly flush-mounted in desktops.

Functions

The PTT-key (press-to-talk), not only switches on the microphone, but also provides priority contacts, that are compatible with the Plena range of amplifiers. The switching characteristic of the PTT-key can be configured internally for PTT-mode (on as long as pressed) or toggle-mode (press to switch on, press again to switch off).

It is equipped with a fixed, flexible 2 m cable and a 5-pin Euro style connector for the balanced signal and the priority contact. If the priority contact is not required, the microphone can be connected to amplifiers with 3-pin Euro style connector.

A green LED indicates when the microphone is active.

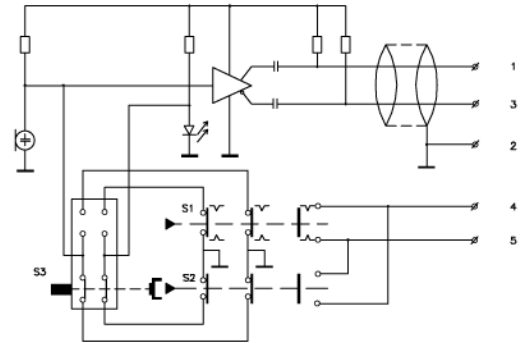
Controls and indicators

- PTT-key
- PTT status LED

Certifications and Approvals

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Installation/Configuration Notes



Circuit diagram

Parts Included

Quantity	Component
1	PLE-1CS PLENA All Call Call Station

Technical Specifications

Electrical

Phantom power supply

Voltage range	12 to 48 V
Current consumption	<8 mA

Performance

Sensitivity	0.7 mV @ 85 dB SPL (2 mV/Pa)
Maximum input sound level	110 dB SPL
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	28 dB SPLA (S/N 66 dBA ref. 1 Pa)
Frequency response	100 Hz to 16 kHz
Output impedance	200 ohm

Mechanical

Base dimensions (H x W x D)	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg (2.2 lb)
Color	Charcoal with silver
Stem length with mic.	390 mm (15.35 in)
Cable length	2 m (6.56 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information**PLE-1CS Plena All Call Station**

metal base design with fixed 2 m cable and
lockable Euro style connector

PLE-1CS

PLE-WP3S2Z-EU Wall Panel



Features

- ▶ Can be used for all Plena Easyline (PLE) mixer-amplifiers
- ▶ Remote selection of three music source inputs
- ▶ Remote zone selection
- ▶ Perfect companion to Bosch volume controls
- ▶ Daisy-chain of multiple wall panels
- ▶ Powered through the Plena system

The Plena PLE-WP3S2Z-EU Wall Panel is used to remotely select a music source and activate or deactivate zones of a Plena PLE audio mixer or mixer amplifier.

Functions

Remote zone and Input source control

Two zones and three music input sources can be controlled from a remote location by selecting the individual switches.

Indicators

The ON status of each zone and selected music source is indicated by an LED.

Connections and settings

With the use of CAT-5 cable and RJ-45 connector the PLE-WP3S2Z-EU Wall Panel can be easily and quickly connected to the PLE series mixer or mixer amplifier. Settings are not required.

Daisy chain / Remote locations

Maximum four PLE-WP3S2Z-EU Wall Panels can be daisy chained to remotely control a PLE series mixer or mixer amplifier.

Certifications and Approvals

EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55103-2

Installation/Configuration Notes

The Wall Panel is installed to the mixer or mixer-amplifier via standard CAT-5 cable with RJ-45 connector. The maximum cable distance is 200 m. The design and color are unobtrusive in any interior. Ease of installation, operation and reliability is optimized in the design. The appearance is matched to the Bosch Loudspeaker Volume Controls.

The wall panel buttons have the same function as the corresponding buttons of the Plena mixer front panel

Parts Included

1	PLE-WP3S2Z-EU Wall Panel
1	Quick Reference Card

Technical Specifications

Electrical

Power supply

Voltage range	5 VDC, supplied by the connected amplifier
Current consumption (typical)	<50 mA

Connectors

to (mixer) amplifier	1 x RJ-45
Loop through	1 x RJ-45

Mechanical

Dimensions (H x W x D)	87 x 87 x 21 mm (3.43 x 3.43 x 0.83 in)
Weight	Approx. 0.35 kg (0.77 lb)
Color	White
Label text color	Silver

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

PLE-WP3S2Z-EU Wall Panel

remotely select a music source and activate or deactivate zones of a Plena PLE audio mixer or mixer amplifier

PLE-WP3S2Z-EU

LBB 1925/10 Plena System Pre-Amplifier



Features

- ▶ **Six-zone system pre-amplifier, with single or dual channel operation**
- ▶ **Two input channels for call stations**
- ▶ **Universal input for microphone/line, with speech optimized tone control**
- ▶ **Three inputs for BGM selection and music optimized tone control**
- ▶ **Front panel zone selection for BGM and call station zone selection for calls**
- ▶ **PC and trigger inputs for automated calls, alarm tones and chimes to selected zones**

The Plena system pre-amplifier is a versatile, high-performance unit with call and mono BGM (background music). It fulfills a wide variety of public address requirements at a surprisingly low cost. It can provide dual channel operation for simultaneous calls and BGM for up to six different zones, using two Plena amplifiers.

Functions

The call channel provides two inputs for the Plena call stations, LBB 1941/00 (all-call) or LBB 1946/00 (six-zone), with loop-through capability, and universal, balanced input. One is a 3-pin XLR connector for microphone or line level (selectable), and the other is a 5-pin DIN-connector with all-call priority contact, which may also be used to start one of the available chime attention signals.

The microphone input has a selectable speech filter for improved intelligibility, a volume control, and bass and treble tone controls with shelving characteristics optimized for speech. The call channel is available on the balanced XLR master output.

The BGM channel provides three inputs on stereo cinch-connectors, converted to mono, with front panel selection, volume control and bass and treble tone controls with shelving characteristics optimized for music. The BGM channel has a direct output on balanced XLR for dual channel operation. It can also feed the master output, with the lowest priority, for single channel operation. Zone selector switches on the front panel control the BGM routing. An overload protected 24 VDC output provides power for driving external relays, often making an external power supply unnecessary.

An emergency/telephone input with signal level detector (VOX) and volume preset has the highest priority to all zones. Two trigger inputs (contact closure) activate alarm or time signals to pre-selected zones. Many different chime tones are available. A PC audio input with RS-232 control provides software controlled zone configuration, or automatic messaging in combination with the LBB 1965/00 Plena Message Manager. There are six levels of priority available for BGM, microphone, call stations, trigger inputs and emergency input. A set of relays directs the amplifier output(s) to different loudspeaker groups (zone switching).

Each zone has a tri-state control on the front panel that can turn it off, switch it to the call channel, or to the BGM channel. The all-call microphone input and emergency activation override the call station selection on the call channel. Each zone has separate priority overrides with preset volume levels. This assures an appropriate message volume, independent of any local volume settings, such as for BGM. Both three-wire and four-wire override schemes are supported. An override also activates a voltage-free contact (call-active) available for external control and monitoring. The master output channel, or one of the input channels, can be monitored through the headphone connector and/or the LED VU-meter.

Controls and indicators

Front

- LED power meter
- Power on LED
- Call active LED
- Three knobs for mic/line volume, treble, and bass levels
- Three knobs for BGM volume, treble, and bass levels
- BGM source selection knob
- Six zone-selections keys
- Six zone status LEDs
- On/off switch

Back

- EMG input volume control
- Mains voltage switch

Interconnections

Front

- Headphone jack

Back

- Two (DIN/XLR) Mic/line input inputs
- Two (DIN/DIN) call station inputs
- PC audio (cinch) input
- Priority input
- Master (XLR) output

- BGM (XLR) output
- Emergency signal input
- Two trigger inputs
- RS-232 (DE-9)
- Three (cinch) CD, tape, aux inputs
- Six 100 V speaker outputs
- 24 VDC output
- 24 VDC input
- Three control inputs
- Ground screw
- IEC mains socket

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Installation/Configuration Notes



LBB 1925/10 rear view

Parts Included

Quantity	Component
1	LBB 1925/10 PLena System Pre-amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Plena CD
1	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230/115VAC, $\pm 15\%$, 50/60 Hz
Current inrush	230/115 VAC, 1.5/3 A
Max power consumption	25 VA

Battery power supply

Voltage	24 VDC, $\pm 15\%$ / -15%
Current max	1 A

Mains power supply

Performance

Frequency response	50 Hz to 20 kHz (+1 / -3 dB)
Distortion	<0.5%
Bass control	± 10 dB @ 100 Hz
Treble control	± 10 dB @ 10 kHz
Channel separation	>70 dB @ 1 kHz
Priority mute	>40 dB
Dynamic range	100 dB

Mic/line input

Mic/line input	1 x
Connectors	5-pin DIN, 6.3 mm phone jack, balanced, with phantom power
Sensitivity	1 mV (mic), 200 mV (line)
Impedance	>1 kohm (mic); >5 kohm (line)
S/N (flat at max volume)	>63 dB (mic); >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR	>40 dB (50 Hz – 20 kHz)
Headroom	>25 dB
Speech filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm, (mic mode only)

Line input

Line input	3 x
Connector	Cinch, stereo converted to mono, unbalanced
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Master output

Master output	1 x
Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

Tape output

Tape output	1 x
Connector	Cinch, 2 x mono
Nominal level	350 mV
Impedance	<1 kohm

Headphone output

Headphone output	1 x
Connector	6.3 mm jack stereo, signal mono
Nominal level	3 V
Impedance	<100 ohm
Zone relays	5 A

Contacts voltage

Contacts voltage	250 V
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Contacts current

Contacts current	8 A
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Interconnection input / emergency

Interconnection input / emergency	1 x
Connector	3-pin XLR, balanced
Sensitivity	200 mV (interconnection), 100 mV to 1 V adjustable (emergency)
Impedance	>10 kohm
VOX threshold	45 mV (emergency)

Mains power supply

Interconnection output	1 x
Connector	3-pin XLR, balanced
Nominal level	200 mV
Impedance	<100 ohm
Relay contacts	30 V, 1 A
DC supply output voltage	24 V, 250 mA max

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Weight	Approx. 5 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1925/10 Plena System Pre-Amplifier **LBB1925/10**
 high-performance unit with call and mono BGM
 (background music).

LBB 1920/00 Plena Universal Pre-Amplifier



Features

- ▶ **Four universal low-noise input channels for microphone or line**
- ▶ **Separate tone control, speech filter and direct output per channel**
- ▶ **Selectable blocking, serial and mixing priorities**
- ▶ **Multifunctional inter-connection point**
- ▶ **Priority and emergency relay outputs**
- ▶ **Master volume control**

The Plena Pre-Amplifier is a versatile, high-performance unit with four mono-input channels. It fulfills a wide variety of public address requirements at a surprisingly low cost.

Functions

All input channels provide the choice of a balanced 3-pin XLR-connector for microphone or line level (selectable), a balanced 5-pin DIN-connector for microphone or line level with priority contact, or a line level stereo cinch-connector, converted to mono. Microphone inputs have a phantom power supply. Each input channel has its own volume and tone control, a selectable speech filter to reduce the bass content of the speech signal for improved intelligibility, and a balanced, direct output on XLR, that bypasses the channel controls.

Three priority modes are available for the input channels. In blocking mode the input channel that is activated first gets priority over all other input channels. In serial mode input channel 1 has priority over channels 2, 3 and 4; channel 2 has priority over channels 3 and 4; and channel 3 has priority over channel 4. Each of the input channels can be mixed to the master output, irrespective of priority, by separately setting that channel to the mixing mode.

Balanced XLR interconnection input and output are provided in combination with an insertion/cascade selector. In insertion mode an external sound processing device, e.g. an equalizer, can be connected between these connections. In the cascade mode, multiple LBB1920/00 pre-amplifiers can be cascaded to increase the number of input channels to 8, 12, or even more. Internally the interconnection input can be switched as an emergency input with a signal level detector (VOX). If an emergency audio signal is detected, this channel overrides all others. The emergency input channel has its own volume preset and bypasses the master volume control.

For the emergency input another VOX activated relay is provided to trigger external equipment or for local volume control override. An overload protected 24 VDC output provides power for driving external relays, making an external power supply unnecessary.

An additional microphone level output is available on the DIN connector, parallel to the balanced XLR master output. This provides an input signal for a mixing desk or a microphone input channel for a mixer amplifier, such as the Plena LBB 19xx/10. A tape output is also available.

The master output channel, or one of the input channels, can be selected to be monitored with headphone connector and LED meter.

Controls and indicators

Front

- LED power level bar
- Power on indication LED (green)
- Power button
- Four treble control knobs
- Four bass control knobs
- Four channel volume control knobs
- Master volume control knob
- Headphone channel selection knob

Back

- Mains voltage switch
- Insertion/ cascade switch

Interconnections

Front

- Headphone jack

Back

- Four channel inputs, each consisting of:
 - One DIN connector (priority)
 - One XLR connector
 - Two cinch connectors
- Four direct channel outputs
- Tape output
- Earth connection screw
- Emergency relay output
- 24 V DC backup power input
- 24 V DC output
- Insertion / cascade / emergency input
- Insertion / cascade output
- Master line output (XLR)
- Master mic output (priority)
- Mains socket

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	
Immunity	acc. to EN 55103-2	
Emission	acc. to EN 55103-1	

Installation/Configuration Notes



LBB 1920/00 rear view

Parts Included

Quantity	Component
1	LBB 1920/00 Plena Universal Pre-amplifier
1	Power cord
1	19" mounting brackets
1	Plena CD
1	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 15\%$, 50/60 Hz
Inrush current	1.5 A at 230 VAC / 3 A at 115 VAC
Max power consumption	25 VA

Battery power supply

Voltage	24 VDC, $+15\%$ / -15%
Current max	1 A

Performance

Frequency response	50 Hz to 20 kHz ($+1$ / -3 dB)
Distortion	$<0.5\%$
Bass control	± 10 dB at 100 Hz
Treble control	± 10 dB at 10 kHz
Channel separation	>70 dB at 1 kHz
Priority mute	>40 dB
Dynamic range	100 dB

Mic/line inputs	4 x
Connectors	3-pin XLR / 5-pin DIN, balanced

Mains power supply

Sensitivity	1 mV (microphone), 200 mV (line)
Impedance	>1 kohm (microphone), >5 kohm (line)
S/N (flat at max volume)	>63 dB (microphone), >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR	>40 dB (50 Hz – 20 kHz)
Headroom	>25 dB
Speech Filter	-3 dB at 315 Hz, high-pass, 6 dB / oct
Phantom power supply	16 V via 1.2 kohm, in mic mode only

Line inputs

Connector	Cinch, unbalanced, stereo converted to mono
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Direct outputs

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

Master output

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	<100 ohm

Master output

Connector	5-pin DIN, balanced
Nominal level	4 mV (microphone level)
Impedance	<100 ohm

Tape output

Connector	Cinch, 2 x mono
Nominal level	350 mV
Impedance	<1 kohm

Headphone output

Connector	6.3 mm jack stereo, signal mono
Nominal level	3 V
Impedance	<100 ohm

Emergency input

Connector	3-pin XLR, balanced
Sensitivity	200 mV (interconnection), 100 mV to 1 V adjustable (emergency)
Impedance	>10 kohm
VOX Threshold	45 mV (emergency)

Interconnection output

Connector	3-pin XLR, balanced
Nominal level	200 mV
Impedance	<100 ohm

Relays

Priority Relay Contacts	30 V, 1 A
Emergency Relay Contacts	30 V, 1 A
DC supply output	24 V, 250 mA max

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Weight	Approx. 5 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1920/00 Plena Universal Pre-Amplifier LBB1920/00
high-performance unit with four mono-input channels.

LBB 190x/10 and LBB 191x/10 Plena Mixer Amplifiers



Features

- ▶ Range of single and dual zone mixer amplifiers from 30 W to 120 W
- ▶ Four low-noise balanced inputs for microphone or line
- ▶ Selectable priority & VOX switching on microphone input 1
- ▶ Optional 2-tone chime to precede announcements
- ▶ VOX activated emergency override
- ▶ Outputs for normal, call-only and mix-only zones
- ▶ Choice of CD, tuner or auxiliary music inputs

The Plena mixer amplifier is a versatile, high-performance unit with four mono microphone inputs and a music input. It fulfills a wide variety of public address requirements at a surprisingly low cost.

Functions

All input channels have a phantom power supply to provide power to condenser microphones and selectable speech filters for improved intelligibility. Input channels 3 and 4 can also be switched to line sensitivity. Separate music inputs are available with their own input selector and volume control.

Input channel 1 can take priority over all other microphone and music inputs. Contact closure on the 5-pin DIN connector, or if the signal level on channel 1 exceeds a predefined value (VOX) will activate priority. A 2-tone chime can be configured to precede a priority announcement. A telephone or emergency input with VOX activation and its own preset volume control overrides all other input.

Loop through input and output connections enable external sound processing equipment, such as an equalizer or the Plena feedback suppressor, to be connected between the preamplifier and the power amplifier stages. An LED VU-meter monitors the master output. The unit also has a tape output channel.

The Plena mixer amplifiers come in a range of maximum output power. This power is directly available on 70 V and 100 V constant voltage connections and on a low impedance connection for an 8 ohm load. Moreover, the amplifiers have a separate 70 V / 100 V call-only output channel for addressing areas where only priority announcements are required, and a 70 V / 100 V mix-only output channel for areas where no priority announcements should be heard. The call-only output can also be used for 3-wire remote, volume control override. For more output power than the built-in power stage can deliver, additional Plena power amplifiers can be connected to the balanced line output in a loop-through arrangement.

The LBB 1914/10 offers the same functionality as the LBB 1912/10 but also has two front-panel switches to direct the amplifier output to two separate zones. This is useful when certain announcements or background music should not be heard in part of a building. Priority calls, however, are always routed to both zones.

Controls and indicators

Front

- LED power meter
- Power on LED
- Master volume control knob
- Four volume control knobs for mic inputs
- Three knobs for BGM volume, treble, and bass levels
- BGM source selection knob
- On/off switch
- Two zone selection buttons (LBB1914/10 only)

Back

- EMG input volume control
- Two mic/line switches
- Chime on/off switch
- Mains voltage switch

Interconnections

Front

- Headphone jack

Back

- Priority mic input (DIN/6.3 mm jack)
- Mic input (XLR/6.3 mm jack)
- Two mic/line inputs (XLR/6.3 mm jack)
- Three audio inputs (2 x cinch)
- EMG input (screw)
- Line output (XLR)
- Tape output (2 x cinch)
- Insertion input/output (2 x cinch)
- 24 VDC input
- Three (five for the LBB 1914/10) loudspeaker outputs (screw)

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Installation/Configuration Notes



LBB 190x/10 and LBB 191x/10 rear view

Parts Included

Quantity	Components
1	LBB 190x/10 Plena Mixer Amplifier or LBB 191x/10 Plena Mixer Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	
LBB 1903/10	4.5 / 9 A (230 / 115 VAC)
LBB 1906/10	5 A / 10 A (230 / 115 VAC)
LBB 1912/10, LBB 1914/10	8 / 16 A (230 / 115 VAC)

Battery power supply

Voltage	24 VDC, $+15\%$ / -15%
Current	
LBB 1903/10	1.6 A
LBB 1906/10	3 A
LBB 1912/10, LBB 1914/10	6 A

Performance

Frequency response	50 Hz to 20 kHz (+1 / -3 dB at -10 dB ref. rated output)
Distortion	<1% at rated output power, 1 kHz

Mains power supply

Bass control	-8 / +8 dB at 100 Hz
Treble control	-8 / +8 dB at 10 kHz
Dynamic range	100 dB
Mic input	2 x
Connector 1	5-pin DIN, 6.3 mm phone jack, balanced, with phantom power
Connector 2	3-pin XLR, 6.3 mm phone jack, balanced, with phantom power
Sensitivity	1 mV
Impedance	>1 kohm
S/N (flat at max volume)	63 dB
S/N (flat at min volume/muted)	>75 dB
CMRR	>40 dB (50Hz-20kHz)
Headroom	>25 dB
Speech filter	-3 dB at 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm
VOX (input 1 only)	attack time 150 ms; release time 2 s

Mic/line input

Connector 3, 4	3-pin XLR, 6.3 mm phone jack, balanced, with phantom power
Sensitivity	1 mV (mic); 200 mV (line)
Impedance	>1 kohm (mic); >5 kohm (line)
S/N (flat at max volume)	>63 dB (mic); >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR	>40 dB (50 Hz to 20 kHz)
Headroom	>25 dB
Speech filter	-3 dB at 315 Hz, high-pass, 6 dB/oct
Phantom power supply	16 V via 1.2 kohm (mic)

Music input

Connector	Cinch, stereo converted to mono
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Emergency / telephone

Connector	Screw terminals
Sensitivity	100 mV to 1 V, adjustable
Impedance	>10 kohm
S/N (flat at max volume)	>65 dB
VOX	50 mV threshold ; 150 ms attack time; 2 s release time

Loop through input

Connector	Cinch
Nominal level	1 V
Impedance	>10 kohm

Master line output

Connector	3-pin XLR, balanced
Nominal level	1 V

Mains power supply

Impedance	<100 ohm
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Tape output

	1 x
Connector	Cinch, 2 x mono

Nominal level	350 mV
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Impedance	1.5 kohm
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Loop through output

	1 x
Connector	Cinch

Nominal level	1 V
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Impedance	<100 ohm
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Loudspeaker output 70/100V

Connector	Screw, floating
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Power	Max / rated
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LBB 1903/10	45 / 30 W
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LBB 1906/10	90 / 60 W
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LBB 1912/10, LBB 1914/10	180 / 120 W
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Loudspeaker output 8 ohm

Connector	Screw, floating
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Power

LBB 1903/10	16 V (30 W)
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LBB 1906/10	22 V (60 W)
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LBB 1912/10, LBB 1914/10	31 V (120 W)
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Power reduction on 24 V	1 dB
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Power consumption**Mains operation max**

LBB 1903/10	100 VA
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LBB 1906/10	200 VA
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LBB 1912/10, LBB 1914/10	400 VA
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24 V operation max

LBB 1903/10	1.6 A
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LBB 1906/10	3 A
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LBB 1912/10, LBB 1914/10	6 A
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Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
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Weight

LBB 1903/10	Approx. 5 kg
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LBB 1906/10	Approx. 8.5 kg
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LBB 1912/10, LBB 1914/10	Approx. 10.5 kg
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Mounting	Standalone, 19" rack
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +45 °C (+14 °F to +113 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Acoustic noise level of fan	<48 dB SPL at 1 m (max output)
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Ordering Information

LBB 1903/10 Plena Mixer Amplifier 45W/30 W, 100 VA, 4.5 A / 9 A (230 Vac/ 150 Vac)	LBB1903/10
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LBB 1906/10 Plena Mixer Amplifier 90 W / 60 W, 200 VA, 5 A / 10 A (230 Vac/ 150 Vac)	LBB1906/10
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LBB 1912/10 Plena Mixer Amplifier 180 W / 120 W, 100 VA, 8 A / 16 A (230 Vac/ 150 Vac)	LBB1912/10
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LBB 1914/10 Plena Mixer Amplifier 180 W / 120 W, 100 VA, 8 A / 16 A (230 Vac/ 150 Vac); 2 zone	LBB1914/10
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LBB 1941/00 Plena Call Station



Features

- ▶ **Stylish all-call call station, intended for LBB 1925/10 system pre-amplifier**
- ▶ **Unidirectional condenser microphone on flexible stem**
- ▶ **Momentary PTT-key for calls**
- ▶ **Selectable gain, speech filter, and limiter for improved intelligibility**
- ▶ **Stable metal base design**
- ▶ **Fixed 5 m cable and loop-through connector for additional call stations**

The Plena Call Station is a stylish, high-quality call station with a stable metal base design, a flexible microphone stem, and a unidirectional condenser microphone. Its purpose is to make calls to all zones (all-call) in a public address system built around the LBB 1925/10 system pre-amplifier. In addition to tabletop use, the special design enables the unit to be neatly flush-mounted in desktops.

Functions

A green LED on the call station gives visible feedback on the active state of the microphone.

This call station features selectable gain, a selectable speech filter, and a limiter for improved intelligibility, even when the speaker moves in front of the microphone.

The call station provides a balanced line-level output, and can be up to 500 m away from the amplifier using CAT 5 extension cables. The LBB 1925/10 can assign different priority levels, and pre and post-call chimes to this call station.

Controls and indicators

- PTT-key
- PTT status LED

Interconnections

- Cable with DIN connector

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Parts Included

Quantity	Component
1	LBB 1941/00 Plena Call Station
1	5 m cable terminated with a lockable 8-pin DIN connector
1	Loop through 8-pin DIN socket to add an additional call station LBB 1941/00 or LBB 1946/00

Technical Specifications

Electrical

Power Supply

Voltage range	18 to 24 V (24 V supplied by LBB 1925/10)
Current consumption	<30 mA

Performance

Nominal sensitivity	85 dB SPL (gain preset 0 dB)
Nominal output level	700 mV
Input sound level (max)	110 dB SPL
Gain preset	+6 / 0 / -15 dB
Limiter threshold	2 V
Compression ratio limiter	1:20
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	25 dB SPLA
Frequency response	100 Hz to 16 kHz
Speech filter	-3dB @ 315 Hz, high-pass, 6 dB/oct
Output impedance	200 ohm

Mechanical

Base dimensions	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg
Color	Charcoal with silver
Stem length with mic	390 mm (15.35 in)
Cable length	5 m (16.4 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information**LBB 1941/00 Plena Call Station****LBB1941/00**

metal base design, a flexible microphone stem,
and a unidirectional condenser microphone.

LBB 1946/00 Plena Six-zone Call Station



Features

- ▶ **Stylish six-zone call station, intended for LBB 1925/10 system pre-amplifier**
- ▶ **Unidirectional condenser microphone on flexible stem**
- ▶ **Six zone selection keys, all-call key, and momentary PTT-key for calls**
- ▶ **Selectable gain, speech filter, and limiter for improved intelligibility**
- ▶ **Selectable priority levels and different pre and post-call chimes**
- ▶ **LED indications for zone selection, system activity, and call station status**

The Plena Six-zone Call Station is a stylish, high-quality call station with a stable metal base design, a flexible microphone stem, and a unidirectional condenser microphone. It can make calls to selected zones (one to six and all-call) in a public address system built around the LBB 1925/10 system pre-amplifier. In addition to tabletop use, the special design enables the unit to be neatly flush-mounted in desktops.

Functions

This call station features selectable gain, a selectable speech filter, and a limiter for improved intelligibility. The call station has a balanced line level output, making it possible to position it up to 100 m away from the LBB 1925/10, using CAT-5 extension cables.

Dipswitches on the bottom of the call station configure different pre and post-call chimes, as well as the priority level. LEDs on the call station indicate selected zones, and an additional, two-color LED gives visible feedback on the active state of the microphone and the system. Green indicates microphone on or chime active (flashing LED); amber indicates that the system is occupied by a source with a higher priority or operation error (flashing LED).

Controls and indicators

- PTT-key
- PTT status LED
- Six zone selection keys
- Six zone selection LEDs
- All-call key
- All-call status LED
- Eight DIP switches

Interconnections

- Cable with DIN connector

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Parts Included

Quantity	Component
1	LBB 1946/00 Plena Six-zone Call Station
1	5 m cable terminated with a lockable 8-pin DIN connector
1	Loop through 8-pin DIN socket to add an additional call station LBB 1941/00 or LBB 1946/00

Technical Specifications

Electrical

Power Supply

Voltage Range	18 to 24 V (24 V supplied by LBB 1925/10)
Current consumption	<30 mA

Performance

Nominal sensitivity	85 dB SPL (gain preset 0 dB)
Nominal output level	700 mV
Maximum input sound level	110 dB SPL
Gain preset	+6 / 0 / -15 dB
Limiter threshold	2 V
Compression ratio limiter	1:20
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	25 dB SPLA

Power Supply

Frequency response	100 Hz to 16 kHz
Speech filter	-3dB @ 315 Hz, high-pass, 6 dB/oct
Output impedance	200 ohm

Selections

Chimes	18 different combinations
Priorities	2 different priorities

Mechanical

Base dimensions (H x W x D)	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg (2.2 lb)
Color	Charcoal with silver
Stem length with mic	390 mm (15.35 in)
Cable length	5 m (16.4 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information**LBB 1946/00 Plena Six-zone Call Station LBB1946/00**

metal base design, a flexible microphone stem, and a unidirectional condenser microphone. It can make calls to selected zones (one to six and all-call).

LBB 1950/10 Plena Tabletop Unidirectional Condenser Microphone



Features

- ▶ **Stylish tabletop unidirectional condenser microphone on a flexible stem**
- ▶ **Phantom powered by amplifier**
- ▶ **Momentary or toggle PTT-key for calls with priority contact**
- ▶ **Green LED, indicating microphone active**
- ▶ **Stable metal base design with fixed 2 m cable and lockable DIN connector**
- ▶ **Separate DIN to XLR adapter**

The Plena tabletop microphone is a stylish, high-quality tabletop unidirectional condenser microphone, mainly intended for making calls in a public address system. Its heavy metal base and rubber feet ensure stability on any flat surface. The special design also allows the unit to be neatly flush-mounted in desktops.

Functions

The PTT-key (press-to-talk), not only switches on the microphone, but also provides priority contacts, that are compatible with the Plena range of amplifiers. The switching characteristic of the PTT-key can be configured internally for PTT-mode (on as long as pressed) or toggle-mode (press to switch on, press again to switch off).

It is equipped with a fixed, flexible 2 m cable and a 5-pin DIN connector for the balanced signal and the priority contacts. If the priority contacts are not required, the microphone can be connected to amplifiers with 3-pin XLR-inputs, using the DIN to XLR adapter.

A green LED indicates when the microphone is active.

Controls and indicators

- PTT-key
- PTT status LED

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Parts Included

Quantity	Component
1	LBB 1950/10 PLENA Tabletop Unidirectional Condenser Microphone
1	DIN to XLR adapter

Technical Specifications

Electrical

Phantom power supply

Voltage range	12 to 48 V
Current consumption	<8 mA

Performance

Sensitivity	0.7 mV @ 85 dB SPL (2 mV/Pa)
Maximum input sound level	110 dB SPL
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	28 dB SPLA (S/N 66 dBA ref. 1 Pa)
Frequency response	100 Hz to 16 kHz
Output impedance	200 ohm

Mechanical

Base dimensions (H x W x D)	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg (2.2 lb)
Color	Charcoal with silver
Stem length with mic	390 mm (15.35 in)
Cable length	2 m (6.56 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1950/10 Plena Tabletop Unidirectional LBB1950/10

Condenser Microphone

tabletop unidirectional condenser microphone on a flexible stem.

Accessories

LBC 1080/00 Microphone Cable LBC1080/00

length 100 m; 2 x 0.13 mm²

LBC 1082/00 Microphone Cable LBC1082/00

length 100 m; 2 x 0.75 mm²

LBC 1081/00 Microphone Cable LBC1081/00

length 100 m; 4 x 0.14 mm²

LBB 1930/20 Plena Power Amplifier



Features

- ▶ **120 W power amplifier in a compact housing**
- ▶ **70 V / 100 V and 8 ohm outputs**
- ▶ **Dual inputs with priority switching**
- ▶ **100 V input for slave operation on 100 V speaker line**
- ▶ **Temperature controlled forced front to back ventilation, directly stackable.**
- ▶ **Mains, battery back-up and pilot tone supervision**
- ▶ **TÜV certified according to IEC 60849**

The LBB 1930/20 is a powerful 120 W power amplifier in a 2U high 19" case for rack mounting or tabletop use. LEDs on the front panel show the status of the amplifier: power, audio output level, and supervised functions. This high-performance unit fulfills a wide range of public address requirements at a surprisingly low cost.

Functions

Dependability

The amplifier is protected against overload and short circuits. A temperature-controlled fan ensures high reliability at high output levels and low acoustic noise at lower output levels. An overheat protection circuit switches off the power stage and activates an LED on the front panel, if the internal temperature reaches a critical limit due to poor ventilation or overload.

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover.

For emergency and evacuation use, the following functions are monitored: mains presence, battery present, pilot tone presence, amplifier operation. Front panel LEDs indicate the status of supervised functions. The LEDs of pilot tone supervision and battery status can be switched off for general public address use. Failsafe (normally energized) relays are provided for each supervised function. These relays are always active regardless of the switches on the rear panel.

Input

The system has two balanced inputs with priority control, each with a loop-through facility. This makes it easy to connect remote systems that require priority control. An additional 100 V line input is provided to connect the amplifier to a 100 V loudspeaker line to provide more power to remote locations.

Gain or level control is located on the rear of the unit to avoid accidental setting change. A meter with LED-bar shows the output level.

Output

The amplifier has 70 V and 100 V outputs for constant voltage loudspeaker systems, and a low impedance output for 8 ohm loudspeaker loads.

The LBB 1930/20 has two separate priority controlled 100 V outputs for zones that only need announcements made via the priority input, and for zones that will not receive announcements made via the priority input.

Controls and indicators

Front

- Meter (LED's for -20, -6, 0 dB and Power ON)
- Battery operation indicator
- Overheat indicator

Back

- Level control input 1
- Level control input 2
- Power button
- Mains switch

Interconnections

Back

- Priority line input 1 (XLR/balanced)
- Line loop-through 1 (XLR/balanced)
- Program line input 2 (XLR/balanced)
- Line loop-through 2 (XLR/balanced)
- Priority controlled loudspeaker output terminals
- 24 VDC power supply terminal
- Three loudspeaker direct output terminals
- Two 100 V slave input terminals
- Input 2 enable control terminal
- Input 1 priority control terminal
- Earth connection screw
- Mains socket

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1
EVAC (TÜV certified)	acc. to IEC 60849

Parts Included

Quantity	Component
1	LBB 1930/20 Plena Power Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User Instructions
1	Cable with XLR connector

Technical Specifications

Electrical

Mains power supply

Voltage	230 VAC $\pm$ 10%, 50/60 Hz
Inrush current	8 A
Max power consumption	400 VA

Battery power supply

Voltage	24 VDC $\pm$ 15% / -15%
Current max	6 A

Performance

Output power (rms/maximum)	120 / 180 W
Power reduction on backup power	-1 dB
Frequency response	50 Hz to 20 kHz (+1 / -3 dB at -10 dB ref. rated output)
Distortion	<1% at rated output power, 1 kHz
S/N (flat at max volume)	>90 dB

Line inputs	2 x
Connector	3-pin XLR, balanced
Sensitivity	1 V
Impedance	20 kohm
CMRR	>25 dB (50 Hz to 20 kHz)
Gain	40 dB

100 V input

Connector	Screw, unbalanced
Sensitivity	100 V
Impedance	330 kohm

Line loop-through output

Connector	3-pin XLR
Nominal level	1 V
Impedance	Direct connection to line input

Loudspeaker outputs

Connector	Screw, floating
Direct output	100 V, 70 V, 8 ohm

Mains power supply

Priority only (from input 1)	100 V or 70 V internally selectable
Music (non-priority) only	100 V or 70 V internally selectable

Power consumption

Mains operation

Max power	274 W
-3dB	193 W
-6dB	143 W
Pilot tone*	41 W
Idle	18 W

24 VDC operation

Max power	7.0 A (168 W)
-3 dB	6.0 A (144 W)
-6 dB	4.3 A (103 W)
Pilot tone*	0.9 A (22 W)
Idle	0.1 A (2.4 W)

* 20 kHz -20dB with maximum loudspeaker load

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high, with feet)
Weight	Approx. 10.5 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Acoustic noise level of fan	<48 dB SPL at 1 m (max output)

Ordering Information

LBB 1930/20 Plena Power Amplifier
120 W power amplifier in a 2U high 19" case
for rack mounting or tabletop use.

LBB1930/20

LBB 1935/20 Plena Power Amplifier



Features

- ▶ 240 W power amplifier in a 2U high housing
- ▶ 70 V / 100 V and 8 ohm outputs
- ▶ Dual inputs with priority switching
- ▶ 100 V input for slave operation on 100 V speaker line
- ▶ Temperature controlled forced front to back ventilation, directly stackable
- ▶ Mains, battery back-up, and pilot tone supervision
- ▶ TÜV certified according to IEC 60849

The LBB 1935/20 is a powerful 240 W power amplifier in a 2U high 19" case for rack mounting or tabletop use. LEDs on the front panel show the status of the amplifier: power, audio output level, and supervised functions. This high-performance unit fulfills a wide range of public address requirements at a surprisingly low cost.

Functions

Dependability

The amplifier is protected against overload and short circuits. A temperature-controlled fan ensures high reliability at high output levels and low acoustic noise at lower output levels. An overheat protection circuit switches off the power stage and activates an LED on the front panel, if the internal temperature reaches a critical limit due to poor ventilation or overload.

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover.

For emergency and evacuation use, the following functions are monitored: mains presence, battery present, pilot tone presence, amplifier operation. Front panel LEDs indicate the status of supervised functions. The LEDs of pilot tone supervision and battery status can be switched off for general public address use. Failsafe (normally energized) relays are provided for each supervised function. These relays are always active regardless of the switches on the rear panel.

Input

The system has two balanced inputs with priority control, each with a loop-through facility. This makes it easy to connect remote systems that require priority control. An additional 100 V line input is provided to connect the amplifier to a 100 V loudspeaker line to provide more power to remote locations.

Gain or level control is located on the rear of the unit to avoid accidental setting change. A meter with LED-bar shows the output level.

Output

The amplifier has 70 V and 100 V outputs for constant voltage loudspeaker systems, and a low impedance output for 8 ohm loudspeaker loads.

The LBB 1935/20 has two separate priority controlled 100 V outputs for zones that only need announcements made via the priority input, and for zones that will not receive announcements made via the priority input.

Controls and indicators

Front

- Meter (LED's for -20, -6, 0 dB and Power ON)
- Battery operation indicator
- Overheat indicator

Back

- Level control input 1
- Level control input 2
- Power button
- Mains switch

Interconnections

Back

- Priority line input 1 (XLR/balanced)
- Line loop-through 1 (XLR/balanced)
- Program line input 2 (XLR/balanced)
- Line loop-through 2 (XLR/balanced)
- Priority controlled loudspeaker output terminals
- 24 VDC power supply terminal
- Three loudspeaker direct output terminals
- Two 100 V slave input terminals
- Input 2 enable control terminal
- Input 1 priority control terminal
- Earth connection screw
- Mains socket

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1
EVAC (TÜV certified)	acc. to IEC 60849

Parts Included

Quantity	Component
1	LBB 1935/20 Plena Power Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User Instructions
1	Cable with XLR connector

Technical Specifications

Electrical

Mains power supply

Voltage	230 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	9 A
Max power consumption	760 VA

Battery power supply

Voltage	24 VDC $+15\%$ / -15%
Current max	11 A

Performance

Output power (rms/maximum)	240 / 360 W
Power reduction on backup power	-1 dB
Frequency response	50 Hz to 20 kHz ($+1$ / -3 dB at -10 dB ref. rated output)
Distortion	$<1\%$ at rated output power, 1 kHz
S/N (flat at max volume)	>90 dB

Line inputs	2 x
Connector	3-pin XLR, balanced
Sensitivity	1 V
Impedance	20 kohm
CMRR	>25 dB (50 Hz to 20 kHz)
Gain	40 dB

100 V input

Connector	Screw, unbalanced
Sensitivity	100 V
Impedance	330 kohm

Line loop-through output

Connector	3-pin XLR
Nominal level	1 V
Impedance	Direct connection to line input

Loudspeaker outputs	3 x
Connector	Screw, floating
Direct output	100 V, 70 V, 8 ohm

Mains power supply

Priority only (from input 1)	100 V or 70 V internally selectable
Music (non-priority) only	100 V or 70 V internally selectable

Power consumption

Mains operation

Max power	451 W
-3dB	340 W
-6dB	244 W
Pilot tone*	55 W
Idle	16 W

24 V operation

Max power	12.1 A (290 W)
-3 dB	11.4 A (274 W)
-6 dB	8.1 A (194 W)
Pilot tone*	1.7 A (41 W)
Idle	0.3 A (7 W)

* 20 kHz -20dB with maximum loudspeaker load

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high, with feet)
Weight	Approx. 12.5 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to $+55$ °C (14 °F to $+131$ °F)
Storage temperature	-40 °C to $+70$ °C (-40 °F to $+158$ °F)
Relative humidity	$<95\%$
Acoustic noise level of fan	<48 dB SPL at 1 m (max output)

Ordering Information

LBB 1935/20 Plena Power Amplifier
240 W power amplifier in a 2U high 19" case
for rack mounting or tabletop use.

LBB1935/20

LBB 1938/20 Plena Power Amplifier



Features

- ▶ **480 W power amplifier in a 3U high 19" housing**
- ▶ **70 V / 100 V and 8 ohm outputs**
- ▶ **Dual inputs with priority switching**
- ▶ **100 V input for slave operation on 100 V speaker line**
- ▶ **Temperature controlled forced front to back ventilation, directly stackable**
- ▶ **Mains, battery back-up, and pilot tone supervision**
- ▶ **TÜV certified according to IEC 60849**

The LBB 1938/20 is a powerful 480 W power amplifier in a 3U high 19" case for rack mounting or tabletop use. LEDs on the front panel show the status of the amplifier: power, audio output level, and supervised functions. This high-performance unit fulfills a wide range of public address requirements at a surprisingly low cost.

Functions

Dependability

The amplifier is protected against overload and short circuits. A temperature-controlled fan ensures high reliability at high output levels and low acoustic noise at lower output levels. An overheat protection circuit switches off the power stage and activates an LED on the front panel, if the internal temperature reaches a critical limit due to poor ventilation or overload.

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover.

For emergency and evacuation use, the following functions are monitored: mains presence, battery present, pilot tone presence, amplifier operation. Front panel LEDs indicate the status of supervised functions. The LEDs of pilot tone supervision and battery status can be switched off for general public address use. Failsafe (normally energized)

relays are provided for each supervised function. These relays are always active regardless of the switches on the rear panel.

Input

The system has two balanced inputs with priority control, each with a loop-through facility. This makes it easy to connect remote systems that require priority control. An additional 100 V line input is provided to connect the amplifier to a 100 V loudspeaker line, to provide more power to remote locations.

Gain or level control is located on the rear of the unit to avoid accidental setting change. A meter with LED-bar shows the output level.

Output

The amplifier has 70 V and 100 V outputs for constant voltage loudspeaker systems and a low impedance output for 8 ohm loudspeaker loads.

The LBB 1938/20 has two separate priority controlled 100 V outputs for zones that only need announcements made via the priority input, and for zones that will not get any announcements made via the priority input.

Controls and indicators

Front

- Meter (LED's for -20, -6, 0 dB and Power ON)
- Battery operation indicator
- Overheat indicator
- Air inlet for forced air cooling

Back

- Level control input 1
- Level control input 2
- Power button
- Mains switch

Interconnections

Back

- Priority line input 1 (XLR/balanced)
- Line loop-through 1 (XLR/balanced)
- Program line input 2 (XLR/balanced)
- Line loop-through 2 (XLR/balanced)
- Priority controlled loudspeaker output terminals
- 24 VDC power supply terminal
- Three loudspeaker direct output terminals
- Two 100 V slave input terminals
- Input 2 enable control terminal
- Input 1 priority control terminal
- Earth connection screw
- Mains socket

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Parts Included

Quantity	Component
1	LBB 1938/20 Plena Power Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User Instructions

Technical Specifications**Electrical****Mains power supply**

Voltage	230 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	19 A
Max power consumption	2200 VA

Battery power supply

Voltage	24 VDC $\pm 15\%$ / -15%
Current max	30 A

Performance

Output power (rms/maximum)	480 W / 720 W
Power reduction on backup power	-1 dB
Frequency response	50 Hz to 20 kHz ($\pm 1/-3$ dB @ -10 dB ref. rated output)
Distortion	<1% @ rated output power, 1 kHz
S/N (flat at max volume)	>90 dB

Line inputs

Connector	3-pin XLR, balanced
Sensitivity	1 V
Impedance	20 kohm
CMRR	>25 dB (50 Hz to 20 kHz)
Gain	40 dB

100 V input

Connector	Screw, unbalanced
Sensitivity	100 V
Impedance	330 kohm

Line loop-through output

Connector	3-pin XLR
Nominal level	1 V
Impedance	Direct connection to line input

Loudspeaker outputs

Connector	Screw, floating
Direct output	100 V, 70 V, 8 ohm
Priority only (from input 1)	100V or 70 V internally selectable
Music (non-priority) only	100V or 70 V internally selectable

Power consumption**Mains operation**

Max power	990 W
-3dB	715 W
-6dB	510 W
Pilot tone*	110 W
Idle	25 W

24 VDC operation

Max power	32 A (770 W)
-3 dB	26 A (625 W)
-6 dB	18 A (430 W)
Pilot tone*	3.8 A (91 W)
Idle	0.7 A (17 W)

* 20 kHz -20dB with maximum loudspeaker load

Mechanical

Dimensions (H x W x D)	145 x 430 x 370 mm (19" wide, 3U high, with feet)
Weight	Approx. 25 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Acoustic noise level of fan	<48 dB SPL @ 1 m (max output)

Ordering Information

LBB 1938/20 Plena Power Amplifier
480 W power amplifier in a 3U high 19" case
for rack mounting or tabletop use.

LBB1938/20

PLN-1P1000 Plena Power Amplifier



Features

- ▶ 1000 W power amplifier in a 3U high housing
- ▶ 70 V / 100 V and 8 ohm outputs
- ▶ Dual inputs with priority switching
- ▶ 100 V input for slave operation on 100 V speaker line
- ▶ Temperature-controlled forced front-to-back ventilation, directly stackable
- ▶ Mains, battery back-up and pilot tone supervision

The PLN-1P1000 is a powerful 1000 W power amplifier in a 3U high 19" case for rack mounting or tabletop use. LEDs on the front panel show the status of the amplifier: power, audio output level, and supervised functions. This high-performance unit fulfills a wide range of public address requirements at a surprisingly low cost.

Functions

Dependability

The amplifier is protected against overload and short circuits. A temperature-controlled fan ensures high reliability at high output levels, and low acoustic noise at lower output levels. An overheat protection circuit switches off the power stage and activates an LED on the front panel, if the internal temperature reaches a critical limit due to poor ventilation or overload.

The unit operates both on mains power and on a 24 V battery power supply for emergency back up, with automatic switchover.

For emergency and evacuation use, the following functions are monitored: mains presence, battery present, pilot tone presence, amplifier operation. Front panel LEDs indicate the status of supervised functions. The of pilot tone supervision and battery status LEDs can be switched off for general public address use. Failsafe (normally energized) relays are provided for each supervised function. These relays are always active regardless of the switches on the rear panel.

Input

The system has two balanced inputs with priority control, each with a loop-through facility. This makes it easy to connect remote systems that require priority control. An additional 100 V line input can connect the amplifier to a 100 V loudspeaker line, to provide more power to remote locations.

Output

The amplifier has 70 V and 100 V outputs for constant voltage loudspeaker systems, and a low impedance output for 8 ohm loudspeaker loads. A meter with LED-bar shows the output level.

The PLN-1P1000 has two separate priority controlled 100 V outputs for zones that only need announcements made via the priority input, and for zones that will not get any announcements made via the priority input.

Controls and indicators

Front

- LED level meter
- Battery operation LED
- Overheat LED

Back

- Power button
- Mains switch

Interconnections

Back

- Priority line input 1 (XLR/balanced)
- Line loop-through 1 (XLR/balanced)
- Program line input 2 (XLR/balanced)
- Line loop-through 2 (XLR/balanced)
- Priority controlled loudspeaker outputs
- 24 VDC power supply terminal
- Three loudspeaker direct outputs
- Two 100 V slave inputs
- Input 1 enable control terminal
- Input 2 priority control terminal
- Earth connection screw
- Mains socket

Certifications and Approvals

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1
EVAC (TÜV certified)	acc. to IEC 60849

Parts Included

Quantity	Component
1	PLN-1P1000 Plena Power Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	16 A

Max power consumption	2200 VA
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Battery power supply

Voltage	24 VDC $+15\%$ / -15%
Current max	48 A

Performance

Output power (rms/maximum)	1000 W / 1500 W
Power reduction on backup power	-1 dB
Frequency response	50 Hz to 20 kHz ($+1/-3$ dB at -10 dB ref. rated output)
Distortion	<1% at rated output power, 1 kHz
S/N (flat at max volume)	>90 dB

Line inputs

Connector	3-pin XLR, balanced
Sensitivity	1 V
Impedance	20 kohm
CMRR	>25 dB (50 Hz to 20 kHz)
Gain	40 dB

100 V input

Connector	Screw, unbalanced
Sensitivity	100 V
Impedance	330 kohm

Line loop-through output

Connector	3-pin XLR
Nominal level	1 V
Impedance	Direct connection to line input

Loudspeaker outputs

Connector	Screw, floating
Direct output	100 V, 70 V, 8 ohm
Priority only (from input 1)	100 V or 70 V internally selectable
Music (non-priority) only	100 V or 70 V internally selectable

Power consumption

Mains operation

Max power	2200 W
-3dB	1472 W
-6dB	1058 W
Pilot tone*	345 W
Idle	115 W

24 VDC operation

Max power	62 A (1500 W)
-3 dB	34 A (823 W)
-6 dB	25 A (597 W)

Mains operation

Pilot tone*	7.6 A (182 W)
Idle	1.5 A (36 W)

* 20 kHz -20dB with maximum loudspeaker load

Mechanical

Dimensions (H x W x D)	145 x 430 x 430 mm (19" wide, 3U high, with feet)
Weight	Approx. 32 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Acoustic noise level of fan	<48 dB SPL at 1 m (max output)

Ordering Information

PLN-1P1000 Plena Power Amplifier

PLN-1P1000

PLN-1LA10 Plena Loop Amplifier



Features

- ▶ **High power, current driven amplifier**
- ▶ **Two microphone/line inputs, one priority input (100 V)**
- ▶ **Selectable frequency range and tone controls**
- ▶ **Limiter and automatic gain control (AGC)**
- ▶ **Integrates in an IEC 60849 compliant system**

The Plena Loop Amplifier is a cost-effective amplifier designed to drive a wire loop installed in the floor or ceiling, covering an area of up to 600 m² per amplifier. This solution enables hearing-aid users in the area enclosed by the wire loop to hear all announcements, or music. Hearing-aid users can set their devices to the T-mode setting to receive the signal coming from the loop. They receive announcements in excellent audio-quality, without the background noise or reverberations that normally impair intelligibility for people with hearing disabilities.

Functions

The loop amplifier can be connected to a mixing amplifier's line level output, or it can accept up to two microphone/line signals directly. A 100 V priority input is available for uplink to a voice alarm system. This input can be monitored for the presence of a pilot tone. The built-in supervision monitors all key functions of the loop amplifier, and the fault state is available on a fail-safe relay. This makes it possible to use the Plena Loop Amplifier in an IEC 60849 compliant system, and to include the induction loop in the supervised transmission paths.

For added ease, the loop amplifier is equipped with a limiter that keeps the output field strength below the prescribed 100 mA/m. This circuitry can also be set to an automatic gain control (AGC) that amplifies weak signals for enhanced intelligibility, while attenuating loud signals. This ensures that all information is presented at a comfortable listening level.

The unit has tone controls and a metal loss compensation circuit to adjust the sound to the program material and the environment. The controls have locks to prevent unwanted access after they have been adjusted.

The Plena loop amplifier is stackable (master/slave configuration) to cover very large areas, and supports low spillover schemes. Its unique quadrate configuration provides uniform field strengths even over multiple loops.

Controls and indicators

Front

- LED power meter
- Current meter
- Four LEDs for fault, limiter, AGC, loop integrity
- Headphones socket
- Two tone controls
- Three input volume controls (master and two channels)
- On/off switch

Back

- Metal loss compensation control
- Supervision switch
- Voltage selector
- Frequency range switch
- AGC/Limiter switch
- AGC range control
- VOX/mix switch
- Pre/post amp switch
- Two phantom power switches
- Two Mic/line switches

Interconnections

Back

- Master input
- Two slave outputs
- Audio inputs
- Priority input
- Induction loop output
- Line output
- Fault output
- Ground screw
- Mains socket

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity IEC 60849

Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1
Induction loop systems	acc. to EN 60118-4
EVAC (TÜV certified)	acc. to IEC 60849

Installation/Configuration Notes



PLN-1LA10 rear view

Parts Included

Quantity	Component
1	PLN-1LA10 Loop Amplifier
1	Power cord
1	Set of 19" mounting brackets
1	Plena CD
	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	7 A at 230 VAC / 14 A at 115 VAC
Max power consumption	500 VA

Performance

Output current	10 A
Frequency response	50 Hz to 10 kHz (+1/-3 dB at -10 dB ref. rated output)
Distortion	<1% at rated output power, 1 kHz
Bass control	-8/+8 dB at 100 Hz
Treble control	-8/+8 dB at 10 kHz
Mic/line input	2 x
Connector	3-pin XLR, balanced mic/line level (switchable)
Sensitivity	1 mV / 1 V (mic/line)
Impedance	>1 kohm
Dynamic Range	100 dB
S/N (flat at max volume)	75 dB
Headroom	25 dB
Phantom power supply	16 V (switchable)

Mains power supply

VOX functionality	Input 1 (switchable) mutes input 2
VOX sensitivity	-10 dB ref nominal input

Priority input

Connector	Screw
Sensitivity	100 V, transformer balanced
Impedance	>100 kohm
S/N (flat at max volume)	63 dB
Headroom	25 dB
Pilot tone detection	-20 dB, ref 100 V (10 V)
Pilot tone threshold	-26 dB, ref 100 V (5 V)

Master input*

1 x	
Connector	1/4" TS jack

Line output

Connector	3-pin XLR, balanced
Nominal level	1 V
Impedance	200 ohm

Loop output

Connector	Screw
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Slave output (for master input of other PLN-1LA10)

Connector	1/4" TS jack 0° to 90°
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Fault Relay

Connector	Screw
Contacts	100 V, 2 A (voltage free, SPDT)

* Only intended for slave output of another PLN-1LA10. Plugging a jack into this input disables all other inputs and the limiter. The unit becomes a slave to the connected master. Only the master control on the front panel will function. To monitor the level, switch the VU meter switch to POST Amp.

Mechanical

Dimensions (H x W x D)	94 x 430 x 320 mm (19" wide, 2U high)
Weight	Approx. 11.6 kg
Mounting	Stand-alone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Acoustic noise level of fan	<35 dB SPL at 1m, temperature controlled

Ordering Information

PLN-1LA10 Plena Loop Amplifier

drive a wire loop installed in the floor or ceiling, covering an area of up to 600 m² per amplifier.

PLN-1LA10

PLN-DVDT Plena BGM Source



Features

- ▶ **Source unit for background music**
- ▶ **DVD/CD-player for video and audio**
- ▶ **Supports MP3, JPEG, and multi-format video outputs**
- ▶ **AM/FM tuner with 10 presets and digital control**
- ▶ **Simultaneous operation of-player and tuner**
- ▶ **Separate outputs and level controls for player and tuner**
- ▶ **Combined DVD/CD-player/tuner output with player priority**
- ▶ **Remote control**
- ▶ **System Overview**

The Plena BGM source unit is the ideal high-quality source for background music (BGM) in public address systems. The unit consists of a DVD/CD-player and a digitally controlled FM/AM tuner in a compact 2U-high, 19" housing. It is typically used in shops, supermarkets, restaurants, bars, canteens, gyms, showrooms, and other places where BGM creates the right atmosphere. It connects to almost any public address amplifier. The unit's appearance is in line with the Bosch Plena range of products.

Functions

Player

The DVD/CD player provides up to a whole workweek of high quality, uninterrupted music playback from a single MP3 DVD. It supports music organized on a disk in multiple folders. The player will automatically search and play all playable formats on a disk, and has repeat and random play modes. Navigation is done on the multi lingual on screen display.

Formats

The unit plays normal audio and video DVD/CDs, as well as long-play MPEG2, MP3 encoded CDs. It can also play MP3s and display JPEGs on CD-R, DVD-ROM, DVD-R. MP3-files with bit-rates from 32 kbps to 320 kbps, mono/ stereo/ joint-stereo, and both continuous bit-rates (CBR) and variable bit-rate (VBR) are supported. Component, composite, and S-Video connectors are available for video output. The unit plays PAL and NTSC content in progressive scan, as well as interleaved. It is also possible to view JPEG images from disk.

Output

Next to the stereo analog outputs, the disc part of the unit also has a Toslink optical output that supports S/P DIF as well as DST and Dolby Digital. It is possible to output S/P DIF, regardless of the source, and to choose left/right, surround channels of low frequency effects on this output.

Tuner

The digitally controlled AM/FM tuner uses a frequency synthesizer for accurate capture of radio stations and has ten presets for FM and ten presets for AM to store favorite radio stations.

Controls and operation

Basic controls are on the unit itself, while navigation and configuration is done with the remote control and the on screen display. The unit supports most major languages, and it is possible to set regional preference, such as subtitle language preference.

Both the player and the tuner can operate simultaneously on different outputs to facilitate two-channel BGM distribution. The output level of both outputs can be adjusted via rear panel presets. Combined output is also possible, to connect to systems without input selection. In the combined output mode the system defaults to the tuner signal as long as the DVD/CD-player is not playing. When the player is active, its signal overrides that of the tuner.

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Parts Included

Quantity	Component
1	PLN-DVDT Plena BMG Source
1	Remote control
1	Power cord
1	Set of 19" mounting brackets
1	Installation and User instructions
1	Plena CD

Technical Specifications**Electrical****Mains power supply**

Voltage	230/115 VAC, ±15%, 50/60 Hz
Max power consumption	25 VA

DVD/CD-player

Frequency response	2 Hz to 20 kHz (+1/-3 dB)
Distortion	<0.1%
S/N	>96 dB

Mp3

MP3 bit rates	CBR 32 to 320 kbps and VBR, mono and stereo
Data buffer shock protection	32 MB

Tuner

Frequency response	30 Hz to 15 kHz (+1/-3 dB, FM)
Distortion	<1%
S/N	>63 dB (1 mV, FM)

DVD/CD player outputs

Connector	Cinch, (RCA) stereo
Nominal level	500 mV
Optical output	TOSlink (PCM, multi channel)
Supported formats	DVD, CD, (re-)writables MP3, MP4, JPEG

Mixed output

Connector	Cinch, (RCA) stereo
Nominal level	200 mV

Video outputs

Component connectors	3 x cinch
Composite connector	1 x cinch
S-video connector	1 x mini-DIN

Tuner frequency range

Range	FM	87.5 – 108 MHz
		(Europe, 50 kHz)
		87.5 – 108 MHz
		(Asia/America, 100 kHz)
	AM	531 – 1602 kHz
		(Europe, 9 kHz)
		530 – 1610 kHz
		(Asia/America, 10 kHz)

Sensitivity

Mains power supply

FM	2 µV (26 dB S/N)
AM	30 µV (20 dB S/N)

Mechanical

Dimensions (H x W x D)	100 x 430 x 270 mm (19" wide, 2U high)
Weight	Approx. 4.2 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information**PLN-DVDT Plena BGM Source**

high-quality source for background music (BGM) in public address systems.

PLN-DVDT

PLN-2AIO120 BGM/Paging System



Features

- ▶ All-in-one solution for background music and paging
- ▶ DVD/CD-player for video and audio
- ▶ Supports MP3, JPEG, and multi-format video outputs
- ▶ FM/AM tuner with 10 presets and digital control
- ▶ Dual-zone 120 W mixer amplifier with volume control per zone
- ▶ Selectable priority and VOX switching on microphone input 1
- ▶ Optional 2-tone chime to precede announcements
- ▶ Remote control

The Plena BGM/paging system is the versatile all-in-one solution to cover all needs for background music (BGM), making announcements and paging people. This high-performance yet affordable unit is very easy to install and operate.

It is typically used in shops, supermarkets, restaurants, bars, schools, canteens, gyms, garages and other places where BGM creates the right atmosphere, and also amplified speech needs to be heard clearly.

Functions

DVD/CD Player

The DVD/CD player provides up to a whole workweek of high quality uninterrupted music playback from a single MP3 DVD. It supports music organized on a disk in multiple folders. The player will automatically search and play all playable formats on a disk, and has repeat and random play modes. Navigation is done on the multi lingual on screen display.

The unit plays normal audio and video DVD/CDs, as well as long-play MPEG2, MP3 encoded CDs. It can also play MP3s and display JPEGs on CD-R, DVD-ROM, DVD-R. MP3-files with bit-rates from 32 kbps to 320 kbps, mono/ stereo/ joint-stereo, and both continuous bit-rates (CBR) and variable bit-rate (VBR) are supported. Component, composite, and S-Video connectors are available for video output. The unit plays PAL and NTSC content in progressive scan as well as interleaved.

The disc part of the unit also has a TOSlink optical output that supports S/P DIF as well as DST and Dolby Digital. It is possible to output S/P DIF regardless of the source and choose left/right, surround channels of Low frequency effects on this output.

Basic controls are on the unit itself, while navigation and configuration is done with the remote control and the on screen display. The unit supports most major languages, and it is possible to set regional preference, such as subtitle language preference.

FM/AM Tuner

The digitally controlled FM/AM tuner uses a frequency synthesizer for accurate capture of radio stations and has 10 presets for each waveband to store favorite programs. An auxiliary (music) input and tape output provide connections for external equipment.

Microphone Inputs

The announcement part of the unit has three balanced microphone inputs. Microphone input 1 has a DIN socket on the rear for a priority microphone (e.g. the LBB 1950/00) with selectable priority, a two-tone chime to precede a priority announcement, a speech filter, phantom power. It also has a phone jack connector on the front with selectable VOX activation for a dynamic microphone, such as the LBC 2900/15, as well as presets for music ducking level and chime volume. Microphone inputs 2 and 3 have XLR sockets with selectable phantom power, and are mixed with the BGM. All microphone inputs and the music source have their own volume control, with a shared bass and treble tone control and a shared master volume control.

Outputs

The powerful 120 W output section has two transformer-isolated, 100 V constant voltage outputs for driving 100 V-loudspeakers in two separate zones. The 100 V-technique reduces line losses on longer distances and allows easy parallel connection of multiple loudspeakers. Both zones can be selected individually from the front panel, and the output level for each zone can be individually set. Each zone also has a low-voltage output for connecting 8 ohm, transformerless loudspeakers (consumer-type). There is a separate, 100 V call-only output for addressing an area where announcements are necessary, but BGM is not desired. A voltage-free call-active contact is available for overriding local volume controls during priority calls, and for other purposes. An LED meter monitors the output.

Controls and indicators

Front

- Power on/off
- Disc eject key
- Disc previous key
- Disc play key
- Disc next key
- Disc stop key
- Disc display
- Disc repeat key
- Disc pause key
- Tuner memory keys 1-5 and 6-10
- Tuner shift key to select memory 1-5 or 6-10
- Tuner program key
- Tuner scan key
- Tuner FM/AM selection key
- Tuner frequency up/down keys
- Tuner display

Back

- Mains voltage selection
- Chime selection DIP switch
- Phantom power switch

Interconnections**Back**

- FM antenna input
- AM antenna input
- Tape output (mono, 2 x)
- Aux input (stereo converted to mono)
- Call only output
- Zone 1 output
- Zone 2 output
- Call active output
- Component video output (3 x)
- Composite video output
- Digital optical output
- Earth connection screw
- Mains connection

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Parts Included

Quantity	Component
1	PLN-2AIO120 PLENA BMG/Paging System
1	Power cord
1	Remote control
1	Installation and User Instructions
1	Plena CD

Technical Specifications**Electrical****Mains power supply**

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	8 A @ 230 VAC / 16 A @ 115 VAC
Max power consumption	400 VA
Max/rated output power	180 W / 120 W

Performance

Frequency response	60 Hz to 18 kHz (+1/-3 dB @ ref. rated output)
Distortion	<1% @ rated output, 1 kHz
Bass control	-8/+8 dB @ 100 Hz
Treble control	-8/+8 dB @ 10 kHz

Mic input	1 x
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Connectors	5-pin DIN, balanced, 6.3 mm jack
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Sensitivity	1 mV
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Impedance	>1 kohm
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S/N (flat at max volume)	63 dB
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S/N (flat at min volume/muted)	75 dB
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Headroom	25 dB
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Speech Filter	-3 dB @ 315 Hz, high-pass, 6 dB/oct
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Phantom power supply (on 5-pin DIN)	12 V
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VOX (on 6.3 mm jack)	Attack time 200 ms, release time 2 s, ducking level adjustable
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Mic input	2 x
------------------	-----

Connector	3-pin XLR, balanced
-----------	---------------------

Sensitivity	1 mV
-------------	------

Impedance	>1 kohm
-----------	---------

S/N (flat at max volume)	63 dB
--------------------------	-------

S/N (flat at min volume/muted)	75 dB
--------------------------------	-------

Headroom	25 dB
----------	-------

Phantom power supply	12 V
----------------------	------

Auxiliary input

Connector	Cinch, converted to mono
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Sensitivity	200 mV
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Impedance	22 kohm
-----------	---------

S/N (flat at max volume)	70 dB
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S/N (flat at min volume/muted)	75 dB
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Headroom	25 dB
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Tuner

Tuning range	FM	87.5 to 108 MHz (Europe, 50 kHz; Asia / USA, 100 kHz)
	AM	531 to 1602 kHz (Europe, 9 kHz) 530 to 1610 kHz (Asia / USA, 10 kHz)

FM sensitivity	2 μ V (26 dB S/N)
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AM sensitivity	30 μ V (20 dB S/N)
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Frequency response	30 Hz to 15 kHz (+1/-3 dB, FM)
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Distortion	<1%
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Mains power supply

S/N >63 dB (1 mV, FM)

Tuner output 1 x

Connector Cinch, (RCA) stereo

Nominal level 200 mV

DVD-Player

Frequency response 20 Hz to 20 kHz (+1/-3 dB)

Distortion <0.1%

S/N >96 dB

General

MP3 bit rates CBR 32 kbps to 320 kbps and VBR, mono and stereo

Data buffer shock protection 16 MB

DVD/CD player output 1 x

Optical output Toslink (PCM, multi channel)

Supported Formats DVD, CD, (re-)writables
MP3, MP4, JPEG**Video outputs**

Component connectors 3 x cinch

Composite connector 1 x cinch

S-video connector 1 x mini-DIN

General

Data buffer 8 MB (shock protection)

Lifetime >10.000 CD play cycles

Max number of titles 999 (MP3), 99 (audio CD)

Tape output

Connector Cinch, 2x mono

Nominal level 350 mV

Impedance 1 kohm

Loudspeaker outputs 6 x 2

Connector Screw, floating

100 V outputs 120 W rated (all zones together)

Zone output attenuation taps 100/70/50/35/25/18 V for
0/-3/-6/-9/-12/-15 dB
(120/60/30/15/8/4 W)

8 ohm outputs 18 V (40 W rated per zone)

Call-active 1 x

Connector Screw

Relay Voltage free, max 100 V, 2 A

MechanicalDimensions (H x W x D) 144 x 430 x 320 mm
(19" wide, 3U high)

Weight Approx. 11.6 kg

Mounting Standalone (rack mounting not recommended)

Color Charcoal

Environmental

Operating temperature -10 °C to +55 °C (14 °F to +131 °F)

Storage temperature -40 °C to +70 °C (-40 °F to +158 °F)

Relative humidity <95%

Acoustic noise level of fan <35 dB SPL at 1 m, temperature controlled

Ordering Information**PLN-2AI0120 BGM/Paging System****PLN-2AI0120**

all-in-one solution to cover all needs for background music (BGM), making announcements and paging people.

LBB 1965/00 Plena Message Manager



Features

- ▶ **Highly flexible standalone digital message player**
- ▶ **Up to 12 messages and 12 trigger inputs**
- ▶ **Downloads messages from a PC in WAV-format**
- ▶ **Compliant with standards for emergency sound systems**
- ▶ **Zone-control for Plena system pre-amplifier LBB 1925/10**
- ▶ **Front panel control and remote control**

The Plena message manager is a high performance, highly versatile stand-alone digital message player. Applications range from spot announcements in supermarkets and theme parks to warning and evacuation messages in emergency situations.

Functions

Messages

Up to 12 messages can be stored in the internal 64Mbit EEPROM, without the need for data retention battery backup. Each message can have any length within the total available capacity. A PC uploads messages and configurations via RS-232 to the unit, which can then operate without a PC. The standard WAV-format is used for messages with sample rates of 8 kHz to 24 kHz with 16-bit word length (linear PCM). This gives up to 500 seconds of recording time with a CD-quality, signal-to-noise ratio. The use of linear PCM instead of a compressed audio format, such as MP3, ADPCM and u-law/A-law, ensures high-quality playback of all types of audio signals, including sound effects and special tones, such as attention chimes.

The unit has 12 contact closure trigger inputs for announcements. Each can be configured for a sequence of up to four messages from those available. In this way messages can be used in combination with other messages, optimizing flexibility and storage space usage. When used together with the six-zone LBB 1925/10 Plena System Pre-

Amplifier, a zone selection can be configured for each trigger input. The message manager communicates this selection to the LBB 1925/10 via an RS-232 connection. Continuous activation of a trigger input causes the corresponding message sequence to repeat.

Trigger Inputs

The trigger inputs have a serial priority, i.e. input 1 has priority over input 2, input 2 over input 3, etc. The high priority trigger inputs 1-6 are only accessible as contacts on the rear panel to prevent accidental use. The lower priority trigger inputs 7-12 are also available as trigger switches on the front panel.

Integrity and Dependability

The LBB 1965/00 can also play emergency/evacuation messages, as it fulfills the IEC 60849 standard. The microcontroller continually checks the data integrity of the system, and a watchdog circuit, in turn, checks the microcontroller. The unit monitors the D/A converter with a pilot tone, and the high priority trigger inputs (one to six) for cable short circuits and breaks. A 24 V battery back-up connection with automatic fail-over provides continued operation if the mains power should fail. A 20 kHz pilot tone can be mixed with the output signal to supervise the link to the next amplifier. This also works for loudspeaker supervision in combination with 20 kHz detectors. Any failure causes a red LED fault indication, and activates a fault output contact.

Loop-through Facility

The LBB 1965/00 provides a loop-through facility with balanced XLR and unbalanced cinch inputs and outputs. This allows the unit to be inserted into an existing audio link. As long as no announcements are playing, the signal input is routed to the output. If an announcement begins, the input signal is interrupted and the announcement is routed to the output.

Updating

Messages and configuration settings are uploaded from a PC. After uploading, the trigger inputs 7-12 can be configured by using the front-panel switches, without the need for a new upload or even a PC. Message content can be monitored using the available headphone jack.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Installation/Configuration Notes



LBB 1965/00 back view

Parts Included

Quantity	Component
1	LBB 1965 Plena Message Manager
1	Power cord
1	Set of 19" mounting brackets
1	Plena CD
1	Installation and User Instructions

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	1.5 A at 230 VAC / 3 A at 115 VAC
Max power consumption	50 VA

Battery power supply

Voltage	24 VDC, $\pm 15\%$ / -15%
Current max	1 A

Performance

Supported sample rates (fs)	24 / 22.05 / 16 / 12 / 11.025 / 8 kHz
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Frequency response

@ fs=24kHz	100 Hz to 11 kHz (+1 / -3 dB)
@ fs=22.05kHz	100 Hz to 10 kHz (+1 / -3 dB)
@ fs=16kHz	100 Hz to 7.3 kHz (+1 / -3 dB)
@ fs=12kHz	100 Hz to 5.5 kHz (+1 / -3 dB)
@ fs=11.025kHz	100 Hz to 5 kHz (+1 / -3 dB)
@ fs=8kHz	100 Hz to 3.6 kHz (+1 / -3 dB)

Distortion	<0.1% at 1 kHz
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S/N (flat at max volume)	>80 dB
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Supervision DAC	1 Hz pilot tone
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Line input	1 x
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Connector	3-pin XLR, balanced
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Sensitivity	1 V
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Impedance	20 kohm
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CMRR	>25 dB (50 Hz to 20 kHz)
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Line input	1 x
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Connector	Cinch, unbalanced
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Sensitivity	1 V
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Mains power supply

Impedance	20 kohm
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Trigger input	6 x
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Connector	Screw
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Activation	Contact closure
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Supervision method	Cable loop resistance check
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Line output	1 x
--------------------	-----

Connector	3-pin XLR, balanced
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Nominal level	1 V, adjustable
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Impedance	<100 ohm
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Line output	1 x
--------------------	-----

Connector	Cinch, unbalanced
-----------	-------------------

Nominal level	1 V, adjustable
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Impedance	<100 ohm
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Message active output	1 x
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Connector	Screw
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Relay	100 V, 2 A (voltage free, SPDT)
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Fault output	1 x
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Connector	Screw
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Relay	100 V, 2 A (voltage free, SPDT)
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Interconnection	1 x
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Connector	9-pin D-sub (RS-232)
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PC protocol	115 kb/s, N, 8, 1, 0 (upload)
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LBB 1925/10 protocol	19.2 kb/s, N, 8, 1, 0 (zone control)
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Messages

Data format	WAV-file, 16-bit PCM, mono
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Memory capacity	64 Mb EEPROM
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Recording/playback time	500 s @ fs=8 kHz 167 s @ fs=24 kHz
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Number of messages	12 (maximum)
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Data retention time	>10 years
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Mechanical

Dimensions (H x W x D)	56 x 430 x 270 mm (19" wide, 1U high, with feet)
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Weight	Approx. 3 kg
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Mounting	Standalone, 19" rack
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

LBB 1965/00 Plena Message Manager	LBB1965/00
high performance, highly versatile stand-alone digital message player.	

LBB 1968/00 Plena Feedback Suppressor



Features

- ▶ **Patented feedback suppression algorithm**
- ▶ **Suppresses feedback before it occurs**
- ▶ **Automatically adapts to the acoustical situation**
- ▶ **Up to 12 dB additional gain before feedback occurs**
- ▶ **Balanced line or microphone input with phantom supply**
- ▶ **Second microphone input with automatic mixer**

The Plena feedback suppressor uses a powerful DSP with a patented algorithm to suppress acoustic feedback. It actively filters out unwanted room reverberations using an echo-cancellation and de-reverberation algorithm. By adding masked (inaudible) noise to the output signal or by shifting the frequency of the output signal by five hertz, the Plena feedback suppressor is able to detect the reverb component of the signal and remove it before feedback occurs. This leaves the original signal intact.

Functions

The adaptive filter can be switched between fast mode and accurate mode. The fast mode is for situations where the microphone position changes over time, such as in a discussion system with multiple switching microphones. The accurate mode is for situations with a fixed microphone position, such as on a pulpit where the acoustical environment is more stable. The adaptive filter is allowed to converge more slowly, suppressing reverberation components even more effectively. Depending on the acoustical environment and the chosen mode of operation, up to 12dB of additional gain is possible before acoustic feedback occurs.

The Plena feedback suppressor also features a built-in automatic mixer for the two microphone inputs. In many situations, such as on a rostrum, a pulpit or a conference table, two microphones are used to capture the voice of a moving speaker better, even though this increases the risk of acoustic feedback. To counter this, the automatic mixer in the Plena feedback suppressor reduces the gain of the microphone with the lowest signal input and increases the gain of the microphone with the highest signal input. This way, it tracks the moving speaker for optimum speech intelligibility, while maintaining a maximum feedback margin by keeping the combined gain constant. The automatic mixer function remains operational even when the feedback suppressor is deactivated.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Installation/Configuration Notes



LBB 1968/00 back view

Parts Included

Quantity	Components
1	LBB 1968/00 Plena Feedback Suppressor
1	Power cord
1	Set of 19" mounting brackets
1	0.5 m XLR cable
1	Installation and User Instructions
1	Plena CD

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, ±10%, 50/60 Hz
Inrush current	1.5 A @ 230 VAC / 3 A @ 115 VAC
Max power consumption	50 VA

Performance

Sample rate (fs)	32 kHz
Frequency response	125 Hz to 15 kHz
Distortion	<0.1 % @ 1 kHz
Gain (bypass mode)	0 dB line in, 24 / 36 / 48 dB mic in
Gain (active mode)	0 dB line in, 24 / 36 / 48 dB mic in
S/N	> 90 dB
Signal delay	<11 ms
Decorrelator	Frequency shift, 5 Hz up Masked noise

Mic / line input

Connectors	3-pin XLR, 5-pin DIN, balanced
Max level	18 / 6 / -6 dBV line in, -18 / -30 / -42 dBV mic in
Impedance	10 kohm / 2 kohm (line / mic)
CMRR	> 25 dB (50 Hz to 20 kHz)
Phantom power	16 V (mic only, switchable)
Priority control	Loop through of pin 4 and 5 of DIN

Mic input

Connectors	3-pin XLR, 5-pin DIN, balanced
Max level	-18 / -30 / -42 dBV
Impedance	2 kohm
Phantom power	16 V (switchable)
Priority control	Loop-through of pin 4 and 5 of DIN

Line input

Connector	Cinch, unbalanced
Max input level	18 / 6 / -6 dBV
Impedance	20 kohm

Line output

Connector	3-pin XLR, balanced
Max level	18 / 6 / -6 dBV (line in), 6 dBV (mic in)
Impedance	<100 ohm

Line output

Connector	Cinch, unbalanced
Max level	18 / 6 / -6 dBV (line in), 6 dBV (mic in)
Impedance	<100 ohm

Mic output

Connector	5-pin DIN, balanced
Max level	22 / -34 / -46 dBV (line in), 34 dBV (mic in)
Impedance	<100 ohm
Priority control	Loop-through of pins 4 and 5 of DIN from inputs

Mechanical

Dimensions (H x W x D)	56 x 430 x 270 mm (19" wide 1U high)
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Weight	3 kg (6.6 lb)
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Mounting	Stand-alone, 19" rack
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

LBB 1968/00 Plena Feedback Suppressor

a powerful DSP with a patented algorithm to suppress acoustic feedback.

LBB1968/00

PLN-6TMW Plena Weekly Timer



Features

- ▶ **Two weekly programs**
- ▶ **14 Chimes**
- ▶ **Six contact outputs**
- ▶ **Automatic summer winter time**
- ▶ **BGM level control**
- ▶ **Hold and pause function**
- ▶ **Programming on the unit and via the supplied PC program**
- ▶ **Ideal partner for the Plena Message Manager and Voice Alarm Controller for timed messages**

The Plena Weekly Timer is an accurate timer for use in public address systems. It is ideally suited for schools, shopping malls and all other venues that need regularly timed messages, signals or other controls. It is ideally suited for connection to the Plena Message Manager and Voice Alarm System.

Functions

The unit has two weekly schedules as well as a pause mode, where all actions except the clock display are suspended. Events can be programmed with an accuracy of one minute. There is no limit to the number of events, every minute may have an event associated with it. Each day can have a separate event set, and two schedules can be programmed. The schedule can be selected via the front panel. Each event can trigger:

- A chime
- Any combination of output contacts
- BGM volume change

The timer can broadcast 14 different chimes via the audio throughput. It has six programmable output contacts with relays to connect to other equipment. Programmed contact events can open or close the contact or generate a pulse of configurable duration. The contacts can also be controlled via buttons on the front panel.

The unit has an audio input and output to attenuate BGM signals. The volume can be controlled directly from the front panel, or programmed to change level at fixed times, for example, to automatically attenuate music in the morning or evening hours. It can automatically jump back to the programmed level at the next event.

The timer has a clock sync input to synchronize the time with an external source but can also take the correct time from a PC. This way it can synchronize with a time server. The timer clock also keeps track of the date, ensuring correct weekday display and automatic summer winter time setting. (according to European, North American, user defined dates or off). The timer has a 24 V backup power input with reverse-polarity protection as well as a back up battery that preserves the correct clock setting. Synchronization and programming is done via the USB port. Programming can also be performed by the front panel. An RS-232 connector is available to connect to a large separate display.

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Parts Included

Quantity	Component
1	PLN-6TMW Plena Weekly Timer
1	Power cord
1	Set of 19" mounting brackets

Technical Specifications

Electrical

Mains power supply

Voltage	230/115VAC, ±15%, 50/60 Hz
Max power consumption	30 W

Battery power supply

Voltage	24 VDC, +15% / -15%
Current max	1 A

Performance

Frequency response	20 Hz to 20 kHz (-3 dB)
Total harmonic distortion	< 0.01 % (1kHz)
S/N	<85 dB
Dynamic range	>100 dB

Mains power supply

Line input	1 x
Connector	XLR balanced
Sensitivity	1 V
Impedance	>5 kohm
Headroom	>25 dB
Line output	1 x
Connector	XLR balanced
Impedance	>100 ohm

Clock

Accuracy (without sync)	25 °C: better than <2 s/month -10 °C to 55 °C: <3.5 s/month
Sync input	NO, contact closure synchronizes to the nearest hour

Output contacts

Connector	MC 1,5/6-ST-3,5
Rating	100 V, 1 A, voltage free

Mechanical

Dimensions (H x W x D)	48 x 440 x 3120 mm (without brackets, with feet) 44 x 483 x 312 mm (with brackets, without feet)
Weight	Approx. 3 kg
Mounting	Standalone, 19" rack
Color	Charcoal with silver

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information**PLN-6TMW Plena Weekly Timer**

for regularly timed messages, signals or other controls.

PLN-6TMW

LBC 1901/00 Rack Mount Kit

Ordering Information**LBC 1901/00 Rack Mount Kit**

for Plena rack mountable components, 19-inch

LBC1901/00

Plena Voice Alarm System Overview



Features

- ▶ **Complete IEC 60849 compliance**
- ▶ **Up to 60 zones**
- ▶ **Up to eight call stations**
- ▶ **One-channel or two-channel operation**
- ▶ **Fully supervised system**

The Plena Voice Alarm System is designed for public address and emergency evacuation in small to medium-sized applications such as factories, offices, hotels, shopping malls, supermarkets, sports facilities, schools and universities. All the essential EVAC functionality, such as system supervision, spare amplifier switching, loudspeaker line surveillance, digital message management and a fireman's panel interface is combined with proven audio technology to guarantee excellent speech intelligibility and message delivery. The Plena Voice Alarm System offers extensive possibilities, with emergency call (EMG) and BGM audio channels, up to 60 zones, eight call stations, and two remote control panels. It can function as a one-channel, or as a two call-channel (BGM & call) system. It is compatible with the Plena BGM source units and Plena amplifiers. Bosch can deliver EVAC compliant loudspeakers and accessories for an integrated public address and voice alarm solution.

Functions

The Plena Voice Alarm System is the integrated solution for BGM and EVAC. It complies with the IEC 60849 standard, including full system supervision, loudspeaker line impedance supervision, a supervised emergency microphone on the front panel and a supervised message manager for up to 255 pre-recorded messages and chimes. The messages can be combined, allowing even more flexible

use of prerecorded announcements and evacuation messages. Each message can have any length within the total available capacity of 16 MB. Messages and configurations are uploaded from a PC via USB 2 into the memory, after which the unit operates without a PC connection.

The controller can be used as a stand-alone system with up to six zones, or expanded to up to 60 zones using additional six-zone routers. Up to eight call stations can be connected. Interconnections are made using standard RJ45 connectors and (shielded) CAT-5 cable.

With a maximum of 1000 W per router, the audio output uses standard analog audio 100 V line switching for full compatibility with the Plena family of public address equipment and Bosch EVAC-compliant loudspeakers. The system is configured using DIP switches for basic functionality, and a PC for more advanced functions. Up to 18 priority levels can be specified for optimum system flexibility.

Six zones can be selected on each call station, and call station keypads can be connected to increase the number of selectable zones or zone groups.

The controller and each connected router have 12 trigger inputs to start business and emergency messages. Each can be configured for a message consisting of a sequence of up to eight wave files. In this way some wave files may be used in different combinations with other messages, optimizing flexibility and used storage space. Together with this sequence, a zone selection can be configured for each trigger input.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849

Technical Specifications

Maximum total cable length between the controller and the last router in the chain	1000 m
Maximum total cable length between the controller and the last call station in the chain	1000 m
Maximum total cable length between the controller and the RC panel	1000 m
PC connection for system configuration	USB 2.0
Maximum power consumption per router	1000 W
Interconnections	CAT-5
Maximum number of zones supported	60
Maximum number of call station supported	8
Maximum number of key pads per call station	8
Maximum number of messages	255

LBB 1990/00 Plena Voice Alarm Controller



Features

- ▶ **Heart of the Plena Voice Alarm System**
- ▶ **TÜV-certified for IEC 60849**
- ▶ **Six-zone system controller**
- ▶ **Built-in 240 W amplifier**
- ▶ **12 business and emergency control inputs**

The Plena Voice Alarm Controller is the heart of the voice alarm system. It is the basis of the Plena Voice Alarm System, and has all the essential functionality for compliance with the IEC 60849 standard, including full system supervision, loudspeaker line impedance supervision, a supervised emergency microphone on the front panel and a supervised message manager.

The messages can be merged to allow even more flexible use of pre-recorded announcements and evacuation messages. The controller can be used as a stand-alone system with up to six zones, or expanded to up to 60 zones using additional six-zone routers. Up to eight call stations can be connected. Interconnections are made using standard RJ45 connectors and shielded CAT-5 cable.

A built-in 240 W amplifier provides the power for the emergency call channel and BGM. Additional Plena Amplifiers can be added to provide two-channel operation. All amplifiers are supervised. The audio output uses standard analog audio 100 V line switching for full compatibility with the Plena family of public address equipment and Bosch EVAC-compliant loudspeakers. The system is configured using DIP switches for basic functionality and a PC for more advanced functions.

Functions

The controller has two BGM source inputs and a mic/line input with configurable priority, speech filter, phantom power and selectable VOX activation. A total of 16 priority levels can be specified for microphone, call stations and trigger inputs for optimum system flexibility.

The powerful 240 W output section has six transformer-isolated 100 V constant-voltage outputs for driving 100 V loudspeakers in six separate zones. The 100 V-technique reduces line losses on longer distances and provides easy parallel connection of multiple loudspeakers. All zones may be individually selected from the front panel, and the BGM output level in each zone can be individually set in six steps. The controller supports A/B wiring.

Configuration software is provided on the CD included with the unit. The CD also includes many useful programs, such as MP3-ripping software, a sample-rate converter, various audio and visual tools, and free, MP3-coded music.

The amplifier output is also available as a separate output on 100 V and 70 V. A separate 100 V call-only output provides addressing for an area where BGM is not required but where priority announcements are. Six configurable volume-override output contacts are available for overriding local volume controls during priority calls. Both four-wire and three-wire schemes are supported. An LED meter monitors the output.

Up to 255 messages can be stored in the internal 16 MB flash ROM, without a need for battery backup. Each message can have any length within the total available capacity. Messages and configurations are uploaded from a PC via USB 2 into the memory, after which the unit operates without a PC connection. The standard WAV-format is used for the messages, and sample rates of 8 kHz up to 24 kHz with 16-bit word length (linear PCM) are supported. This gives up to 17 minutes of recording time with CD-quality signal-to-noise ratio.

The unit has 12 contact trigger inputs for business and emergency (EMG) calls. Each can be configured for a message consisting of a sequence of up to eight wave files. In this way some wave files may be used in various combinations with other messages, optimizing flexibility and the amount of storage space used. Multiple messages can be merged to form one integrated message. A zone selection, together with this sequence can be configured for each trigger input.

Controls and indicators

Front

- LED power meter
- 13 system fault LEDs
- Two fault state buttons
- Two emergency state buttons
- Six EMG zone status LED pairs
- Six EMG zone select buttons
- Six BGM zone select LEDs
- Six BGM zone select buttons
- Six BGM zone volume control knobs

- Two BGM source status LEDs
- Three knobs for BGM volume, treble, and bass levels
- All-call button
- Indicator test button
- EMG state button
- Alert message button

Back

- Three service settings DIP switches
- Calibration switch
- Four system configuration DIP switches
- Mains voltage selector
- Power switch
- Power cord socket
- Mic/line level switch
- Three DIP switches for VOX, speech, phantom power
- Microphone volume control knob
- Digital message volume control screw
- Monitoring speaker volume control knob

Interconnections

Front

- Microphone socket

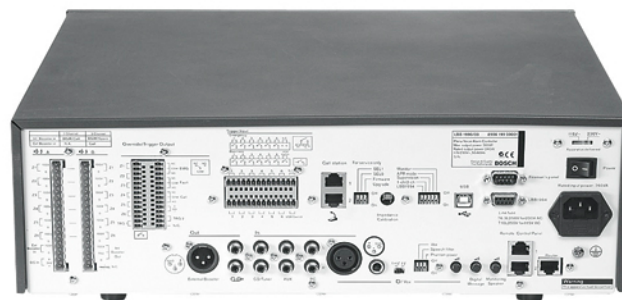
Back

- 12 loudspeaker outputs
- External amplifier input
- Amplifier output (on 100 V)
- Backup power input
- Call output
- Six volume override outputs
- Three status outputs
- 12 trigger inputs
- 24 VDC output
- Two call station connectors (redundant)
- USB 2 connector
- Two DE-9 connectors (reserved)
- External amplifier output
- Line output connectors
- Two BGM inputs
- PC call station input (reserved)
- Two RC station connectors (redundant)
- Connector to LBB 1992/00 (router)

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849
		Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1990/00 rear view

Parts Included

Quantity	Component
1	LBB 1990/00 Plena Voice Alarm Controller
1	Power cord
1	Set of 19" mounting brackets
1	Plena CD
1	Installation and User Instructions
1	USB cable

Technical Specifications

Electrical

Mains power supply

Voltage	230/115VAC, ±15%, 50/60 Hz
Current inrush	8 A
Max power consumption	600 VA

Battery power supply

Voltage	24 VDC, +15% / -15%
Current max	14 A

Performance

Output power (rms/maximum)	240 W / 360 W
Power reduction on backup power	-1 dB
Frequency response	60 Hz to 18 kHz (+1/-3 dB at -10 dB ref. rated output)
Distortion	<1% at rated output power, 1 kHz
Bass control	-8/+8 dB at 100 Hz
Treble control	-8/+8 dB at 10 kHz

Mic/line input

Connector	XLR, 6.3 mm jack
Sensitivity	1 mV (mic), 1 V (line)
Impedance	>1 kohm (mic); >5 kohm (line)
S/N (flat at max volume)	>63 dB (mic); >70 dB (line)
S/N (flat at min volume/muted)	>75 dB
CMRR	>40 dB (50 Hz – 20 kHz)
Headroom	>25 dB

Mains power supply

Speech filter	-3 dB at 315 Hz, high-pass, 6 dB/oct
Phantom power supply	12 V (mic mode only)
VOX trigger level	-20 dB (100 µV mic / 100 mV line) or via input contact
Limiter	Automatic

Line input (BGM and PC call station)

Connector	Cinch, stereo converted to mono, unbalanced
Sensitivity	200 mV
Impedance	22 kohm
S/N (flat at max volume)	>70 dB
S/N (flat at min volume/muted)	>75 dB
Headroom	>25 dB

Trigger Inputs 12 x (6 EMG, 6 business)

Connectors	MC1,5 / 14-ST-3,5
Activation	Programmable
Supervision	On EMG inputs, programmable
Supervision method	Series / parallel resistor

100 V input

Connector	MSTB 2,5 / 16-ST
Power handling capacity	1000 W

Tape output 1 x

Connector	Cinch, 2 x mono
Nominal level	350 mV
Impedance	<1 kohm

Loudspeaker outputs

Connectors	MSTB 2,5 / 16-ST, floating
100 V output	700 W rated per zone
Volume override types	3-wire, 4-wire (24 V), 4-wire failsafe
BGM zone output	70 / 50 / 35 / 25 / 18 / 13 V for
Attenuation	0 / -3 / -6 / -9 / -12 / -15 dB 120 / 60 / 30 / 15 / 8 / 4 W

Output Contacts

Connector Type	MC 1,5/14-ST-3,5
Rating	250 V, 7A, voltage free
Emergency active relay	NO / COM / NC
Call active relay	NO / COM / NC
Fault relay	NO / COM / NC normally energized (fail-safe)
General purpose relays	NO / COM

Power consumption**Mains operation**

Max power	550 W
-3dB	440 W
-6dB	340 W
Pilot tone*	136 W
Idle	60 W

24 VDC operation

Max power	14.0 A (336 W)
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Mains operation

-3 dB	12.5 A (300 W)
-6 dB	9.5 A (228 W)
Pilot tone*	2.5 A (60 W)
Idle	0.9 A (22 W)

* 20 kHz -20dB with maximum loudspeaker load

Messages

Data format	WAV-file, 16-bit PCM, mono
Supported sample rates (fs)	24 / 22.05 / 16 / 12 / 11.025 / 8 kHz
Frequency response	
at fs=24kHz	100 Hz to 11 kHz (+1/-3 dB)
at fs=22.05kHz	100 Hz to 10 kHz (+1/-3 dB)
at fs=16kHz	100 Hz to 7.3 kHz (+1/-3 dB)
at fs=12kHz	100 Hz to 5.5 kHz (+1/-3 dB)
at fs=11.025kHz	100 Hz to 5 kHz (+1/-3 dB)
at fs=8kHz	100 Hz to 3.6 kHz (+1/-3 dB)
Distortion	<0.1% at 1 kHz
S/N (flat at max volume)	>80 dB
Memory capacity	16 MB Flash ROM
Recording / playback time	1000 seconds at fs = 8 kHz 333 seconds at fs = 24 kHz
Number of messages	255 max
Supervision Flash ROM	Continuous checksum control
Supervision DAC	1 Hz pilot tone
Data retention time	>10 years

Mechanical

Dimensions (H x W x D)	144 x 430 x 370 mm (19" wide, 3U high)
Weight	Approx. 15 kg
Mounting	19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Acoustic noise level of fan	<48 dB SPL at 1 m (max output)

Ordering Information**LBB 1990/00 Plena Voice Alarm Controller LBB1990/00**

for full system supervision, loudspeaker line impedance supervision. Built-in 240 W amplifier for the emergency call channel and BGM.

LBB 1992/00 Plena Voice Alarm Router



Features

- ▶ **Six-zone router with single or dual channel operation**
- ▶ **Six EMG input contacts**
- ▶ **Six business input contacts**
- ▶ **Six volume override output contacts**
- ▶ **Supervision within the Plena Voice Alarm System (IEC 60849 compliant)**

The Plena Voice Alarm Router is an expansion unit that can add six zones as well as 12 input and eight output contacts to the Voice Alarm System. It can use the built-in amplifier on the LBB 1990/00 Voice Alarm Controller, and provides inputs and outputs for one or two amplifiers in a multi-amplifier one or two-channel system.

It provides dual channel operation for calls and BGM simultaneously to a maximum of six different zones, using two Plena amplifiers. Additionally, single channel operation is possible with only one Plena amplifier.

Multiple routers can also share one amplifier, including the internal amplifier on the controller unit. It is possible to use any number of amplifiers from one up to the number of routers used. The controller supports A/B wiring.

Functions

The LBB 1992/00 has a set of relays for zone-switching the power amplifier output(s) to different loudspeaker groups. Each zone can be switched between:

- The call channel (call-station selection, all-call microphone, or emergency activation)
- The BGM channel (front panel selection)
- Off

Volume override relay contacts are provided for each zone separately for overriding local loudspeaker volume controls. This ensures that priority messages go through with a given volume, even though the local volume controls may be set to a low volume level for background music, for example. Both three-wire and four-wire override schemes are supported. A call or a triggered input will activate these contacts for the appropriate zones, together with an additional voltage-free contact (call-active) for control purposes.

An overload protected 24 VDC output provides power for driving external relays, making an external power supply unnecessary. The master output channel, or one of the input channels, can be selected to be monitored with headphone connector and LED meter.

Controls and indicators

Front

- Meter (LED's for -20, -6, 0 dB and Power ON)
- Eight system fault LEDs
- 12 loudspeaker line fault LEDs
- Six EMG call-zone selection buttons
- 12 EMG call-zone status LEDs
- Six BMG zone selector buttons
- Six BMG zone status LEDs

Back

- 2 x DIP switch
- Unit ID rotary control
- Mains voltage selector
- Power switch
- Mains socket

Interconnections

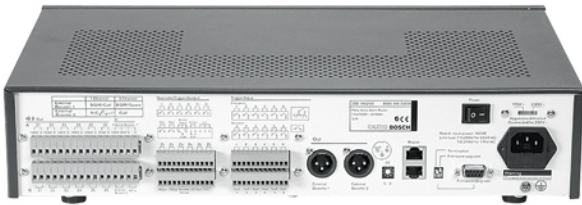
Back

- 12 loudspeaker outputs
- Two external amp inputs
- Call output
- Six volume override outputs
- 12 trigger inputs
- RS-232 connector
- Two system interlinks
- Two external amp outputs (XLR/balanced)
- Power amp fault output
- 24 VDC power output
- 24 VDC power input
- Two extra trigger outputs
- Earth connection screw

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849 Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1992/00 rear view

Parts Included

Quantity	Component
1	LBB 1992/00 Plena Voice Alarm Router
1	Power cord
1	Set of 19" mounting brackets
1	Plena CD
1	Installation and User Instructions
1	XLR cable
1	Ethernet cable

Technical Specifications

Electrical

Mains power supply

Voltage	230/115 VAC, $\pm 10\%$, 50/60 Hz
Inrush current	1.5 A @ 230 VAC / 3 A @ 115 VAC
Max power consumption	50 VA
Idle / max load* current	0.2 A / 0.3 A

Battery power supply

Voltage	24 VDC, $+15\%$ / -15%
Current max	1.8 A
Typical / max load* current	0.51 A / 1.5 A

Trigger Inputs

Connectors	MC1,5 / 14-ST-3,5
Activation	Programmable
Supervision	On EMG inputs, programmable
Supervision method	Series / parallel resistor

100 V input

Connector	MSTB 2,5 / 16-ST
Amp 1	100 V / 70 V / 0 V
Amp 2	100 V / 0 V
Power handling capacity	1000 W

Loudspeaker outputs

Connectors	MSTB 2,5 / 16-ST, floating
100 V output	700 W rated per zone
Volume override types	3-wire, 4-wire (24 V), 4-wire failsafe

Output Contacts

Connector	MC 1,5/14-ST-3,5
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Mains power supply

Rating	250 V, 7A, voltage free
General purpose relays (2x)	NO / COM

* Maximum load means maximum load on 24 VDC, and indicator test.

Mechanical

Dimensions (H x W x D)	88 x 430 x 260 mm (19" wide, 2U high)
Weight	Approx. 3 kg
Mounting	Standalone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1992/00 Plena Voice Alarm Router **LBB1992/00**
add six zones as well as 12 input and eight out-
put contacts to the Voice Alarm System.

LBB 1956/00 Plena Voice Alarm Call Station



Features

- ▶ **Stylish six-zone call station for the Plena Voice Alarm System**
- ▶ **Six zone selection keys, all-call key and momentary PTT-key for calls**
- ▶ **Selectable gain, speech filter, limiter, and output level for improved intelligibility**
- ▶ **LED indications for zone selection, fault, and emergency state**
- ▶ **Call station extension provides seven additional zone and zone group keys**

The Plena call station is a stylish, high-quality call station with a stable metal base design, a flexible microphone stem and a unidirectional condenser microphone. It can make calls to selected zones (one to six and all-call) in a public address system built with the Plena Voice Alarm System. In addition to tabletop use, the special design allows it to be neatly flush-mounted in desktops. The Plena Voice Alarm Keypad (LBB 1957/00) is an extension adding seven additional keys.

Functions

Each call station supports six zone selections. The number of selectable zones or zone groups can be increased by connecting call station keypads (LBB 1957/00). Up to eight keypads can be added with each keypad adding seven zone or zone-group keys.

This call station features selectable gain, a selectable speech filter, and a limiter for improved intelligibility. The call station has a balanced line level output, making it possible to position it up to 1000 meters from the controller, using CAT-5 extension cables. With shielded cable, the call station can also be used in an EMC level 5 (heavy industry) environment.

DIP switches at the base of the call station select different microphone gain levels, the call station ID, and the speech filter. A service accessible rotary control provides microphone level attenuation. LEDs on the call station show which zones have been selected. Three additional LEDs give visible feedback on the active state of the microphone and the system. Green flashing means standby (chime is sounding). Green indicates microphone active. Amber indicates that the system has detected a fault (IEC 80649), and red indicates that the system is in the emergency state.

Controls and indicators

- Four status LEDs
- PTT-key
- PTT status LED
- Six zone selection keys
- Six zone selection LEDs
- All-call key
- Eight DIP switches
- Rotary volume control

Interconnections

- Two RJ45 jacks
- 24 VDC input
- Keypad connector

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Parts Included

Quantity	Components
1	LBB 1956/00 Plena Voice Alarm Call Station
1	Cable terminated with a lockable CAT-5 connector

Technical Specifications

Electrical

Power Supply

Voltage range	24 VDC supplied by LBB 1990/00 (or 18 to 24 VDC or VAC external power supply)
Current consumption	<30 mA (plus <15 mA per keypad)

Performance

Nominal sensitivity	85 dB SPL (gain preset 0 dB)
Nominal output level	700 mV
Input sound level (max)	110 dB SPL
Gain preset	+6 / 0 / -15 dB
Limiter threshold	2 V
Compression ratio limiter	1:20
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	25 dB SPLA
Frequency response	100 Hz to 16 kHz
Speech filter	-3dB at 315 Hz, high-pass, 6 dB/oct
Output impedance	200 ohm

Selections

Chimes	Any wave file
Priorities	7

Mechanical

Base dimensions	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg
Mounting	Standalone
Color	Charcoal with silver
Stem length with mic	390 mm (15.35 in)
Cable length	5 m (16.4 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1956/00 Plena Voice Alarm Call Station **LBB1956/00**
metal base design, a flexible microphone stem
and a unidirectional condenser microphone. It
can make calls to selected zones (one to six and
all-call)

LBB 1957/00 Plena Voice Alarm Keypad

Features

- ▶ **Seven zone selection keys**
- ▶ **LED indications for zone selection**
- ▶ **Up to eight keypads can be connected together**

The keypad is an extension to the LBB 1956/00 Plena Voice Alarm Call Station that adds seven additional zone-select keys. It has the same stable metal base as the call station. In addition to tabletop use, the special design allows it to be neatly flush-mounted in desktops.

Functions

Each call station supports six zone selections. Connecting one of these units, adds seven zones or zone groups that can be selected. Up to eight keypads can be added to an LBB 1956/00 call station. LEDs on the keypad indicate the active zones.

Controls and indicators

- Seven zone selection keys
- Seven zone selection LEDs
- Eight DIP switches

Interconnections

- Two RJ45 jacks
- 24 VDC input
- Keypad connector

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Technical Specifications

Electrical

Power Supply

Voltage range	24 VDC supplied by LBB 1956/00
Current consumption	<15 mA

Mechanical

Base dimensions	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg
Mounting	Bracket coupled with LBB 1956/00 or other LBB 1957/00
Color	Charcoal with silver

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1957/00 Plena Voice Alarm Keypad	LBB1957/00
an extension to the LBB 1956/00 Plena Voice Alarm Call Station that adds seven additional zone-select keys	

LBB 1995/00 Plena Voice Alarm System Fireman's panel



Features

- ▶ Remote control of the voice alarm system
- ▶ Large buttons designed for gloved hands
- ▶ Emergency (EMG) microphone
- ▶ EMG state and fault indicators
- ▶ Call monitoring loudspeaker
- ▶ Control outputs for EMG and fault state

The Plena voice alarm remote control panels allow the system to be controlled remotely from one or two remote locations. There are five models available:

- The fireman's panel, which has oversized, illuminated controls and an all-call function
- The main RC unit, which duplicates the front panel of the Voice Alarm Controller
- The RC extension, which duplicates the front panel of the router
- The main RC kit
- The RC extension kit

The kits are a functional match to the remote control and the RC extension, with connectors on the front panel instead of controls and indicators.

Functions

The fireman's panel is a remote control that has specialized buttons and indicators for firemen. The remote control has no zone selection, as the standard RC has, but large backlit buttons.

It is possible to enter or acknowledge the emergency state, and acknowledge and reset the fault state. Emergency or alert messages can be started, and live calls can be made.

An LED meter shows the presence and level of the calls that are active in the system. The fault indicators show detailed information of a fault in the system. Connection to the Plena Voice Alarm System is via standard, shielded CAT 5 cable and RJ45 connectors. The included rack mounting brackets can also be used to mount the units to a rear wall with spacing for cables, and even to a flat surface above or below the unit.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849 Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1995/00 rear view

Parts Included

Quantity	Component
1	LBB 1995/00 Plena Voice Alarm System Fireman's panel
1	Set of 19" mounting brackets
1	EMG microphone and cable
1	EMG mic mounting clip
1	1 m CAT 5 cable

Technical Specifications

Electrical*

Power supply

Voltage	24 VDC, +20% / -10%
Current typical	100 mA
Current max (indicator test)	250 mA
Priority relay contacts	30 V, 1 A
Emergency relay contacts	30 V, 1 A

* Technical performance data acc. to IEC 60268-3

Mechanical

Dimensions	134 x 430 x 90 mm (19" wide, 3U high)
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Weight	Approx. 3 kg
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Mounting	19" rack or wall
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

LBB 1995/00 Plena Voice Alarm System	LBB1995/00
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Fireman's panel

all-call EVAC remote control with microphone

LBB 1996/00 Plena Voice Alarm Remote Control



Features

- ▶ Remote control of the voice alarm system
- ▶ Emergency (EMG) microphone
- ▶ EMG and background (BGM) zone selections
- ▶ EMG state and fault indicators
- ▶ Control outputs for EMG and fault states
- ▶ Call monitoring loudspeaker

The Plena voice alarm remote control panels allow the system to be controlled remotely from one or two remote locations. There are five models available:

- The fireman's panel, which has oversized, illuminated controls and an all-call function
- The main RC unit, which duplicates the front panel of the Voice Alarm Controller
- The RC extension, which duplicates the front panel of the router
- The main RC kit
- The RC extension kit

The kits are a functional match to the remote control and the RC extension, with connectors on the front panel instead of controls and indicators.

Functions

The remote control is an exact duplicate of the control panel on the LBB 1990/00 Plena Voice Alarm System Controller. The LBB 1996/00 provides all EVAC control from one or two locations, such as at entrance points. The remote control has BGM and emergency-call zone selection without source, volume or tone control.

It is possible to enter or acknowledge the emergency state, and acknowledge and reset the fault state. Emergency or alert messages can be started, and live calls can be made.

An LED meter shows the presence and level of the calls that are running in the system. The fault indicators reflect any faults present in the system. The unit connects to the Plena Voice Alarm System via standard shielded CAT 5 cable. The included rack mounting brackets can also mount the unit on a wall with spacing for cables at the back, as well as to a horizontal surface above or below the unit.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849 Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1996/00 rear view

Parts Included

Quantity	Component
1	LBB 1996/00 Plena Voice Alarm System Remote Control
1	Set of 19" mounting brackets
1	EMG microphone and cable
1	EMG microphone mounting clip
1	1 m CAT 5 cable

Technical Specifications

Electrical

Power supply

Voltage	24 VDC, +15% / -15%
Current typical	100 mA
Current max (indicator test)	250 mA
Relay contacts	30 V, 1 A

Mechanical

Dimensions (H x W x D)	134 x 430 x 90 mm (19" wide, 3U high)
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Weight	Approx. 3 kg
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Mounting	19" rack or wall
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

LBB 1996/00 Plena Voice Alarm Remote	LBB1996/00
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Control

six-zone voice alarm remote control with microphone

LBB 1997/00 Plena Voice Alarm System Remote Control Extension



Features

- ▶ Remote control of the voice alarm routers
- ▶ EMG and background (BGM) zone selections
- ▶ EMG state and fault indicators
- ▶ One extension per router
- ▶ Power supply from the remote control panel (kit)

The Plena voice alarm remote control panels allow the system to be controlled remotely from one or two remote locations. There are five models available:

- The fireman's panel, which has oversized, illuminated controls and an all-call function
- The main RC unit, which duplicates the front panel of the Voice Alarm Controller
- The RC extension, which duplicates the front panel of the router
- The main RC kit
- The RC extension kit

The kits are a functional match to the remote control and the RC extension, with connectors on the front panel instead of controls and indicators.

Functions

The extension duplicates the Plena LBB 1992/00 Voice Alarm Router front panel. One extension is needed per router, but not all routers need to have a remote control.

An LED meter shows the presence and level of the calls that are running in the system. The fault indicators show detailed information of any faults present in the system. The unit connects to the Plena Voice Alarm System via standard shielded CAT 5 cable. The included rack mounting brackets can also mount the unit on a wall with spacing for cables at the back, as well as to a horizontal surface above or below the unit.

One or more extensions need to be connected to a voice alarm RC or voice alarm RC kit.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849
		Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1997/00 rear view

Parts Included

Quantity	Component
1	LBB 1997/00 Plena Voice Alarm System Remote Control Extension
1	Set of 19" mounting brackets
1	1 m CAT 5 cable

Technical Specifications

Electrical*

Power supply

Voltage	24 VDC, +15% / -15%
Current typical	50 mA
Current max (indicator test)	200 mA (indicator test)
Relay contacts	30 V, 1 A

* Technical performance data according to IEC 60268-3

Mechanical

Dimensions (H x W x D)	88 x 430 x 90 mm (19 in wide, 2U high)
Weight	Approx. 2 kg
Mounting	Stand-alone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1997/00 Plena Voice Alarm System	LBB1997/00
Remote Control Extension	
six-zone voice alarm router remote control	

LBB 1998/00 Plena Voice Alarm System Remote Kit



Features

- ▶ Remote control of the Voice Alarm Controller
- ▶ Emergency (EMG) microphone
- ▶ EMG and background (BGM) zone selections
- ▶ EMG state and fault indicators
- ▶ Control outputs for EMG and Fault state
- ▶ Front panel zone selection for BGM and call station zone selection for calls

The Plena voice alarm remote control panels allow the system to be controlled remotely from one or two remote locations. There are five models available:

- The fireman's panel, which has oversized, illuminated controls and an all-call function
- The main RC unit, which duplicates the front panel of the Voice Alarm Controller
- The RC extension, which duplicates the front panel of the router
- The main RC kit
- The RC extension kit

The kits are a functional match to the remote control and the RC extension, with connectors on the front panel instead of controls and indicators.

Functions

The kit is a functional match to the LBB 1996, which duplicates the voice alarm controller. All controls and indicators are available on screw terminals. The remote control kit has BGM zone selection without source selection, volume or tone control.

These kits make it easy to build a custom control unit. The electrical connections are printed on the front and rear panels. A 24 VDC output is available to supply power to external LEDs and relays, so an external power supply is not required for that purpose.

The remote control kit functions on an external 24 V power supply. The interconnecting CAT 5 (shielded) cable provides power for the RC extension and extension kit.

After connecting all indicators the following functions are available:

- The LED meter shows the presence and level of the calls that are running in the system
- The fault indicators show detailed information of a fault in the system

The connection to the Bosch Voice Alarm System is via standard, shielded CAT 5 cable and RJ45 connectors. The included rack mounting brackets can also be used to mount the units to a rear wall with spacing for cables, and even to a flat surface above or below the units.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849
		Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1998/00 rear view

Parts Included

Quantity	Component
1	LBB 1998/00 Plena Voice Alarm System Remote Kit
1	Set of 19" mounting brackets
1	EMG microphone and cable
1	EMG microphone mounting clip
1	1 m CAT 5 cable

Technical Specifications

Electrical*

Power supply

Voltage	24 VDC, -15% / +15%
Current typical	100 mA
Current max (indicator test)	250 mA
Priority relay contacts	30 V, 1 A
Emergency relay contacts	30 V, 1 A
DC supply output	24 V, 200 mA (max)

LEDs / lamps

On external power	50 V (200 mA max)
On internal power	5 mA max
Type	Open collector pull down

* Technical performance data acc. to IEC 60268-3

Mechanical

Dimensions	134 x 430 x 90 mm (19" wide, 3U high)
Weight	Approx. 3 kg
Mounting	Stand-alone, 19" rack
Color	Charcoal

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1998/00 Plena Voice Alarm System **LBB1998/00**

Remote Kit

kit for six-zone voice alarm controller remote control

LBB 1999/00 Plena Voice Alarm System Remote Control Extension Kit



Features

- ▶ Remote control of voice alarm routers
- ▶ Connectors with screw terminals
- ▶ EMG and background (BGM) zone selections
- ▶ Fault indicators
- ▶ Open collector terminals for LEDs or lamps

The Plena voice alarm remote control panels allow the system to be controlled remotely from one or two remote locations. There are five models available:

- The fireman's panel, which has oversized, illuminated controls and an all-call function
- The main RC unit, which duplicates the front panel of the Voice Alarm Controller
- The RC extension, which duplicates the front panel of the router
- The main RC kit
- The RC extension kit

The kits are a functional match to the remote control and the RC extension, with connectors on the front panel instead of controls and indicators.

Functions

The kit is a functional match to the LBB 1997/00, which duplicates the voice alarm router. All controls and indicators are available on screw terminals.

These kits make it easy to build a custom control unit. The electrical connections are printed on the front and rear panels. A 24 VDC output is available to supply power to external LEDs and relays, so an external power supply is not required for that purpose.

The remote control kit functions on an external 24 V power supply. The interconnecting CAT 5 (shielded) cable provides power for the RC extension and extension kit.

After connecting all indicators the following functions are available:

- The LED meter shows the presence and level of the calls that are running in the system
- The fault indicators show detailed information of a fault in the system

The connection to the Bosch Voice Alarm System is via standard, shielded CAT 5 cable and RJ45 connectors. The included rack mounting brackets can also be used to mount the units to a rear wall with spacing for cables, and even to a flat surface above or below the units.

Certifications and Approvals

Region	Certification	
Europe	CE	IEC 60849
		Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1
EVAC (TÜV certified)		acc. to IEC 60849

Installation/Configuration Notes



LBB 1999/00 rear view

Parts Included

Quantity	Component
1	LBB 1999/00 Plena Voice Alarm System Remote Control Extension
1	Set of 19" mounting brackets
1	1 m CAT 5 cable

Technical Specifications

Electrical*

Power supply

Voltage	24 VDC, +15% / -15%
Current typical	50 mA
Current max (indicator test)	200 mA
Priority relay contacts	30 V, 1 A
Emergency relay contacts	30 V, 1 A

Power supply

DC supply output	24 V, 200 mA (max)
------------------	--------------------

LEDs / lamps

On external power	50 V (200 mA max)
-------------------	-------------------

On internal power	5 mA max
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Type	Open collector pull down
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* Technical performance data according to IEC 60268-3

Mechanical

Dimensions (H x W x D)	88 x 430 x 90 mm (19 in wide, 2U high)
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Weight	Approx. 2 kg
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Mounting	Stand-alone, 19" rack
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Color	Charcoal
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Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
-----------------------	-------------------------------------

Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Relative humidity	<95%
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Ordering Information

LBB 1999/00 Plena Voice Alarm System LBB1999/00

Remote Control Extension Kit

kit for six-zone voice alarm router remote control

PLN-24CH10 Plena Power Supply and Battery Charger



Features

- ▶ 10 A battery charger
- ▶ 5 A power supply for volume overrides
- ▶ Fully supervised, EN 54-4 compliant
- ▶ Voltage current and status indicators
- ▶ Fault relay outputs
- ▶ Short-circuit protection
- ▶ Switch mode power supply

The PLN-24CH10 can be used with Plena public address systems to assure that the system batteries are always charged. Rack mountable, the unit charges lead-acid batteries and simultaneously provides 24 volts for volume overrides and Plena Voice Alarm remote controls. In contrast to built-in trickle chargers found in low-end products, this charger is fully compatible with IEC 60849 and EN 54-4. The PLN-24CH10 is a premium quality, intelligent, microprocessor controlled device. This battery charger has been designed to be part of a Plena Voice Alarm System, but can be used in any system.

Functions

Performance

The maximum charging current is 10 A. The maximum battery capacity, according to IEC 60849, is therefore over 200 Ah (more, if bulk charging for longer than 24 hours is possible). The output capacity of the back up power system is up to 70 amps. Multiple chargers can be stacked to accommodate very large systems.

The charger has a switched mode power supply with a voltage range of 90 to 240 volts, and a power factor corrector. Output is current limited (70 amps), and protected by a fuse. Output of this charger to a PA system is limited to less than 25.5 volts independent of charging mode. The power supply is short-circuit-proof. For

maximum battery life and compliance to international standards, the unit is equipped with temperature compensation.

Charge cycles

- Bulk mode: The charger automatically chooses the suitable charging current according to the configured battery capacity. The current remains constant in this mode.
- Top off mode: When the battery voltage has reached a certain level, a constant (temperature dependent) voltage is applied. Once the charging current has reached a threshold, the battery is full.
- Float mode: a constant (lower) voltage is used to maintain battery in the float mode (trickle).

Additionally, once a month, the charger will charge the battery via the three charging modes to maintain long battery life.

The charger has four dedicated 24 V outputs to supply power to volume overrides and/or the voice alarm system remote control panels. These are current limited to 3 A per output, and a total load of 5 A.

Four relay contacts provide control output for mains fault, battery fault, battery-in-use, and general fault.

Controls and indicators

- Mains status LED
- Battery status LED
- Battery in use LED
- General fault LED
- Battery current drain LED (>1 A)
- Temperature sensor fault (or over 60 °C) LED
- Three LEDs for bulk/full/float charging states
- LCD for current display
- LCD for voltage display
- Rotary knob for battery capacity setting

Interconnections

- Four massive screw terminals for battery and system (connection through the charger)
- Four fault relays (mains, battery, battery-in-use, and general fault)
- Four 24 V outputs for volume overrides or voice alarm system remote controls

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Installation/Configuration Notes

Warning Do not ground battery!

Parts Included

Quantity	Component
1	PLN-24CH10 Plena Power Supply and Battery Charger
1	Power cord (1.7 m)
1	Set of 19" mounting brackets
1	Installation and User Instructions
1	Temperature sensor with 3 m cable

Technical Specifications

Electrical

Mains power supply

Voltage	90 to 240 VAC, 50 to 60Hz
Power consumption	550 VA max

24 V performance

Voltage min	17 VDC (auto shutdown when on AC power)
Voltage max	26.5 VDC (regulated, battery independent)
Max charge current	10 A
Max system current	70 A
IN (connect to battery)	150 A screw terminal
OUT (connect to system)	150 A screw terminal

24 V auxiliary outputs

Connectors	MC 1,5/6-ST-3,5
Voltage	24 VDC, regulated
Current	3 A per output, 5 A total max load

Control outputs

Connectors	MC 1,5/6-ST-3,5
Rating	250 V, 7 A, voltage free
Contacts	Normally energized (failsafe)

Mechanical

Dimensions (H x W x D)	88 x 430 x 260 mm (19" wide, 2U high)
Weight	Approx. 8 kg
Mounting	Standalone; 19" rack
Color	Charcoal with silver

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

PLN-24CH10 Plena Power Supply and Battery Charger	PLN-24CH10
charges lead-acid batteries and simultaneously provides 24 volts for volume overrides and Plena Voice Alarm remote controls.	

PM1-CHAC Plena Charger Accessory Set



Features

- ▶ **Complete set of products to connect the back up power of a Voice Alarm System**
- ▶ **DIN rail mounting**
- ▶ **Large reliable fuse holders and fuses**
- ▶ **Four battery clamps**
- ▶ **2 x 5 meters of thick 100 A cables with eye attached on one side**
- ▶ **2 x 7 meters of 25 A cables for connection after fuses to separate Bosch units**

The Plena Charger accessories set is a set to help an installer to connect a battery, Plena charger and a Voice Alarm system for 24 V backup power use according to a variety of standards.

It contains the necessary items for a medium size system and is chosen in such a way that for larger systems two or more sets will scale well to accommodate most installations.

Functions

Intended for the medium sized installer who does not wish to have a large stock of fuse holders and for whom buying 10 mm² cable per 100 m or 200 m is not practical, Bosch has compiled a complete set of accessories that enable fast installation of a small to medium size Voice Alarm System. This set contains all elements necessary for a standard installation. For large installations, several sets can accommodate most installation in a practical way.

For more specialized installations the installer will need to purchase fuses with a specific rating, for most equipment, the supplied fuses will suffice. Most notable exception is the PLN-1P1000 amplifier, which requires a larger value. The fuse holders are rated high enough to accommodate this and also for use as primary battery fuse if this is required by the local standard.

Certifications and Approvals

Safety	acc. to EN 60065
EMC emission	acc. to EN 55103-1
EMC immunity	acc. to EN 55130 heavy industry
Induction Loop Systems	acc. to EN 60118-4 / IEC 118-4

Parts Included

4	Battery clamps for standard lead acid batteries
1	5 meter red cable (10 mm ²)
1	5 meter black cable (10 mm ²)
1	7.5 meter red cable (2.5 mm ²)
1	7.5 meter black cable (2.5 mm ²)
4	DIN rail fuse holders (max 100 A)
4	Fuses (32 A)

Technical Specifications

Electrical

Battery clamps current	124 A (continuous)
10 mm ² cable	100 A / 600 V (continuous)
2.5 mm ² cable	25 A / 600 V (continuous)
Fuse holder current and voltage	125 A / 600 V
Mounting	DIN rail
Fuse	32 A

Mechanical

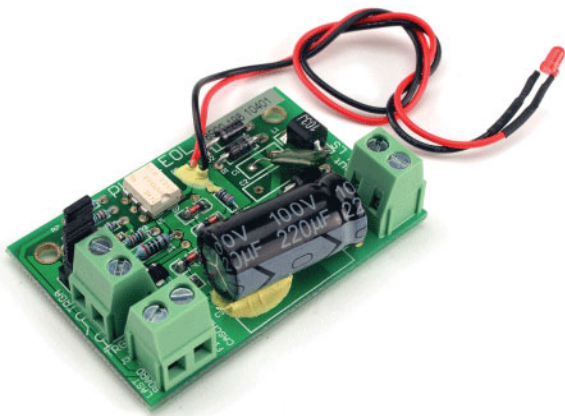
Weight	Approx. 8 Kg (17.64 lb)
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Ordering Information

PM1-CHAC Plena Charger Accessory Set
connect a battery, Plena charger and a Voice Alarm system for 24 V backup power use according to a variety of standards.

PM1-CHAC

PLN-1EOL Plena End-of-Line Boards



Features

- ▶ Pilot tone detection on 100 V loudspeaker lines
- ▶ Voltage free switch 200 V 1 A and LED indications of pilot tone
- ▶ 10 kohm resistors on board for optional supervised connection
- ▶ Daisy chainable for monitoring multiple zones on a single input contact
- ▶ Fits on built-in mounts on selected Bosch loudspeakers

A Plena end-of-line board is a PCB designed to detect the 20 kHz pilot tone generated by a supervised public address or voice alarm system. It activates a voltage free switch in the presence of a 20 kHz signal (pilot tone) above 5 V, as well as an LED for easy visual confirmation of operation.

Functions

Plena end-of-line boards monitor the presence of a pilot tone on a loudspeaker line. The board connects at the end of a loudspeaker line and detects the 20 kHz pilot tone signal. This signal is always present on the line: when background music (BGM) is playing, when a call is in progress, and when no signal is present. The 20 kHz tone is inaudible and at a very low level (-20dB). When the pilot tone signal is present, an LED lights up, and a contact on the board is closed. When the pilot tone fails, the contact opens, and the LED goes off. If mounted at the end of the loudspeaker line, this applies to the integrity of the whole line. Presence of the pilot tone signal does not depend on the number of loudspeakers on the line, the load on the line, or the line

capacitance. The contact can be connected to a PA system, such as the Bosch Voice Alarm System, to detect and report faults on a loudspeaker line.

Several EOL boards can be daisy-chained to a single fault input. This allows a loudspeaker line with several branches to be monitored.

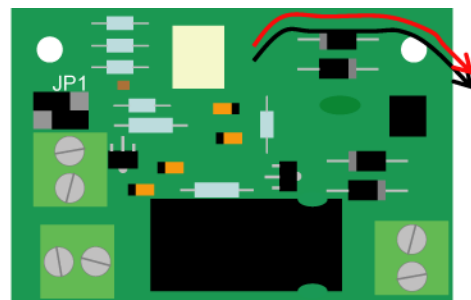
Since the background music also includes a 20 kHz pilot tone signal, there is no need to interrupt background music.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Immunity		acc. to EN 55103-2
EVAC (TÜV certified)		acc. to IEC 60849*

* When used with the Voice Alarm System and installed according to the Installation and User Instructions

Installation/Configuration Notes

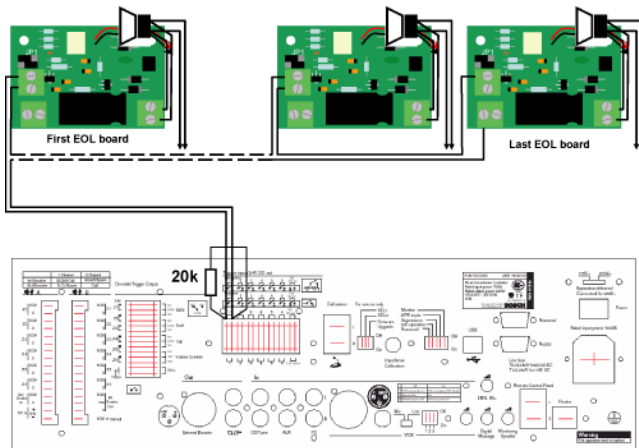


JP1 configuration for trigger output configuration

Using a daisy chain configuration it is possible to:

- Supervise several loudspeaker lines with only one fault input.
- Supervise several branches of a loudspeaker line with just one fault input

When connecting more than one EOL board on a single trigger input, and to supervise the boards, a 20 kohm or 22 kohm resistor should be connected in parallel with the trigger input. The boards are connected as shown in the following drawing.



Multiple boards on a single trigger input

Parts Included

Quantity	Components
12	PLN-1EOL Plena End of Line Board
1	Application note

Technical Specifications

Electrical

Input	1 x
Voltage	100 V loudspeaker line
Detection threshold	5 to 50 V @ 20 kHz
Output	2 x
Indicator	Red LED
Contact	Normally closed fail safe Bipolar MOS switch 250 Vp 190 mA max
Detection threshold*	5 to 50 V @ 20 kHz (contact and LED)

* LED threshold and switch threshold may be slightly different.

Mechanical

Dimensions (H x W x D)	17 x 60 x 40 mm
Mounting	WLS II
Weight	Approx. 40 g

Environmental

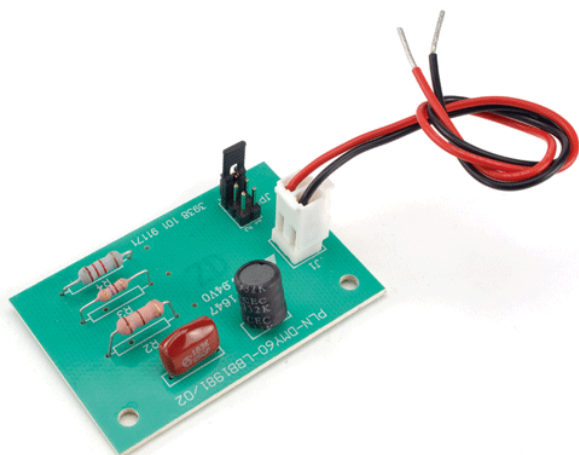
Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

PLN-1EOL Plena End-of-Line Boards
set of 6 end-of-line supervision boards

PLN-1EOL

PLN-DMY60 Plena Dummy Loads



Features

- Provides filtered load at 20 kHz
- Makes longer loudspeaker lines possible
- Three power settings
- Fits on built-in mounts on selected Bosch loudspeakers

The Plena Voice Alarm System employs a simple and easy to use method of loudspeaker surveillance based on impedance measurement. On long wire runs, external influences, such as cable capacitance and speaker impedance, can negatively influence the reliability of the measurements. The dummy loads provide a filtered load exclusively at the pilot tone frequency. This greatly increases the dependability of impedance measurements, providing reliable break or short circuit detection, even on long wire runs.

Functions

To improve the performance of the impedance measurement Bosch Security Systems introduced the Plena Dummy Load. It increases the loudspeaker load at the monitored frequency of 20 kHz, while having a minimal load in the normal audio frequency range.

When connected in parallel with the last loudspeaker on a line, it will increase the percentage of impedance present at the end of the line, thus increasing the number of loudspeakers that can be attached. At the same time, it will also increase the margin for masking by cable capacitance, allowing longer cable lengths.

The dummy load connects in parallel to the last loudspeaker on a line, which must be a Bosch loudspeaker with the appropriate mounting studs. It has a jumper to set the load (at 20 kHz) to 8, 20 and 50 W, according to the results calculated by the Dummy Load Calculator.

The Dummy Load Calculator is a spreadsheet that uses macros to calculate whether an application can use a dummy load, and what the optimal load setting would be. The spreadsheet is available from all Bosch dealers.

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

Parts Included

Quantity	Component
12	PLN-DMY60 Plena Dummy Load
1	Application note

Technical Specifications

Electrical

Input

Connector	High temp flying leads
Voltage	100 V loudspeaker line
Load	8, 20 and 60 W

Mechanical

Dimensions (H x W x D)	17 x 30 x 50 mm
Mounting	WLS II
Weight	Approx. 80 g

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

PLN-DMY60 Plena Dummy Loads
set of 12 dummy loads

PLN-DMY60

Digital PA and Emergency Sound

2

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Praesideo - Digital Public Address and Emergency Sound System



Praesideo is a fully digital public address system that meets all the requirements placed by professional users on a public address/emergency sound system. It brings highly innovative and advanced digital technology to the public address market. The processing and communication of both audio signals and control data entirely in the digital domain makes the system superior to other currently available public address and emergency sound systems. Digital signal processing allows significant improvements in audio quality to be achieved. The Praesideo system is configured from a PC, making installation and configuration very simple and user-friendly.

All audio processing is digital. Communication between the units is via plastic fiber or glass fiber cabling, depending on the distance between the units. Because the system uses the daisy chain principle, cabling and installation are very quick, simple and easy.

User-friendly Software Control

The system has user-friendly software to configure all system functions. The software is web-based technology, and provides authorized users full freedom of configuration: any time and from anywhere in the network. A simple and well-organized user interface provides an intuitive environment for configuring the system. The software has plausibility checks, and informs the user of any parameters, which have not been set, before exiting from any stage of the configuration process.

Network Approach

The system architecture is based on the daisy chaining of units. Equipment can be placed anywhere a network connection is available. Customers can expand their systems easily without adding additional electronics to the network controller unit. Thanks to this network architecture, a small initial system can be expanded later by simply adding the required new units to the existing network. The same is true for modifications to the PA system that become necessary later, due to reorganizations, structural changes, etc.

The system can be configured for redundant cabling using a ring cabling structure.



Distributed Control

The system design distributes the control of various system functions, as well as processing, throughout the system. The external interfaces, inputs and outputs, can be located anywhere in the network. All units can process audio input and output signals. This allows the network controller to concentrate on other activities such as the routing of announcements, taking actions on control inputs, etc. As a result, the response times are much shorter than for those of systems with centralized processing of all signals. The system scales gracefully, because each new unit increases the overall digital signal processing power of the system.

Combination of Functions

The Praesideo range of equipment has multiple functions combined in a single unit. This feature drastically reduces the number of different types of equipment used in the system. For example, functions such as audio processing, audio delay, amplifier monitoring (including spare switching), and speaker line monitoring are provided by the power amplifier unit itself. This makes the overall system highly cost-effective. The flexible architecture of the Praesideo range of equipment allows the customer to locate any type of equipment anywhere in the building. The configuration software lets an administrator/installer configure any units in the system from any PC with a network connection to the network controller. No local configuring at the equipment end is required, drastically reducing the installation and commissioning time, as well as any changes, which become necessary after commissioning.

IEC 60849 Certified

The Praesideo range of equipment complies with the various emergency standards, which are applicable all over the world. In fact Praesideo is the first system to be certified according to the IEC 60849 standard. The network controller can supervise all units in the system, from the microphone capsule of the call station to the loudspeaker line and loudspeakers. A built-in memory stores the last 200 fault messages. All faults are reported back to the network controller. The system also fulfills the requirements for emergency call stations. The open system architecture has the flexibility to provide large numbers of in and outputs, making even the most demanding emergency applications possible.



External Interfaces

Administrators and installers can configure the control inputs to initiate the desired actions in the system. The ability to route any input from one system unit to any other unit makes it possible to use the Praesideo range of products for a wide range of public address and emergency sound system applications.

Reduced Installation Costs

The Praesideo architecture uses the daisy chain principle for both data and audio signals. This makes the system wiring very cost-effective, using two fiber cores for data and audio communication, and a copper wire pair to supply power from the network controller to the units.

High System Flexibility

The Praesideo system is an extremely versatile system. It gives system designers a high degree of flexibility in the number of zones, call stations, audio and control in and outputs, etc., that they can use. The flexibility of unit distribution is also greater than legacy systems, and it is usually easier to place elements closer to where they are needed.

System Overview

Network Controller



The network controller is the heart of the system, and stores all configuration information. It provides the Ethernet interface for connection to the PC to enable system configuration, as well as diagnostic and logging functions. The network controller stores the digital audio messages for (scheduled) announcements on a built-in flash card. The controller monitors all the system components and reports any changes in status. The unit provides four audio inputs and four outputs, as well as eight control inputs and five control outputs. The control inputs can trigger actions in the system. Administrators and installers can define the control input characteristics in the configuration software. Control inputs can be programmed for momentary or toggle operation, act on make or break, supervision, etc. They can be used to initiate actions, and can be linked to external equipment. The network controller stores and shows the last 200 fault messages. The availability of the digital audio messages, the alarm tones,

and the control inputs are continuously supervised. An internally generated pilot tone can be provided on the audio outputs for monitoring purposes.

Power Amplifiers

There are four types of power amplifier units in the Praesideo product range. These differ in the number of amplifier channels per frame: one, two, four, or eight. The overall power rating is 500 watts for all of the amplifiers.

The power amplifiers can be selected for 100 V, 70 V and 50 V output tapping. The fiber optic network cable provides audio input. The amplifiers are equipped with amplifier supervision and spare amplifier changeover relays. They have short-to-ground and short-circuit detection functions, and can generate their own pilot tone for supervision purposes.

Loudspeaker and/or line supervision control boards can be added to an amplifier. The control board communicates with supervision boards at the end of the line and/or in individual loudspeakers. Their status is communicated over the loudspeaker line itself without interfering with the audio signal.

The power amplifiers are equipped with audio processing facilities for each amplifier channel. They support configurable delay, three parametric equalizer sections and two shelving equalizers per channel. An ambient microphone connection enables automatic output level adjustment for maximum intelligibility. The power amplifier has a supervised connection for a 48 VDC backup power supply.

Multi Channel Interface and Basic Amplifiers

The basic amplifiers are cost effective alternatives to the regular Praesideo power amplifiers, for situations where no built-in digital signal processing functions, such as equalizers, delay and AVC are required. They do not have a Praesideo network connection. Instead, these amplifiers are connected to the Praesideo network via the multi channel interface.



The basic amplifiers are high-efficiency, class-D power amplifiers for public address and emergency sound systems. The multi channel interface provides audio signals to all basic amplifier channels and has full control. The basic amplifier is fully supervised, and fault events are reported via the multi channel interface to the Praesideo network controller (IEC 60849 compliant). The amplifiers have

connections for separate group A and group B loudspeakers in a zone and can be configured for class-A loudspeaker loop wiring.

The multi channel interface provides 16 configurable output channels (14 main outputs and 2 spare outputs), 32 control inputs and 16 control outputs. With its built-in supervision controller, it can also take care of loudspeaker and loudspeaker line supervision for all connected basic amplifier outputs.

Call Station Basic

The call station basic has a direct network interface, one press-to-talk-key, a monitoring speaker and a headphone socket. The volume control on the front of the unit adjusts the loudspeaker or headphone volume. Up to 16 call station keypads can be connected to the unit. LEDs on the unit indicate the status of the system, call station, and call.



Call Station Keypad

The call station keypad has eight selection keys and status indicators. This unit connects to a basic call station through a local interface. Each selection key has one bi-color LED, which shows the status of the selection.

Call Station Numeric Keypad

The Numeric Keypad provides a telephone-like user interface for numeric zone and zone group selection. It connects to a basic Call-Station and has a LCD to show selections and their status. Also a user access control function can be configured.

Call Station Kit

The call station kit has the same functions as the basic call station, and is intended for the construction of custom-made units. The kit is supplied without a housing for easy installation in panels, walls or custom made housings. It has a power supply input for both the call station itself and the call station keypads. The external power supply can be monitored by connecting its fault control output to the control input of the call station kit.

Call Station Keypad Kit

The kit is a call station keypad without housing, but with the same functionality. The kit facilitates the construction of custom applications, where special placement, custom switches, and/or custom indicators are desired.

Call Station Remote

In many applications, call stations must be located relatively far away from the rest of the system. For such cases, the Praesideo system provides the remote call station as a cost-effective alternative. It has the same functionality as the basic call station, but does not connect to the Praesideo network directly. Instead, it connects to the call station interface via a CAT 5 cable with a maximum length of 1000 meters. Thus, the distance from the remote call station to the network is not part of the overall network length. Often an existing CAT 5 cable can be used, further reducing costs. Up to 16 call station keypads or call station keypad kits can be connected.

Call Station Remote Kit

The remote kit is a version of the remote call station with the same functionality, but without the housing for easy installation in custom-applications.

Call Stacker

The Call Stacker is a unit that records calls that cannot be sent to all required zones because some are occupied by a higher priority call. Recorded calls are automatically repeated to these zones when they become available. The Call Stacker can also be used as time-shifter to avoid acoustic feedback from a loudspeaker to the active microphone. The call is recorded and broadcast after the recording has finished. The call can be pre-monitored before broadcast with the option to cancel the call.

Call Station Interface

The call station interface is a unit that interfaces between a remote call station and the Praesideo network. Because a remote call station uses CAT 5 cable for interconnection and does not have Praesideo network connections, a call station interface is needed. The call station interface also provides a local power input as well as control inputs, and delivers power to the remote call station. The call station interface interfaces to the remote call station via a bidirectional digital interface. Because not all 28 Praesideo audio channels, but only the required microphone and monitor audio channels are transported on this interface, the bit-rate is much lower. The lower bit rate allows the interconnection cable to be much longer than the typical Praesideo network connection between units.

Audio Expander

The audio expander can provide additional audio inputs and outputs to the system. The unit has four transformer isolated audio inputs and four transformer isolated audio outputs, as well as eight control inputs and five control outputs. The audio inputs can be configured for background music, microphone or line inputs. The control inputs can be configured to initiate actions.

CobraNet Interface

The CobraNet interface can insert up to four audio channels from CobraNet into the Praesideo system and up to four audio channels from Praesideo into a CobraNet network. CobraNet, developed by Peak Audio (a division of Cirrus Logic, Inc.), is a network protocol for real-time uncompressed digital audio distribution over industry standard 100Base-T Ethernet networks. Digital audio data is directly converted between Praesideo and CobraNet with no audio processing other than sample rate conversion.

Control inputs and outputs provide external interfacing. The CobraNet interface gets its power from the Praesideo network and does not need a mains or battery connection. CobraNet interfaces are often used to interconnect two or more Praesideo subsystems via Ethernet. The audio channels are transported via CobraNet and the Praesideo control data via the Praesideo Open Interface.

IP Audio Interface

The IP Audio interface is a universal, IP-based audio device supporting VoIP and Audio over IP applications. It is an ideal solution for bridging audio and contact closures over long distance LAN and WAN networks. It extends and interfaces to Praesideo and non-network based traditional public address systems without the need for a PC during operation.

Network Splitter



The network splitter allows the main network line to be split into branches. The branch lines are still supervised, but do not have the redundant cabling of the main network line. The network splitter has an option to connect a 48 VDC supply that can supply additional power if required. The network splitter can also function as a repeater to extend the cable another 50 meters with plastic fiber.

Fiber Interfaces

Most of the Praesideo system units have plastic fiber optic interfaces. Plastic fiber is used to interconnect nodes which are less than 50 meters apart. For distances of more than 50 meters, glass fiber optic cable is used. A fiber interface converts from plastic to glass fiber, and vice versa. The fiber interface has a power supply input to provide power to remote network sections, and two control inputs. The control inputs can pass on supervision information about the power supply connected to the fiber interface.

Different models exist for single-mode and multi-mode glass fiber.

Certifications and Approvals

Region	Certification	
Europe	CE	TUV Certificate IEC60849
		GL-SOLAS
		Alarm Certificate EN 50130-4
		Railway Certificate EN-50121-4 update
		Bundesbahn Zertifikat

PRS-NCO-B Network Controller



Features

- ▶ **Public address and emergency sound system control unit**
- ▶ **Fully digital with four audio inputs and four audio outputs**
- ▶ **Control and routing of 28 audio channels**
- ▶ **Eight supervised control inputs and five control outputs**
- ▶ **Ethernet interface for configuration, control, diagnostics, and logging**
- ▶ **Digital storage for prerecorded messages**
- ▶ **Stores the last 200 fault events**
- ▶ **IEC60849 Certified**

The network control unit is the heart of the Praesideo system. The unit routes up to 28 simultaneous audio channels, delivers power to the system, reports faults, and controls the system. Audio inputs can be announcements from call stations, background music, or local audio. The network control unit can be configured for the most complex public address systems. The configuration can be done comfortably and efficiently via a PC. The PC is only needed for configuration. The controller can operate independently of the PC. However, the controller can use a PC to display information on the system status using the software, supplied with the unit. The unit can be freestanding on a tabletop or mounted in a 19" rack.

Functions

Connectivity

The network controller has four analog audio inputs. Of these, two are selectable between microphone and line. The other two inputs are fixed as line inputs. The microphone/line inputs can be used as call inputs, if they are programmed conditionally to any of the eight control inputs, which are freely programmable for system actions, with freely programmable priorities.

The controller has four analog audio line outputs each with a selectable 20 kHz monitoring signal. Three control outputs are programmable for faults or calls, and two others are used to connect visual and audible fault indicators.

Operation and performance

The network controller is completely configurable from a PC using the supplied software, which can also provide the current status of the running system, as well as comfortable and efficient configuration. The controller can also run without a connected PC, once it has been configured. The front panel has a 2 x 16-character LCD display and a rotary control to navigate through the menu and select the menu items. Address, version, fault events, and monitor enquiries can be done using the display and control knob. The network controller can control up to 60 nodes. Nodes include equipment such as power amplifiers, audio expander units, call stations, call station kits, etc.

To meet the requirements for emergency sound systems, automatic messaging is included in the network controller. The controller has a built-in, replaceable compact flash memory card, to match the storage requirements for audio messages. Four messages can be played simultaneously. Message storage and of the messages themselves are monitored. Audio messages (as a set of wav files) can be downloaded from a computer via the Ethernet link. The controller also stores wide range of attention tones, test tones, and alarm tones, all accessible by any call stations or control inputs for announcement or alarm broadcast. An internal real time clock lets the network controller automatically do things, such as playing scheduled announcements or changing the volume of background music during evening hours. It has extensive audio processing possibilities for the audio inputs and the audio outputs. Parametric equalization, limiter and gain can be easily adjusted using the configuration software. There is a headset jack for monitoring the audio channels.

Security

The network controller supports redundant network cabling. It can be wired as a branched network or redundant loop. The system can handle 256 priorities, for calls to hundreds of zones, satisfying even the most complex public address and emergency requirements.

The controller monitors the status of all the equipment in the system, reports status changes, and stores the last 200 fault messages in the system. This monitoring extends from the capsule of a call station microphone to the end of a loudspeaker line. The external cables connected to the control inputs are monitored for short and open circuit. An internally generated pilot tone is available for monitoring the audio outputs. The controller operates both on mains power and on a 48 V battery power supply for emergency back up, with automatic switchover. It can supervise both of the power supplies.

Controls and indicators

Front

- 2 x 16-character LCD display
- Rotary/push button

Back

- Mains switch
- Voltage selector

Interconnections

Front

- Headphone output

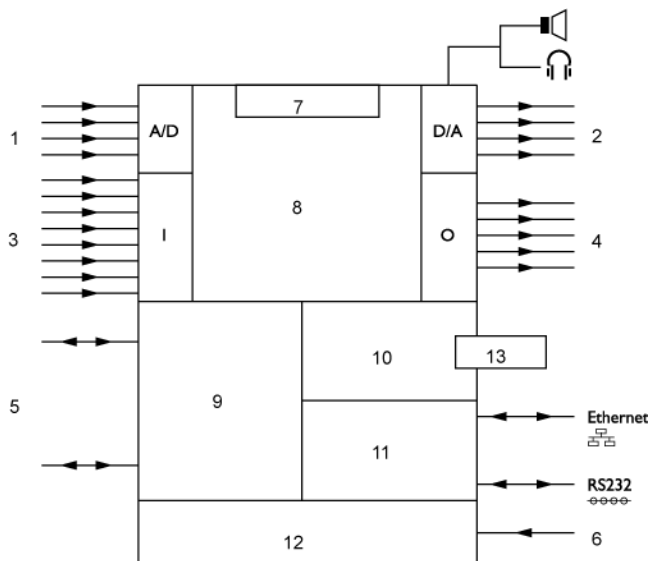
Back

- Mains input
- Battery backup input
- Eight control inputs
- Two analog audio mic/line inputs
- Two analog line audio inputs
- Five control outputs (two dedicated fault)
- Four analog audio line outputs
- Ethernet
- RS232
- Two system network connections

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Audio inputs
- 2 Audio outputs
- 3 Control inputs
- 4 Control outputs
- 5 Plastic optical fiber network
- 6 Mains
- 7 Display and control
- 8 Network processor and DSP
- 9 Network redundancy switching
- 10 Message manager
- 11 Micro processor
- 12 Power supply
- 13 Compact flash (CF) memory card



Rear view

Parts Included

Quantity	Component
1	PRS-NCO-B Network Controller
1	Power cord
1	Set of mounting brackets for 19" rack
1	Set of feet
1	Set of connectors
1	PRS-SW Configuration, Diagnostic and Logging Software

Technical Specifications**Electrical****Mains power supply**

Voltage	115/230 VAC $\pm 10\%$, 50/60 Hz
Power consumption	14 W with no load 150 W with maximum load

Battery power supply

Voltage	48 VDC -10% to +20%
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Performance

Frequency response	20 Hz to 20 kHz (-3 dB)
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Line inputs 2 x

Connectors	3-pin XLR and stereo cinch (for each line)
S/N	>87 dBA at maximum level
CMRR	>40 dB
Input range	+6 dBV to +18 dBV (XLR) -6 dBV to +6 dBV (cinch)

Mic / line inputs 2 x

Connector	3-pin XLR
Nominal Input Level	-57 dBV
S/N	>62 dBA with 25 dB headroom
CMRR	>55 dB at 100 Hz
Input Impedance	1360 ohm
Phantom supply	12 V ± 1 V @ 15 mA
Input range	-7 dB to 8 dB ref nominal input level
Line outputs	4 x
Connectors	XLR and stereo cinch (for each line)
Output Impedance	<100 ohm
S/N	>89 dBA at maximum level
Crosstalk	<-85 dB
Signal range	-12 dBV to +18 dBV (XLR) -24 dBV to +6 dBV (cinch)
Distortion at 1 kHz	<0.05%

Mechanical

Dimensions (H x W x D)

for tabletop use, with feet	92 x 440 x 400 mm (3.6 x 17.3 x 15.7 in)
for 19" rack use, with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
in front of brackets	40 mm (1.6 in)
behind brackets	360 mm (14.2 in)

Weight	7 kg (15.4 lb)
Mounting	Standalone; 19" rack
Color	Charcoal with silver

Environmental

Operating temperature	-5 to +55 °C (+23 °F to +131 °F)
Storage temperature	-40 to +70 °C (-40 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information**PRS-NCO-B Network Controller****PRS-NCO-B**

routes up to 28 simultaneous audio channels, delivers power to the system, reports faults, and controls the system.

Software Options**PRS-SW Praesideo Software****PRS-SW**

Configuration software, Diagnostic & logging software, File transfer software.

PRS-SW Praesideo Software

Features

Configuration software

- ▶ Web-based user interface
- ▶ Can be accessed using a PC with Internet Explorer
- ▶ Different levels of access rights can be assigned
- ▶ All system and unit parameters can be configured
- ▶ Easy navigation
- ▶ Dynamic HTML pages

Diagnostic and logging software

- ▶ Logging of call events, fault events and general events
- ▶ On-line logging function
- ▶ Historical logging
- ▶ Events can be sorted
- ▶ Password-protected

File transfer software

- ▶ PC application
- ▶ Supplied together with the network controller
- ▶ Creation of message sets
- ▶ Off-line configuration

This software has three parts:

- Configuration software, which is installed in the network controller
- Diagnostic & logging software, which is installed in the network controller, and optionally on a logging PC
- File transfer software, which is to be installed on the configuration PC and supplied together with the network controller

System Overview

Configuration software

The configuration software is required for every system. Once the configuration data entry has been completed and downloaded to the network controller, the system can operate without the configuration PC. The configuration software is required only during installation and to make changes to an existing system configuration.

The configuration software design allows even first-time users to navigate easily through the configuration.

Diagnostic and logging software

The main function of the diagnostic & logging software is to monitor and record the status of all elements of the PA system. This software logs all events, such as calls and changes in the status of system components, and displays the current status of the system. It can provide real-time logging to a PC.

File transfer software

The file transfer software transfers both data and message files from the PC to the network controller.

Functions

Configuration Software

The software supports three access levels: administrator, installer, and user. Each of the three levels carries different access rights.

Call macros allow users to configure various functions and/or actions that can be assigned to inputs such as control inputs and call station keys. The same call macro can be assigned to multiple inputs. A call macro defines: priority, start and end tones, an audio input, a message or sequence of messages, number of repetitions, and scheduling with duration and interval.

Zone grouping allows the user to define zones covering the same types of area. In the zone configuration, zone-related items such as amplifier channel outputs, audio outputs and control outputs can be assigned to defined zones.

A power amplifier can be linked to a spare power amplifier so that if there is a fault in the power amplifier it will automatically change over to the spare power amplifier. The ratio of main power amplifiers to spare power amplifiers is flexible, and can be configured to meet specific application requirements.

The software can configure all equipment inputs and outputs in the system. All audio inputs and outputs have audio processing facilities, including parametric equalization with high and low-pass filters for inputs and outputs, and gain and limiter adjustments for inputs only. The audio inputs can be set to microphone or line. Delays can be configured for each amplifier output individually. The level of the 20 kHz pilot tone can be adjusted automatically. Keys on call station keypads can be configured with various functions. A call station can be defined as an emergency call station, with the ability to add zones or audio outputs during an announcement. Control inputs can be configured for a sequence of functions. Control inputs can be configured for monitoring lines connected to them for open-circuits and short-circuits. Zones can be configured for various, time-based volume settings. BGM sources can be assigned to music channels, which can be assigned to different zones/audio outputs.

Diagnostic and Logging Software

Modes of enquiry supported by the software include general events, call logging, and fault logging. This part of the software allows monitoring the fault status of all units, as well as any status changes in the system. Users can view the last 200 fault messages, which are stored in the network controller. Control inputs can be used for reporting the fault status of third-party equipment, which is not part of the Praesideo system, allowing users to view logged events of monitored external devices. The software also provides control of audible and visual fault indicators.

Faults and alarm states can be acknowledged and reset, and the acknowledgement and reset actions are logged. Optionally, a PC-based logging server can store events from multiple systems in a database. This can be accessed remotely by a dedicated Praesideo log viewer program.

File Transfer Software

File transfer is protected by user IDs and passwords. The message set (a set with multiple wav files), which has to be stored in the network controller, can be assembled, stored on the PC and sent to the network controller. A configuration file, which has been created in off-line mode, can be transferred to the network controller. The configuration file can also be retrieved from the network controller.

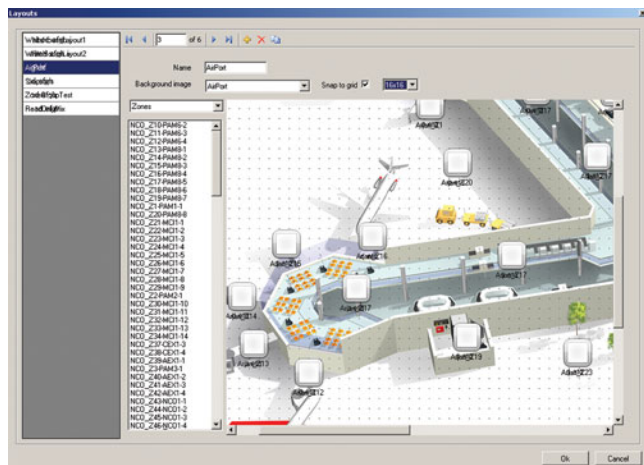
Certifications and Approvals

Region	Certification	
Europe	CE	TUV Certificate IEC60849

Ordering Information

PRS-SW Praesideo Software	PRS-SW
Configuration software, Diagnostic & logging software, File transfer software.	

PRS-SWCS PC Call Server and PRS-SWCSL PC Call Server NCO Client



Features

- Serves multiple Call Station Clients and/or Telephone Interface Clients
- Controls multiple Network Controllers in extended systems
- Includes a license for a single Network Controller
- Controls user access with selectable rights per user

The PRS-SWCS PC Call Server is a Windows service connected to one or more Praesideo network controllers via TCP/IP, using the Praesideo open interface. It is used in combination with one or more client applications, such as the PC Call Station Client and the PC Telephone Interface Client, handling all operational requests.

The PRS-SWCS PC Call Server is configured via an included PC Call Server Configuration Client, running on the same computer.

Functions

Configuration and Control

The PRS-SWCS PC Call Server provides facilities for connected clients, such as identification, making of calls, BGM source and volume control, acknowledge and reset of emergency modes, time synchronization and license control. It operates on Windows XP and Vista platforms.

Via the PRS-SWCS PC Call Server Configuration Client the connections of the connected network controllers can be monitored and set up. In case of multiple network controllers audio connections between network controllers can be configured to enable calls from one Praesideo network to other Praesideo networks.

Configuration data of each connected Praesideo subsystem can be retrieved from the network controllers and used for configuration of the PRS-SWCS PC Call Server. Multiple views of a system can be configured as background images with zone and zone group locations, independent for different users of clients. Also multiple predefined calls can be configured for different users which can be accessed via e.g. one or more PRS-CSC PC Call Station Clients. These predefined calls may contain information about priority, zones, tones, messages, live speech and zones. The zones can be part of different Praesideo systems, as long as all these systems are connected to the PRS-SWCS PC Call Server.

The PRS-SWCS PC Call Server allows control of BGM source and volume in the configured zones and gives feedback about the actual volume to the clients.

License

The PRS-SWCS PC Call Server uses a USB dongle for identification of the system for all licenses purchased. The dongle is supplied with the PRS-SWCS PC Call Server. The PRS-SWCS PC Call Server already comes with a license for use with one network controller. Additional licenses for more network controllers, connected to the same PRS-SWCS PC Call Server are available as PRS-SWCSL PC Call Server NCO License.

Applications, such as the PRS-CSC PC Call Station Client, also require a license. Only one application license is required, independent of the number of clients (operator panels) that are connected.

Parts Included

1	PRS-SWCS PC Call Server license (including license for one network controller).
1	USB dongle
1	PRS-SW Praesideo software CD

Ordering Information

PRS-SWCS PC Call Server and PRS-SWCSL PC Call Server NCO Client	PRS-SWCS
Windows service connected to one or more Praesideo Network Controllers via TCP/IP	

Software Options

PRS-CSC PC Call Station Client	PRS-CSC
PC Call Station Client	

PRS-CSC PC Call Station Client



Features

- ▶ **PC interface for operators with synoptic view of zone locations in tabbed windows**
- ▶ **Configurable access for different users**
- ▶ **Call and BGM control**
- ▶ **Support for multiple network controllers as one system**

The PRS-CSC PC Call Station Client is a client of the PRS-SWCS PC Call Server and must be used in combination with the PRS-SWCS PC Call Server. It operates with Windows XP or Vista and can be used on the same PC as the PRS-SWCS PC Call Server or on different PCs. An almost unlimited number of PRS-CSC PC Call Station Clients can be installed and used under the same license.

Functions

User interface

The PRS-CSC PC Call Station Client provides a graphical user interface to the operator where the operator can select predefined calls, add or remove zones from that predefined call by clicking on zone icons in a graphical system layout, and then start, stop and/or abort this call.

Multiple calls can be active simultaneously from the same client.

Zone icon appearance shows the status of each zone. The library of zone icons and background colors can be modified by the customer.

Also BGM source selection and volume can be selected and controlled per zone. The actual source and volume setting is shown in the zone icon for each zone.

Configuration

In the configuration of the PRS-SWCS PC Call Server access rights per user are set, e.g. the right to start certain predefined calls or to access certain zones or overviews.

A logo of the company or site where the PRS-CSC PC Call Station Client is located can be added to the user interface. Also different user languages can be selected from a growing list of supported languages.

Parts Included

- 1 PRS-CSC PC Call Station Client license

Ordering Information

PRS-CSC PC Call Station Client	PRS-CSC
PC Call Station Client	

Software Options

PRS-SWCS PC Call Server and PRS-SWCSL	PRS-SWCS
PC Call Server NCO Client	
Windows service connected to one or more Praesideo Network Controllers via TCP/IP	

LBB 442x/xx Power Amplifiers



Features

- ▶ 1, 2, 4, or 8 audio outputs (selection from 100 / 70 / 50 V outputs)
- ▶ Audio processing and delay for each amplifier channel
- ▶ Amplifier supervision and spare amplifier switching
- ▶ Loudspeaker line and loudspeaker supervision (LBB 4428/00 only line supervision)
- ▶ Eight control inputs and 1, 2, 4 or 8 control outputs
- ▶ Supervision of line attached to control inputs
- ▶ Automatic volume control
- ▶ Two audio inputs (4 audio inputs for LBB 4428/00)
- ▶ Redundant network connection

There are four types of power amplifier units in the Praesideo product range. These differ in the number of amplifier channels per frame: one, two, four, or eight. The overall power rating is 500 watts for all of the amplifiers.

The power amplifiers can be set to 100 V, 70 V and 50 V output tapplings. They have short-to-ground and short-circuit detection functions, and can generate their own pilot tone for supervision purposes.

Functions

The power amplifiers receive input signals over the network. They also have two auxiliary audio inputs (four for LBB 4428/00) for local audio. Their eight control inputs are freely programmable for system actions, and priorities can be assigned to these inputs. Each control input has the ability to monitor the attached line for open and short-circuits. Five control outputs are freely programmable for faults and call related actions.

The 2 x 16-character display and the rotary control enable local status enquiries. The display shows the VU-meter reading, when the audio monitoring mode is active. Audio can be monitored by headphone.

The units are self-monitoring and continually report their status to the network controller. They support both single branch and redundant loop cabling. The amplifiers have a changeover facility for spare power amplifier switching. Changeover relays are included with the units. The amplifiers have a 48 V DC back-up supply input.

The digital audio processing can handle three parametric equalization sections and two shelving equalization sections per channel with configurable audio delay.

Controls and indicators

- 2 x 16-character LCD for status display
- Rotary/push control button
- Mains switch

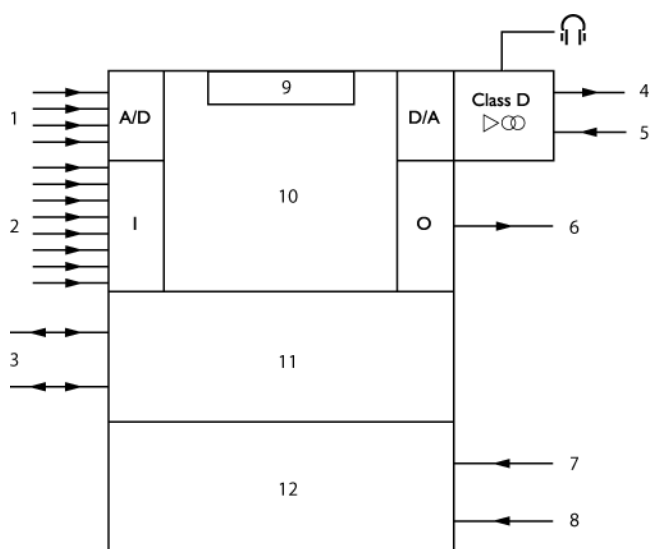
Interconnections

- Mains input
- Battery backup input
- Two system network connections
- Two mic/line inputs (four for LBB 4428/00)
- 100 V, 70 V or 50 V outputs (for each amplifier channel)
- 50 V output
- Eight programmable control inputs
- Control output (for each amplifier channel)
- Headphone output
- Spare amplifier connection (for each amplifier channel)

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Audio inputs, 2 x or 4 x
- 2 Control inputs
- 3 Plastic optical fiber network
- 4 Loudspeaker outputs, 1 x, 2 x, 4 x, 8 x
- 5 Spare amplifier input
- 6 Control outputs, 1 x, 2 x, 4 x, 8 x
- 7 Mains input
- 8 48 V backup supply
- 9 Display and control
- 10 Network processor and DSP
- 11 Network redundancy switching
- 12 Power supply



Rear view of LBB 4421/10 Power Amplifier 1 x 500 W



Rear view of LBB 4422/10 Power Amplifier 2 x 250 W



Rear view of LBB 4424/10 Power Amplifier 4 x 125 W



Rear view of LBB 4428/00 Power Amplifier 8 x 60 W

Parts Included

Quantity Component

1	LBB 442x/xx Power Amplifier
1	Power cord
1	Set of mounting brackets (large) for 19" rack
1	Set of feet
1	Set of connectors

Technical Specifications

Electrical

Mains power supply

Voltage	100 to 240 VAC $\pm 10\%$, 50/60 Hz
Power consumption	Pmax -3 dB* / idle** / standby
LBB 4421/10	404 / 56 / 28 W
LBB 4422/10	402 / 60 / 28 W
LBB 4424/10	426 / 83 / 37 W
LBB 4428/00	433 / 90 / 32 W

* Alarm tone level

** With pilot tone 15 V

Battery power supply

Voltage	48 VDC -10% to +20%
Power consumption	Pmax -3 dB* / idle** / standby
LBB 4421/10	380 / 46 / 20 W
LBB 4422/10	378 / 50 / 21 W
LBB 4424/10	399 / 76 / 28 W
LBB 4428/00	397 / 63 / 22 W

* Alarm tone level

** With pilot tone 15 V

Mic/line inputs

2 x (4 x for LBB 4428/00)

Connector	6-pole header for removable screw connector (mono, balanced)
Line	
Frequency response	-3 dB @ 50 Hz and 20 kHz (± 1 dB)
S/N	>87 dBA
CMRR	>40 dB @ 1 kHz
Input range	-6 dBV to 6 dBV
Input impedance	22 kohm
Mic	
Frequency response	-3 dB @ 100 Hz and 16 kHz
Nominal input level	-57 dBV
S/N	>62 dBA with 25 dB headroom
CMRR	40 dB at 1 kHz
Input impedance	1360 ohm
Phantom supply	12 V ± 1 V @ 15 mA
Input range	-7 dBV to +8 dBV ref nominal input value

Loudspeaker outputs	LBB 4421/10
Rated load resistance	20 ohm (100 V); 10 ohm (70 V)
Rated load capacitance	250 nF (100 V); 500 nF (70 V)
Rated output power (per channel)	500 W (1 min. at 55 °C) 250 W (30 min. at 55 °C, cont. at 30 °C) 125 W (cont. at 55 °C)

Loudspeaker outputs	LBB 4422/10
Rated load resistance	40 ohm (100 V); 20 ohm (70 V)
Rated load capacitance	125 nF (100 V); 250 nF (70 V)
Rated output power (per channel)	250 W (1 min. at 55 °C) 125 W (30 min. at 55 °C, cont. at 30 °C) 60 W (cont. at 55 °C)

Loudspeaker outputs	LBB 4424/10
Rated load resistance	80 ohm (100 V); 40 ohm (70 V)
Rated load capacitance	60 nF (100 V); 125 nF (70 V)
Rated output power (per channel)	125 W (1 min. at 55 °C) 60 W (30 min. at 55 °C, cont. at 30 °C) 30 W (cont. at 55 °C)

Loudspeaker outputs	LBB 4428/00
Rated load resistance	160 ohm (100 V); 80 ohm (70 V)
Rated load capacitance	30 nF (100 V); 60 nF (70 V)
Rated output power (per channel)	60 W (1 min. at C) 30 W (30 min. at 55 °C, cont. at 30 °C) 15 W (cont. at 55 °C)
Connectors	9-pole header for removable screw connector
Frequency response	60 Hz (80 Hz for LBB 4428/00) to 19 kHz (-3 dB)
S/N	>85 dB (no pilot tone)
Crosstalk	<80 dB at nominal load for 1 kHz
Distortion	<0.3% (@ 1 kHz) @ 50% of rated output power

Mechanical

Dimensions (H x W x D)	
for tabletop use, with feet	92 x 440 x 400 mm (3.6 x 17.3 x 15.7 in)
for 19" rack use, with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
in front of brackets	40 mm (1.6 in)
behind brackets	360 mm (14.2 in)
Weight	
LBB 4421/10	13 kg (28.7 lb)
LBB 4422/10	14 kg (30.9 lb)
LBB 4424/10	16.5 kg (36.4 lb)
LBB 4428/00	14.5 kg (32 lb)
Mounting	Standalone; 19"-rack
Color	Charcoal with silver

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	15% to 90%
Air pressure	600 to 1100 h Pa

Ordering Information

LBB 4421/10 Power Amplifier 1 x 500 W 1 x 500W	LBB4421/10
LBB 4422/10 Power Amplifier 2 x 250 W 2 x 250 W	LBB4422/10
LBB 4424/10 Power Amplifier 4 x 125 W 4 x 125 W	LBB4424/10
LBB 4428/00 Power Amplifier 8 x 60 W 8 x 60 W	LBB4428/00

Accessories

LBB 4440/00 Supervision Control Board for use in the power amplifier on each amplifier channel	LBB4440/00
LBB 4442/00 Line Supervision Set contains the master and slave device for supervision of a single loudspeaker line.	LBB4442/00

PRS-xBxxx Basic Amplifiers

Features

- ▶ **High efficiency class-D amplifier channel(s)**
- ▶ **Switched mode power supply**
- ▶ **Local audio inputs**
- ▶ **Mains and battery operation**
- ▶ **Complete supervision**
- ▶ **IEC 60849 compliant**

The basic amplifiers are cost effective alternatives to the regular Praesideo power amplifiers, for situations where no built-in digital signal processing functions, such as equalizers, delay and AVC are required. They do not have a Praesideo network connection. Instead, these amplifiers are connected to the Praesideo network via the PRS-16MCI Multi Channel Interface, which provides the basic amplifier with audio signals and has full control. There are four versions, the PRS-1B500 (1 x 500 W), PRS-2B250 (2 x 250 W), PRS-4B125 (4 x 125 W) and the PRS-8B060 (8 x 60 W).

The basic amplifiers are completely supervised and fault events are reported via the multi channel interface (IEC 60849 compliant) to the Praesideo network controller.

The basic amplifiers provide connections for separate group A and group B loudspeakers for each zone, and support class-A loudspeaker loop wiring. The units should be mounted in a 19"-rack with the included mounting brackets.

Functions

Amplification

The PRS-1B500 is a single channel, 500 W unit, the PRS-2B250 is a two-channel amplifier with 250 W per channel, the PRS-4B125 is a four-channel amplifier with 125 W per channel and the PRS-8B060 is an eight-channel amplifier with 60 W per channel. The power supply is switched mode with low inrush current and the units can run on 48 V, battery stand-by power.

Connection

The amplifiers have built-in output transformers for driving 70 and 100 V loudspeakers. They have separate overload-protected group A and group B loudspeaker connections, which support class-A loop wiring. The separate A and B groups of each channel can be configured for redundancy. The units connect to the PRS-16MCI Multi Channel Interface for audio, control and supervision, but stand-alone operation is possible.

Audio

The amplifiers have analog audio line inputs for low priority local audio. Networked audio from the multi channel interface overrides the local audio.

Security

The units operate both on mains power and on a 48 V battery power supply for emergency back up, with automatic switchover. They supervise both of the power supplies, as well as themselves. They can optionally monitor loudspeakers and their lines, when used together with the PRS-16MCI Multi Channel Interface. Complete channel separation allows one channel of the amplifier to function as a spare amplifier for the other amplifier channel.

The amplifier has overload and short circuit protection. An overheat protection circuit switches off the power stage and activates the fault LED on the front panel if the internal temperature reaches a critical limit.

Controls and indicators

Front

- Two two-color LEDs for mains and battery status
- Four amplifier status/level LEDs (per channel)

Back

- Mains on/off switch
- Mains voltage selector
- Rotary volume control for local audio inputs (per channel)

Inside

- 70 V / 100 V selection (per channel)

Interconnection

Back

- Mains socket
- Battery backup input
- Two loudspeaker output screw terminals (per channel)
- Spare amplifier input screw terminal (per channel)
- Two RJ45 connectors (per channel)
- Local audio input screw terminal (per channel)

Certifications and Approvals

Region	Certification	
Europe	CE	CE PRS-2B250
		CE PRS-1B500

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Parts Included

Quantity	Component
1	PRS-1B500 Basic Amplifier 1x500 W or PRS-2B250 Basic Amplifier 2x250 W or PRS-4B125 Basic Amplifier 4x125 W or PRS-8B060 Basic Amplifier 8x60 W
2/4/8/16	CAT 5-cables (for PRS-1B500 / PRS-2B250 / PRS-4B125 / PRS-8B060)
1	Power cord
1	Set of mounting brackets (large) for 19" rack
1	Set connectors

Technical Specifications

Electrical

Mains power supply

Voltage	115/230 VAC $\pm 10\%$, 50/60 Hz
Power consumption	P _{max} -3 dB* / idle** / standby
PRS-1B500	450 / 52 / 17 W
PRS-2B250	378 / 46 / 18 W
PRS-4B125	395 / 62 / 16 W
PRS-8B060	400 / 80 / 16 W
	* Alarm tone level
	** With pilot tone 15 V

Battery power supply

Voltage	48 VDC -10% to +20%
Power consumption	P _{max} -3 dB* / idle** / standby
PRS-1B500	365 / 34 / 6 W
PRS-2B250	370 / 38 / 6 W
PRS-4B125	375 / 48 / 9 W
PRS-8B060	385 / 62 / 10 W
	* Alarm tone level
	** With pilot tone 15 V

Performance

Frequency response	60 Hz to 19 kHz (-3 dB) 80 Hz to 19 kHz (-3 dB, PRS-8B060)
Total harmonic distortion	<0.3% (1kHz) at 50% of rated power
Cross talk	-70 dB (1 kHz) nominal (only multichannel)
Signal-to-noise ratio	>85 dB with pilot tone off

Line inputs

Local audio input	0 dBV (symmetrical)
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Speaker outputs	PRS-1B500
Rated load resistance	20 ohm (100 V); 10 ohm (70 V)
Rated load capacitance	250 nF (100 V); 500 nF (70 V)
Rated output power	500 W (1 min. at 55 °C) 250 W (30 min. at 55 °C, cont. at 30 °C) 125 W (cont. at 55 °C)

Speaker outputs	PRS-2B250
Rated load resistance	40 ohm (100 V); 20 ohm (70 V)
Rated load capacitance	125 nF (100 V); 250 nF (70 V)
Rated output power (per channel)	250 W (1 min. at 55 °C) 125 W (30 min. at 55 °C, cont. at 30 °C) 60 W (cont. at 55 °C)

Speaker outputs	PRS-4B125
Rated load resistance	80 ohm (100 V); 40 ohm (70 V)
Rated load capacitance	60 nF (100 V); 125 nF (70 V)
Rated output power (per channel)	125 W (1 min. at 55 °C) 60 W (30 min. at 55 °C, cont. at 30 °C) 30 W (cont. at 55 °C)

Speaker outputs	PRS-8B060
Rated load resistance	160 ohm (100 V); 80 ohm (70 V)
Rated load capacitance	30 nF (100 V); 60 nF (70 V)
Rated output power (per channel)	60 W (1 min. at 55 °C) 30 W (30 min. at 55 °C, cont. at 30 °C) 15 W (cont. at 55 °C)

Mechanical

Dimensions (H x W x D)	
for 19" rack use, with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
in front of brackets	40 mm (1.6 in)
behind brackets	360 mm (14.2 in)

Weight	
PRS-1B500	12 kg (26.5 lb)
PRS-2B250	14 kg (30.9 lb)
PRS-4B125	15 kg (33.4 lb)
PRS-8B060	13.7 kg (30.5 lb)
Mounting	19" rack
Color	Charcoal with silver

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

PRS-1B500 Basic Amplifier 1 x 500 W 1 x 500 W	PRS-1B500
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PRS-2B250 Basic Amplifier 2 x 250 W 2 x 250 W	PRS-2B250
---	------------------

PRS-4B125 Basic Amplifier 4 x 125 W 4 x 125 W	PRS-4B125
---	------------------

PRS-8B060 Basic Amplifier 8 x 60 W 8 x 60 W	PRS-8B060
---	------------------

Accessories

PRS-16MCI Multichannel Interface an interface to the Praesideo basic amplifiers that do not provide network connectivity	PRS-16MCI
---	------------------

PRS-16MCI Multichannel Interface

Features

- ▶ **Interface to Praesideo basic amplifiers**
- ▶ **Up to 16 audio channels**
- ▶ **Redundant fiber optic network connection**
- ▶ **Control input and output connections**
- ▶ **Complete supervision**
- ▶ **IEC 60849 compliant**

The PRS-16MCI is part of the Praesideo network and acts as an interface to the Praesideo basic amplifiers that do not provide network connectivity. The unit is intended for public address and emergency sound systems. The multichannel interface provides 16 configurable output channels (14 main outputs and two spare outputs). It provides the audio signals to the basic amplifiers and has full control over the amplifiers. It supervises itself and the connected basic amplifiers, and reports fault events to the Praesideo network controller (IEC 60849 compliant).

The unit should be mounted in a 19"-rack with the included mounting brackets.

Functions

This unit is the interface between the Praesideo network and the Praesideo basic amplifiers. It can get its power from the amplifiers it is connected to, or from the network. It has 16 audio channels for up to 14 main amplifiers (zones) and two spare amplifiers. These can be assigned from a non-mixing matrix of 28 Praesideo channels. There are connections for 32 control inputs and 16 control outputs.

The interface provides supervision for the unit itself, as well as all connected basic amplifiers. The interface monitors the functions of the amplifiers, and can activate a spare amplifier to replace one that reports a fault. It has loop-through in and outputs, supporting failsafe mode, which pass emergency calls through, even if the unit itself fails. A controller for multiple-line and loudspeaker supervision is a standard component. The interface can be configured for redundant group A/B switching, or for class-A loop wiring of the connected basic amplifiers. All configuration is done with software over the network.

Controls and indicators

- 16 two-color LEDs for amplifier channel status
- Two-color LED for network status

Interconnection

- Two system network connectors

- 32 RJ45 jacks for basic amplifiers
- Female XLR-3 connector for failsafe audio loop-through input
- Male XLR-3 connector for failsafe audio loop-through and supervision
- 32 control inputs on removable Euro-style screw terminals
- 16 control outputs on removable Euro-style screw terminals

Certifications and Approvals

Region	Certification
Europe	CE
Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Parts Included

Quantity Component

1	PRS-16MCI Multichannel Interface
1	Set of mounting brackets for 19" rack
1	Set of connectors

Technical Specifications

Electrical

Power consumption	12 W (DC)
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Performance

Frequency response	20 Hz to 20 kHz (-3 dB)
Total harmonic distortion	<0.1% (1 kHz)
Cross talk	<-80 dB (1 kHz)
S/N	>85 dB (without pilot tone)

Line input	1 x
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Connector	XLR bypass
-----------	------------

Line output	1 x
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Connector	XLR loop-through
-----------	------------------

Line output	16 x
--------------------	------

Connectors	RJ45 jack (in pairs)
	0 dBV (symmetrical)

Control inputs	32 x
-----------------------	------

Connectors	Removable screw terminals
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Operation	Closing contact (with supervision)
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Control outputs	16 x
------------------------	------

Connectors	Removable screw terminals
------------	---------------------------

Operation	Change over contact (SPDT) voltage free relay
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Rating	24 V, 1 A
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Mechanical

Dimensions (H x W x D) rack with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
in front of brackets	40 mm (1.6 in)
behind brackets	360 mm (14.2 in)
Weight	7 kg (15.4 lb)
Mounting	19" rack
Color	Charcoal with silver

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information**PRS-16MCI Multichannel Interface**

an interface to the Praesideo basic amplifiers
that do not provide network connectivity

PRS-16MCI

LBB 4430/00 Call Station Basic



Features

- ▶ **Redundant network connection**
- ▶ **Power 'ON' indication**
- ▶ **Status/fault indications**
- ▶ **Indication that the priority level of destinations is higher than that of the pending announcement**
- ▶ **Supervision of microphone capsule**
- ▶ **Stylish and modern design**

The call station basic can make manual or pre-recorded announcements to any pre-assigned zones. The call station basic has a microphone on a flexible stem, a push-to-talk button, a speaker, and a headset socket.

The LBB 4430/00 can be extended with up to 16 keypads (LBB 4432/00 or LBB 4434/00), each with eight programmable keys. Extension with a numeric keypad (PRS-CSNKP) is also possible.

Functions

The call station has a cardioid, supervised microphone on a gooseneck stem with good speech intelligibility. A limiter and a speech filter improve intelligibility and prevent clipping of the audio. It has a volume control for the monitoring speaker and the headset. When it plays a chime or a pre-recorded message, the call station activates its speaker. When a headset is connected, it replaces the microphone and speaker. The call station has its own DSP, and converts between analog and digital audio. The audio processing can include sensitivity adjustment, limiting, and parametric equalization.

Up to 16 call station keypads can connect to the station via a serial communication link. The station provides the power for the keypads. Up to 224 priorities can be assigned to the call station. All configuration can be done via the Praesideo network controller.

The call station is fully supervised and complies with IEC 60849. The call station supports fail-safe operation. Even if the Praesideo network controller fails, the call station is still able to put through emergency calls.

Controls and indicators

- Three status LEDs
- Configurable PTT-key
- Volume control for loudspeaker/headset

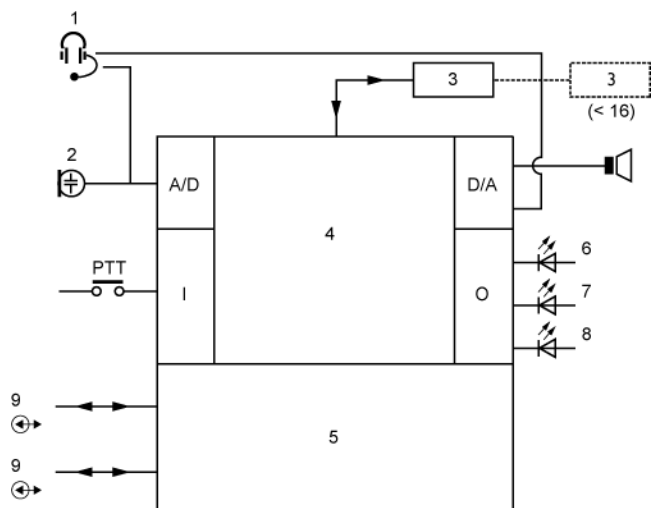
Interconnections

- Two system network connections
- Serial data and power supply interface for call station keypads
- 3.5 mm jack for headset

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity SOLAS TUV Certificate IEC60849
Safety		acc. to IEC 60065-98
Immunity		acc. to EN 55103-2
Emissions		acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)		acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Headset
- 2 Microphone
- 3 Keypad(s)
- 4 Network processor and DSP
- 5 Network redundancy switching

- 6 Power/error
- 7 Call station status
- 8 Network status
- 9 Network connections

Parts Included

Quantity Component

- 1 LBB 4430/00 Call Station Basic
- 1 Flat cable

Technical Specifications

Electrical

- External power supply 18 to 56 VDC
- Power consumption 4.4 W (DC) excluding keypads

Microphone

- Nominal acoustic input level 75 to 90 dB SPL
- S/N >60 dB at 85 dB SPL
- Frequency response 340 Hz to 14 kHz (-3 dB)

Loudspeaker

- S/N 80 dB at max. output
- Sound pressure level 85 dB (SPL) at 0.5 m and 1 kHz

Headset

- Connector 3.5 mm jack
- Recommended type Hosiden HBH 0058

Mechanical

- Dimensions (H x W x D) 90 x 160 x 200 mm
- Weight 0.95 kg (2.1 lb)
- Mounting Tabletop
- Color Charcoal
- Length of mic stem 380 mm

Environmental

- Operating temperature -5 °C to +45 °C (+23 °F to +113 °F)
- Storage temperature -20 °C to +70 °C (-4 °F to +158 °F)
- Humidity 15% to 90%
- Air pressure 600 to 1100 hPa

Ordering Information

- | | |
|--|-------------------|
| LBB 4430/00 Call Station Basic | LBB4430/00 |
| has a microphone on a flexible stem, a push-to-talk button, a speaker, and a headset socket. | |

Accessories

- | | |
|---|-------------------|
| LBB 4432/00 Call Station Keypad | LBB4432/00 |
| has eight programmable buttons, each with a two-color status LED. | |

- | | |
|--|-------------------|
| LBB 4434/00 Call Station Keypad Kit | LBB4434/00 |
| used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions. | |

- | | |
|--|------------------|
| PRS-CSNKP Numeric Keypad | PRS-CSNKP |
| can be used for user access, zone and zone group selection. LCD for user feedback. | |

LBB 4432/00 Call Station Keypad



Features

- ▶ Eight freely programmable selection keys
- ▶ Serial data and power interface to call station basic
- ▶ Up to 16 keypads can be connected to one call station basic
- ▶ Activation indicator for each key
- ▶ Stylish and modern design

The call station keypad is used in combination with the call station basic to make manual or pre-recorded announcements to any assigned zones, to select the zones or to execute pre-defined actions. The call station keypad has eight programmable buttons, each with a two-color status LED.

Functions

The keys of the call station keypad can be programmed for actions, such as:

- Controlling functions: selection recall, call activation, cancel selection, BGM off, BGM volume control, fault acknowledgement, etc.
- Selecting sources: BGM channel, pre-recorded messages, attention and alarm tones
- Selecting destinations: zones and zone groups

The keys can be programmed for different modes of operation, such as momentary or toggle. Each key has one two-color status LED beside it. Beside each LED is a transparent, removable tab that can hold a function or zone label for the key. Safety covers to prevent accidental activation of the keys are available as an option.

The keypad gets its power from the call station it is connected to.

Controls and indicators

- Eight function keys
- Eight two-color LEDs

Interconnections

- Two serial data and power connections

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity SOLAS TUV Certificate IEC60849
Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Parts Included

Quantity	Component
1	LBB 4432/00 Call Station Keypad
1	Flat cable
1	Coupling bracket
1	Set of text labels

Technical Specifications

Electrical

Power consumption	1.1 W (DC)
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Mechanical

Dimensions (H x W x D)	70 x 95 x 200 mm (2.8 x 3.7 x 7.9 in)
Weight	0.3 kg (0.7 lb)
Mounting	Bracket attachment to a call station or other keypad
Color	Charcoal

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

LBB 4432/00 Call Station Keypad	LBB4432/00
has eight programmable buttons, each with a two-color status LED.	

Accessories

LBB 4436/00 Set of Key Covers (10 pcs)	LBB4436/00
10 key covers and 10 replacement lenses	

PRS-CSNKP Numeric Keypad



Features

- ▶ **Numeric keypad for zone selection and user access**
- ▶ **Serial data and power interface to call-station basic**
- ▶ **Can be combined with normal call-station keypads**
- ▶ **LCD for user feedback**
- ▶ **Stylish and modern design**

The Call-Station Numeric Keypad is used in combination with a basic or remote call-station. The call-station provides the microphone and press-to-talk key, while the numeric keypad can be used for user access, zone and zone group selection. It works together with call-station keypads for pre-configured actions. The built-in LCD provides feedback to the user.

Functions

The call-station numeric keypad has a 12-key numeric keypad, providing a telephone-like user interface with *, # and 0...9 keys. A single numeric keypad connects directly to a basic or remote call-station and subsequently up to 15 other keypads can be linked for controlling functions. It is mechanically fixed to the call-station. The numeric keypad can be configured for the following functions:

- User access to the call-station with user number and PIN, configurable for multiple users, with time-out and manual lock
- Selecting zones and zone groups as destinations for calls and BGM; up to eight zones and/or zone groups can be entered into a string.

The LCD gives feedback to the user about the selections and the status of the selected zones and zone groups.

The keypad gets its power supply from the connected call-station. It is configured via the Praesideo network controller (web browser interface).

Controls and indicators

- 12 numeric keys
- 2 x 16 character LCD with backlight
- LCD brightness adjustment
- LCD contrast adjustment

Interconnections

- Flat-cable connection to call-station
- Flat-cable connection to next keypad

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. To EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Parts Included

Quantity	Component
1	PRS-CSNKP Numeric Keypad
1	Flat-cable
1	Coupling bracket

Technical Specifications

Electrical

Power consumption	1.8 W (DC)
-------------------	------------

Mechanical

Dimensions (H x W x H)	70 x 95 x 200 mm (2.8 x 3.7 x 7.9 in)
Weight	0.4 kg (0.9 lb)
Mounting	Bracket attachment to a call-station or other keypad
Color	Charcoal

Environmental

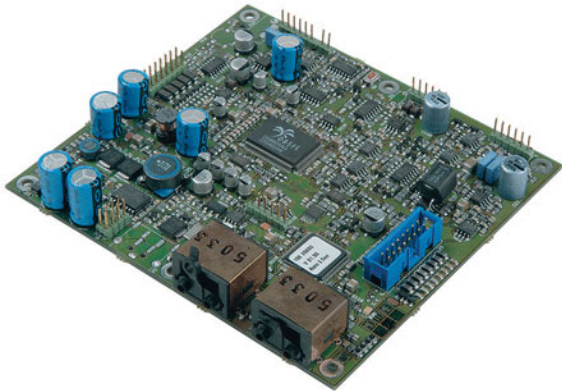
Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

PRS-CSNKP Numeric Keypad
can be used for user access, zone and zone group selection. LCD for user feedback.

PRS-CSNKP

LBB 4433/00 Call Station Kit



Features

- ▶ Redundant network connection
- ▶ Power 'ON' outputs
- ▶ Status/fault outputs
- ▶ Output for a monitoring loudspeaker
- ▶ Priority indication of busy target zones
- ▶ Microphone supervision

The call station kit is used to make custom-made call stations, with the same functionality as the LBB 4430/00 Call Station Basic. The call station contains a built-in limiter and speech filter for improved intelligibility. An external power supply can be connected to the call station kit. Two supervised control inputs provide power supply status information.

The LBB 4433/00 can be extended with up to 16 keypads (LBB 4432/00 or LBB 4434/00), each with eight programmable keys. Extension with a numeric keypad (PRS-CSNKP) is also possible.

Functions

The call station kit has a limiter and a speech filter. This improves intelligibility and prevents clipping of the audio. A potentiometer for volume control of the monitoring speaker and the headset can be connected. When it plays a chime or a pre-recorded message, the call station activates its speaker. The call station has its own DSP, and converts between analog and digital audio. The audio processing includes sensitivity adjustment, limiting, and parametric equalization.

Up to 16 call station keypads can connect to the station via a serial communication link. The call station provides the power for the keypads. Up to 224 priorities can be assigned to the call station. All configuration can be done via the Praesideo network controller.

The call station kit is fully supervised and complies with IEC 60849. The call station supports fail-safe operation. Even if the Praesideo network controller fails, the call station is still able to put through emergency calls.

Controls and indicators

These must be supplied by the installer.

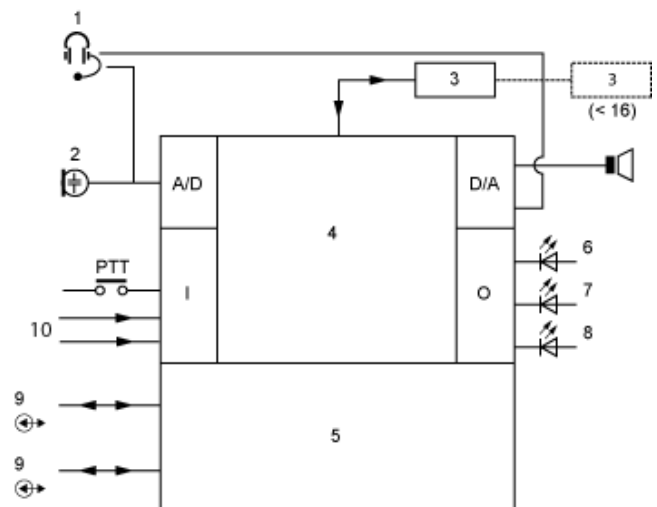
Interconnections

- Two network connectors (system bus)
- Backup supply input and 2 control inputs
- Serial data and power supply interface for call station keypads
- Microphone
- Loudspeaker
- Headset
- Volume control for loudspeaker/headset
- Control input (for PTT)
- Five control outputs (for status LEDs)

Certifications and Approvals

Region	Certification	
Europe	CE	SOLAS
		TUV Certificate IEC60849
Safety	acc. to IEC 60065-98	
Immunity	acc. to EN 55103-2	
Emissions	acc. to EN 55103-1 / FCC-47 part 15B	
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8	

Installation/Configuration Notes



1	Headset
2	Microphone
3	Keypad(s)
4	Network processor and DSP
5	Network redundancy switching
6	Power/error
7	Call station status
8	Network status
9	Network connections
10	Control inputs

Parts Included

Quantity Component

1	LBB 4433/00 Call Station Kit
1	Set of connectors

Technical Specifications

Electrical

Power consumption	7.2 W (DC) excl. indicators and keypads
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Mic input	1 x
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Sensitivity	-57 to -42 dBV
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S/N	>60 dB at -48 dBV
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Frequency response	340 Hz to 14 kHz (-3 dB)
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Loudspeaker output	1 x
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S/N	80 dB $\pm$ 3 dB at max.
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Impedance	8 to 32 ohm
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Power	100 mW typ., 300 mW max.
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Headset	1 x
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Impedance	0.5 to 5 kohm
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Input sensitivity	-57 to -42 dBV/Pa ($\pm$ 3 dB)
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Earphone impedance	>16 ohm
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Status outputs	5 x open collector / drain
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Max. current (internal)	10 mA per pin; 30 mA total
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Max. voltage	56 V per pin
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Max sink current	100 mA per output pin
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Mechanical

Dimensions (H x W x D)	20 x 130 x 118 mm (0.8 x 5.1 x 4.6 in)
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Weight	120 g (0.26 lb)
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Mounting	PCB with 6 mounting holes
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Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
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Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
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Humidity	15% to 90%
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Air pressure	600 to 1100 hPa
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Ordering Information

LBB 4433/00 Call Station Kit	LBB4433/00
used to make custom-made call stations.	

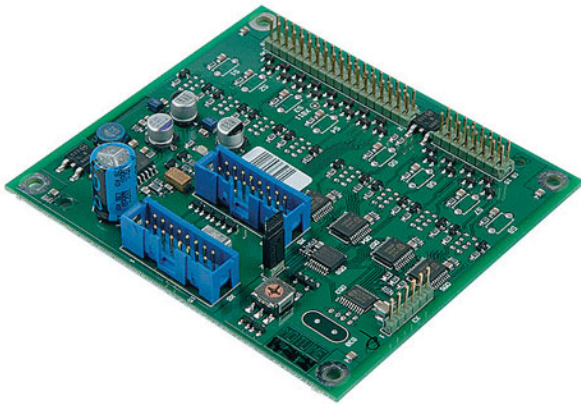
Accessories

LBB 4434/00 Call Station Keypad Kit	LBB4434/00
used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions.	

LBB 4432/00 Call Station Keypad	LBB4432/00
has eight programmable buttons, each with a two-color status LED.	

PRS-CSNKP Numeric Keypad	PRS-CSNKP
can be used for user access, zone and zone group selection. LCD for user feedback.	

LBB 4434/00 Call Station Keypad Kit



Features

- ▶ Eight programmable control inputs linked to 16 outputs
- ▶ Two serial interfaces to call stations or other keypads
- ▶ Up to 16 keypads can be connected to one call station

The call station keypad kit is used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions. It is functionally equivalent to the LBB 4432/00 Call Station Keypad. One of the main applications is the development of fireman's panels. However, since the call station keypad has eight programmable input connections, each with two associated output connections; it is well suited for other control applications.

Functions

The key inputs of the kit can be programmed for actions such as:

- Controlling functions: selection recall, call activation, cancel selection, BGM off, BGM volume control, fault acknowledgement, etc.
 - Selecting sources: BGM channel, pre-recorded messages, attention and alarm tones
 - Selecting destinations: zones and zone groups
- Each key input of the PCB has two functionally related outputs designed to drive a two-color LED, but which can be used for other purposes. Once a control input is used for a function, the two control outputs will be linked to the specific action. Call macros can also be assigned to inputs.

The PCB also has interfaces for serial connections to a call station or other keypads. The keypad gets its power from the call station, it is connected to. The key inputs can be programmed for different modes of operation, such as momentary or toggle.

Interconnections

- Eight control inputs
- 16 control outputs
- Two serial data and power connections

Certifications and Approvals

Region	Certification	
Europe	CE	SOLAS TUV Certificate IEC60849
Safety	acc. to IEC 60065-98	
Immunity	acc. to EN 55103-2	
Emissions	acc. to EN 55103-1 / FCC-47 part 15B	
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8	

Parts Included

Quantity	Component
1	LBB 4434/00 Call Station Keypad Kit
1	Flat cable
1	Set of connectors

Technical Specifications

Electrical

Power consumption	1.2 W (DC) excl. indicators
Control inputs	8 x
Max. current	0.5 mA
Max. voltage	3.3 V (with 10 kohm pull-up)
Control outputs	8 x 2 open collectors
Max. current	100 mA
Max. voltage	30 V

Mechanical

Dimensions (H x W x D)	20 x 90 x 100 mm (0.8 x 3.5 x 3.9 in)
Weight	55 g (0.12 lb)
Mounting	PCB with 4 mounting holes

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information**LBB 4434/00 Call Station Keypad Kit**

used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions.

LBB4434/00

PRS-CSI Call Station Interface



Features

- ▶ Connects a remote call station to the Praesideo network via CAT-5 cable (up to 1 km)
- ▶ Powered by the Praesideo network and/or local power supply
- ▶ Two supervised control inputs
- ▶ Built-in DSP for audio processing functions
- ▶ Complete supervision of the unit
- ▶ IEC 60849 compliant

The PRS-CSI is an interface between a single remote call station, PRS-CSR, or a remote call station kit, PRS-CSRK, and the fiber optical Praesideo network. It uses CAT-5 cable for the connection to the remote call station. The CAT-5 cable, carrying digital audio and control data, can be as long as 1 km. The length of the CAT-5 cable is not a part of the Praesideo optical network length. This considerably increases the overall possible length of the optical network, especially in cases, where the call station is located far from the rest of the system.

The call station interface can get its power from the Praesideo network, and/or from a local power supply. It is fully supervised and complies with IEC 60849.

Functions

The interface can connect a single PRS-CSR remote call station or PRS-CSRK remote call station kit to a Praesideo system with up to 1 km of CAT-5 cable.

The interface is fully digital, supporting high-quality sound with a built-in DSP for audio processing of the remote call station. It supports complete supervision of itself, the call station, and the connection, as well as of two control inputs. It supports the fail safe mode of remote call stations, allowing them to put through emergency calls, even if the network controller fails. The unit is configured via the network controller.

Controls and indicators

- Two LED indicators for power and network status
- Two jumpers (below cover) to separate power supply of call station interface and remote call station

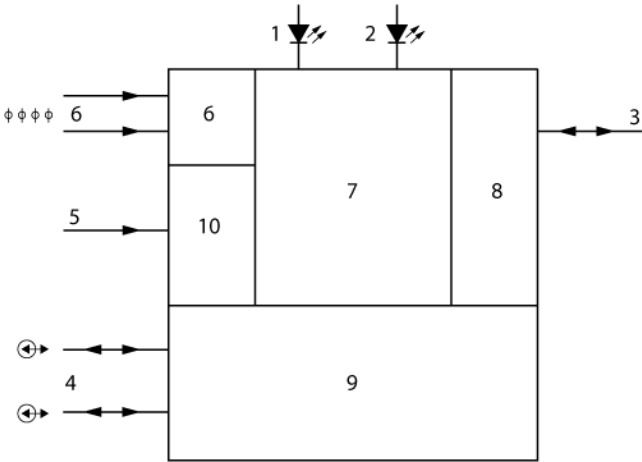
Interconnectors

- Two Praesideo network connectors
- RJ45 connector for CAT-5 connection
- Kycon type (lockable) connector for power and two control inputs

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Fault LED
- 2 Power LED
- 3 Cat.5
- 4 POF
- 5 External (back-up) power 18-56 V
- 6 Control inputs
- 7 Network processor and DSP
- 8 UTP interface
- 9 Network redundancy switching
- 10 Power supply

Parts Included

Quantity Component

1	PRS-CSI Call Station Interface
1	Power supply connector

Technical Specifications

Electrical

External power supply	18 to 56 VDC
Power consumption	3.7 W
Control inputs	2 x
Operation	Closing contact (with supervision)

Mechanical

Dimensions (H x W x D)	27 x 243 x 80 mm without bracket (1.1 x 9.6 x 3.1 in) 34 x 243 x 84 mm with bracket (1.3 x 9.6 x 3.3 in)
Weight	0.7 kg (1.5 lb)
Mounting	Bracket (2 screws)
Color	Charcoal

Environmental

Operating temperature	-5 °C to +45 °C (+23 °F to +113 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

PRS-CSI Call Station Interface

PRS-CSI

an interface between a single remote call station, PRS-CSR, or a remote call station kit, PRS-CSRK, and the fiber optical Praesideo network.

Accessories

PRS-CSR Call Station Remote

PRS-CSR

same functionality as the basic call station, LBB 4430/00, but it uses CAT-5 cable for its connection to the Praesideo network.

PRS-CSRK Call Station Remote Kit

PRS-CSRK

same functionality as the remote call station, PRS-CSR, but without its housing and other components.

PRS-CSR Call Station Remote



Features

- ▶ Connects to call station interface via CAT-5 cable
- ▶ Up to 1 km from Praesideo optical network
- ▶ Uses standard Praesideo keypads for extension
- ▶ Built-in limiter
- ▶ Powered via CAT-5 and/or local power supply
- ▶ Complete supervision
- ▶ IEC 60849 compliant

The PRS-CSR is a call station with the same functionality as the basic call station, LBB 4430/00, but it uses CAT-5 cable for its connection to the Praesideo network. It connects, one-to-one, to the call station interface, PRS-CSI, which is part of the Praesideo optical network. The CAT-5 cable, carrying digital audio and control data, can be as long as 1 km. The length of the CAT-5 cable is not a part of the Praesideo optical network length. This considerably increases the overall possible length of the optical network.

The PRS-CSR can be extended with up to 16 keypads (LBB 4432/00 or LBB 4434/00), each with eight programmable keys. Extension with a numeric keypad (PRS-CSNKP) is also possible.

Functions

The call station has a cardioid, supervised microphone on a gooseneck stem with good speech intelligibility. A limiter and a speech filter improve intelligibility and prevent clipping of the audio. It has a volume control for the monitoring speaker and the headset. When it plays a chime or a pre-recorded message, the call station activates its speaker. When a headset is connected, it replaces the microphone and speaker.

The remote call station connects via a CAT-5 cable to an PRS-CSI unit, which interfaces it to the Praesideo optical network. The call station gets its power from the interface unit via the CAT-5 cable, but is also equipped with a local power supply connection for extreme cases with a very long cable and many keypads.

Up to 16 call station keypads can connect to the station via a serial communication link. The call station provides the power for the keypads. Up to 224 priorities can be assigned to the call station. All configuration can be done via the Praesideo network controller.

The remote call station is fully supervised and complies with IEC 60849. The call station supports fail-safe operation. Even if the Praesideo network controller fails, the call station is still able to put through emergency calls.

Controls and indicators

- Three status LEDs
- Configurable PTT-key
- Volume control for loudspeaker/headset

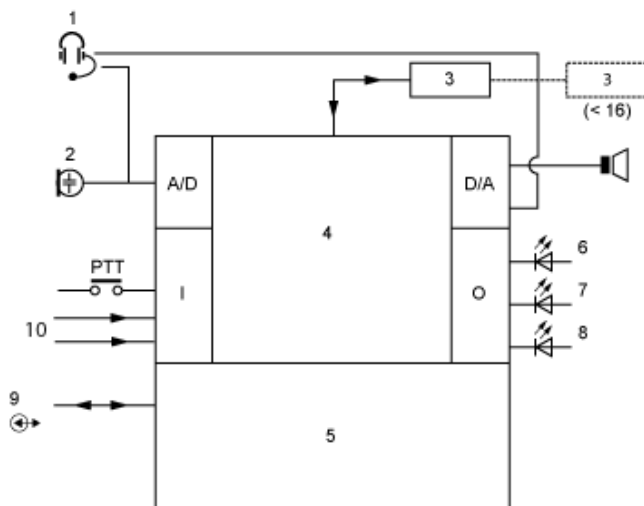
Interconnections

- RJ45 connector for CAT-5 connection
- Serial data and power supply interface for call station keypads
- Kycon type (lockable) connector for power and two control inputs
- 3.5 mm jack for headset/headphone

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Headset
- 2 Microphone
- 3 Keypad(s)
- 4 Network processor and DSP
- 5 Network redundancy switching
- 6 Power/error
- 7 Call station status (two-color)
- 8 Network status
- 9 Data connection (CAT-5)
- 10 Control input

Parts Included

Quantity Component

- | | |
|---|-----------------------------|
| 1 | PRS-CSR Call Station Remote |
| 1 | Flat cable |

Technical Specifications

Electrical

External power supply	18 to 56 VDC
Power consumption	2.9 W at 48 V without keypads

Microphone

Nominal acoustic input level	75 to 90 dB SPL
S/N	> 60 dB at 85 dB SPL
Frequency response	340 Hz to 14 kHz (-3 dB)

Loudspeaker

S/N	80 dB at max.
Sound pressure level	85 dB (SPL) at 0.5 m and 1 kHz

Headset

Connector	3.5 mm jack
Recommended type	Hosiden HBH 0058

Mechanical

Dimensions (H x W x D)	90 x 160 x 200 mm (3.5 x 6.3 x 7.9 in)
Length of goose neck	380 mm (15 in)
Weight	1 kg (2.2 lb)
Mounting	Standalone
Color	Charcoal

Environmental

Operating temperature	-5 °C to +45 °C (+23 °F to +113 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

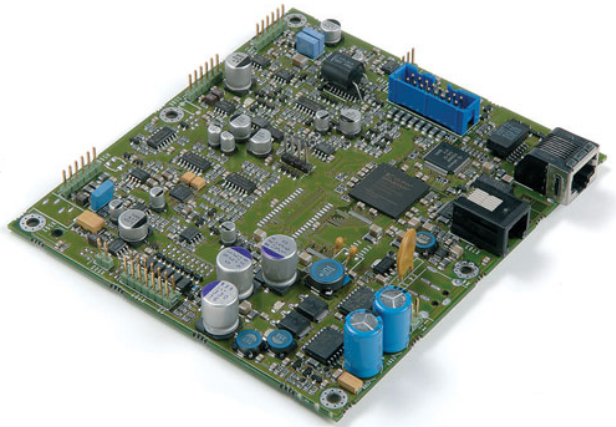
Ordering Information

PRS-CSR Call Station Remote	PRS-CSR
same functionality as the basic call station, LBB 4430/00, but it uses CAT-5 cable for its connection to the Praesideo network.	

Accessories

PRS-CSI Call Station Interface	PRS-CSI
an interface between a single remote call station, PRS-CSR, or a remote call station kit, PRS-CSRK, and the fiber optical Praesideo network.	
LBB 4432/00 Call Station Keypad	LBB4432/00
has eight programmable buttons, each with a two-color status LED.	
LBB 4434/00 Call Station Keypad Kit	LBB4434/00
used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions.	
PRS-CSNKP Numeric Keypad	PRS-CSNKP
can be used for user access, zone and zone group selection. LCD for user feedback.	

PRS-CSRK Call Station Remote Kit



Features

- ▶ Connects to call station interface via CAT-5 cable
- ▶ Up to 1 km from Praesideo optical network
- ▶ Uses standard Praesideo keypads for extension
- ▶ Built-in limiter
- ▶ Powered via CAT-5 and/or local power supply
- ▶ Complete supervision
- ▶ IEC 60849 compliant

The PRS-CSRK is a PCB with the same functionality as the remote call station, PRS-CSR, but without its housing and other components. It is for the construction of custom applications. It connects via a CAT-5 cable, one-to-one, to the call station interface, PRS-CSI, which is part of the Praesideo optical network. The CAT-5 cable, carrying digital audio and control data, can be as long as 1 km. The length of the CAT-5 cable is not a part of the Praesideo optical network length. This considerably increases the overall possible length of the optical network.

The PRS-CSR can be extended with up to 16 keypads (LBB 4432/00 or LBB 4434/00), each with eight configurable keys. Extension with a numeric keypad (PRS-CSNKP) is also possible.

Functions

The call station has a connection for a supervised microphone. A limiter and a speech filter improve intelligibility and prevent clipping of the audio. It has a volume control for the monitoring speaker and the headset. When it plays a chime or a pre-recorded message, the call station activates its speaker. When a headset is connected, it replaces the microphone and speaker. The call station has its own DSP, and converts between analog and digital audio. The audio processing can include sensitivity adjustment, limiting, and parametric equalization.

The kit connects via a CAT-5 cable to an PRS-CSI unit, which interfaces it to the Praesideo optical network. The cable can be up to 1 kilometer long. The station gets its power from the interface unit via the CAT-5 cable, but is also equipped with a local power supply connection for extreme cases with a very long cable and many keypads.

Up to 16 call station keypads can connect to the station via a serial communication link. The call station provides the power for the keypads. Up to 224 priorities can be assigned to the call station. All configuration can be done via the Praesideo network controller.

The remote call station is fully supervised and complies with IEC 60849. The call station supports fail-safe operation. Even if the Praesideo network controller fails, the call station is still able to put through emergency calls.

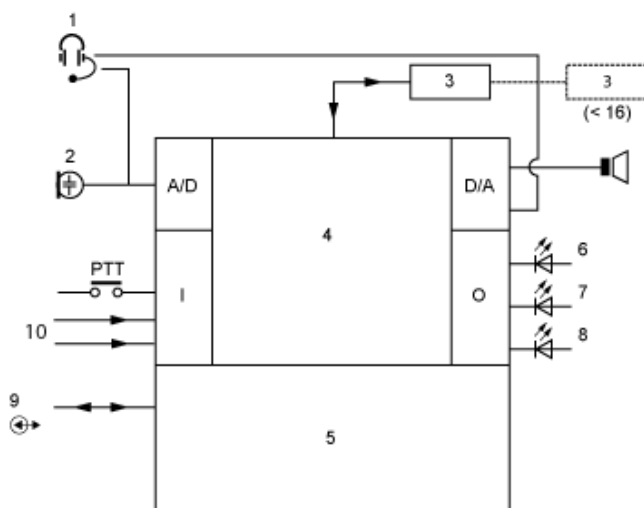
Interconnections

- External power supply input and 2 control inputs
- Serial data and power supply interface for call station keypads
- Microphone
- Loudspeaker
- Headset
- Volume control for loudspeaker/headset
- Control input (for PTT)
- Three control outputs (for status LEDs)

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Headset
- 2 Microphone
- 3 Keypad(s)
- 4 Network processor and DSP
- 5 Network redundancy switching
- 6 Power/error
- 7 Call station status (two-color)
- 8 Network status
- 9 Data connection (CAT-5)
- 10 Control input

Parts Included

Quantity Component

- 1 PRS-CSRK Call Station Remote Kit
- 1 Set of connectors

Technical Specifications

Electrical

Power consumption	4 W at 48 V without keypads
External power supply	18 to 56 VDC

Microphone

Nominal acoustic input level	75 to 90 dB SPL
SNR	> 60 dB at 85 dB SPL
Frequency response	340 Hz to 14 kHz (-3 dB)

Loudspeaker

SNR	80 dB at max.
Sound pressure level	85 dB (SPL) at 0.5 m and 1 kHz

Headset

Impedance	0.5 to 5 kohm
Input sensitivity	-57 to -42 dBV/Pa (± 3 dB)
Earphone impedance	> 16 ohm

Status outputs	5 x open collector / drain
Max. current (internal)	10 mA per pin; 30 mA total
Max. voltage	56 V per pin
Max sink current	100 mA per output pin
Mechanical	
Dimensions (H x W x D)	20 x 130 x 118 mm (0.8 x 5.1 x 4.6 in)
Weight	120 g (0.26 lb)
Mounting	PCB 6 holes
Environmental	
Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

PRS-CSRK Call Station Remote Kit	PRS-CSRK
same functionality as the remote call station, PRS-CSR, but without its housing and other components.	

Accessories

PRS-CSI Call Station Interface	PRS-CSI
an interface between a single remote call station, PRS-CSRK, or a remote call station kit, PRS-CSRK, and the fiber optical Praesideo network.	
LBB 4434/00 Call Station Keypad Kit	LBB4434/00
used in combination with a call station kit or call station basic to make manual or pre-recorded announcements to any assigned zones, or to execute pre-defined actions.	
LBB 4432/00 Call Station Keypad	LBB4432/00
has eight programmable buttons, each with a two-color status LED.	
PRS-CSNKP Numeric Keypad	PRS-CSNKP
can be used for user access, zone and zone group selection. LCD for user feedback.	

PRS-CRF Call Stacker



Features

- ▶ Records calls for automatic playback to previously occupied zones (call stacker)
- ▶ Acoustic feedback suppression by recording a call with delayed broadcast (time shifter)
- ▶ Possibility to monitor a call before broadcasting
- ▶ Records and/or plays back up to eight calls simultaneously
- ▶ Stores up to 16 calls
- ▶ Connects directly to Praesideo network

The Call Stacker is a small unit that records calls that cannot be sent to all required zones because some are occupied by a higher priority call. The unit can store up to 16 calls in high-quality format with a maximum of three minutes for each call, including chimes and pre-recorded messages. Playback of a call can start while it is still being recorded. The unit can record and/or playback up to eight calls simultaneously.

More units can be added to a system in order to increase the number of recordable calls. Units can be connected to the Praesideo network at any place.

Functions

The functions of the call stacker are configured as part of a call macro in Praesideo. Here it is configured whether a call will be recorded for playback later in case zones are occupied or the call is being overruled in some zones.

When these zones become available again, the call is automatically repeated to these remaining zones, to all at once or cascaded to each zone individually.

After a call is finished completely, it will be deleted from memory.

The unit has a configurable time-out period to delete outdated unsent calls.

The call stacker can also be used as time shifter to avoid acoustic feedback from a loudspeaker to the active microphone. The call is recorded and broadcast after the recording has finished. The call can be pre-monitored before broadcast with the option to cancel the call.

Time shifting and call stacking can be combined.

Logging of the call and all its playbacks is supported, but the recorded calls do not survive a power down and are not supervised, so the call stacker function should not be relied upon for emergency calls.

The unit is configurable via the Praesideo network controller (web browser interface).

Controls and indicators

- Two LED indicators for power and network status

Interconnections

- Two Praesideo network connectors
- RJ11 service connector (JTAG)

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. To EN 55103-1 / FCC-47 part 15B

Parts Included

Quantity	Component
1	PRS-CRF Call Stacker
1	Mounting bracket

Technical Specifications

Electrical

Power consumption	8 W
-------------------	-----

Performance

Frequency response	20 Hz to 20 kHz (-3 dB)
S/N	> 85 dB
Crosstalk	<-85 dB

Mechanical

Dimensions (H x W x H)	
Without bracket	27 x 243 x 80 mm (1.1 x 9.6 x 3.1 in)
With bracket	34 x 243 x 84 mm (1.3 x 9.6 x 3.3 in)
Weight	0.7 kg (1.5 lb)
Mounting	Bracket (two screws)
Color	Charcoal

Environmental

Operating temperature	-5 °C to +45 °C (+23 °F to +113 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	15 % to 90 %
Air pressure	600 to 1100 hPa

Ordering Information**PRS-CRF Call Stacker**

unit that records calls that cannot be sent to all required zones because some are occupied by a higher priority call.

PRS-CRF

PRS-1AIP1 IP Audio Interface



Features

- ▶ **All-in-one solution for audio transport on IP-networks**
- ▶ **Supervised control inputs and outputs**
- ▶ **Supports re-broadcasting**
- ▶ **Configurable audio delay on the output for loudspeaker alignment**
- ▶ **Easy to install and configure via standard web-browser**
- ▶ **IEC 60849 compliant IP solution**

The PRS-1AIP1 is a universal, IP-based audio device supporting VoIP and Audio over IP applications. It is an ideal solution for bridging audio and contact closures over long distance LAN and WAN networks, e.g. in shopping malls, tunnels, in and between railway stations. It extends and interfaces to Praesideo and non-network based traditional public address systems without the need for a PC during operation.

The unit has analog audio inputs and outputs for easy interfacing with optional pilot-tone supervision for emergency sound purposes. One audio input can be switched to microphone sensitivity with built-in microphone supervision. Also, the control inputs offer cable and connection supervision.

Control inputs and outputs can be used to set up an audio connection to start a remote call, but also to pass remote fault events to the system controller.

Functions

Audio

Multiple audio formats are supported: single channel, full duplex 16-bit PCM or G.711 for very low latency, and two-channel send or receive MP3 for high quality audio with various sample rates and compression settings.

The unit provides two balanced line inputs and two balanced line outputs. One of the inputs can be configured as balanced microphone input with a phantom power supply for electret / condenser microphones and microphone connection supervision. The output level is configurable.

Audio connection supervision using a 20 kHz pilot tone is supported, with detection on the audio input of the transmitter and regeneration on the audio output of the receiver.

A configurable audio delay can be used to artificially delay the playback of audio for loudspeaker alignment, e.g. in tunnels.

Audio Routing

Audio signals can be routed in uni-cast to up to 16 receivers, preconfigured or on activation of control inputs. Receivers are able to re-broadcast the incoming audio stream to other receivers. In case the interfaces are on the same LAN also broadcast is supported.

In PCM and G.711 (uLaw and aLaw) full duplex audio interfacing between two units is possible.

Control inputs and outputs

The unit has eight control inputs with configurable supervision on open and/or short-circuits. Eight control outputs have dry relay contacts. Control inputs can be routed to control outputs for remote actions or to pass on fault information between audio transmitter and receiver, in both directions. Control inputs can also be configured to change the audio routing.

An additional dry relay contact is provided for fault indication of the unit, including a high temperature fault situation.

Network Interfaces

The unit interfaces to 10 and 100 Mbit Ethernet networks and announces its IP-address that was given by a DHCP server. It can also search the network for a free IP-address or can be given a static IP-address. A second Ethernet connection is available in hardware to support network redundancy in the future via a software upgrade.

An RS 232 interface is provided to communicate additional serial data over the IP network.

Power Supplies

Two power supply connections are provided as main input and backup input with supervision of both supplies.

Controls and Indicators (front)

- Reset button, recessed
- Two status indicator LEDs for network
- Eight status LEDs for control inputs

Interconnections (rear)

- Eight control inputs on Euro-connector
- Eight control outputs on Euro-connector
- Fault relay output on Euro-connector
- Two balanced audio inputs on Euro-connector (one line input, one line / microphone input)
- Two balanced audio outputs on Euro-connector
- Two Ethernet connections on RJ45
- RS 232 on Sub-D
- RS 485 on Euro-connector (future use)
- Main power supply on jack
- Backup power supply on Euro-connector

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4 / EN 55024
Emissions	acc. to EN 55103-1 / EN 55022

Parts Included

Quantity	Component
1	PRS-1AIP1 IP Audio Interface
1	Power supply
1	Set of connectors

Technical Specifications**Electrical**

External power supply 1	24 to 56 VDC
External power supply 2	24 to 56 VDC
Power consumption	8 W max

Microphone input

Sensitivity	-41 to -26 dBV
Impedance	1360 ohm
Frequency response	100 Hz to 16 kHz
S/N	>60 dB

Line Inputs

Sensitivity	6 to 18 dBV
Impedance	22 Kohm
Frequency response	20 Hz to 18 kHz
S/N	>70 dB

Line outputs

Level	6 dBV max
Pilot tone (20 kHz) level	-20 dBV

Audio formats

MP3	Encoding up to 192 kbps VBR Decoding up to 320 kbps (stereo)
G.711	uLaw, aLaw at 8 or 24 kHz
PCM	16-bit at 8 or 24 kHz

Control inputs

Connectors	8 x
Operation	Removable screw terminals
Operation	Closing contact (with supervision)

Control / fault outputs

Connectors	8 x / 1 x
Operation	Removable screw terminals
Operation	Make contact (SPST, voltage free)
Rating	24 V, 0.5 A

Ethernet

Connector	Dual RJ45, DTE-pinout
Standard	802.3i / 802.3u
Speed	10 / 100 Mbps, auto-negotiation
Flow	Full / half-duplex, auto-negotiation

Protocol	TCP/IP, UDP, RTP, SIP, DHCP, SNMP
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RS 232

Connector	9-pin Sub-D male, DTE-pinout
Pinout	300 to 115.200 Baud
Setting (default)	9600, 8, N, 1

Mechanical

Dimensions (H x W x H)	216 x 38 x 125 mm(8.5 x 1.5 x 4.92 in) (half 19" wide)
Weight	0.7 kg (1.5 lb)
Mounting	Stand-alone or in 19"-rack
Color	Silver with Charcoal

Environmental

Operating temperature	-5 °C to +50 °C (+23 °F to +122 °F)
Start-up temperature	0 °C to +50 °C (+32 °F to +122 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15 to 90 %
Air pressure	600 to 1100 hPa

Ordering Information

PRS-1AIP1 IP Audio Interface
universal, IP-based audio device supporting
VoIP and Audio over IP applications.

PRS-1AIP1

LBB 4402/00 Audio Expander



Features

- ▶ **Four audio inputs – two selectable mic/line and two line inputs**
- ▶ **Four line audio outputs**
- ▶ **Eight supervised control inputs and five control outputs**
- ▶ **Audio processing functions**
- ▶ **Redundant network connection**
- ▶ **Headphone connection and VU meter for audio monitoring**

The audio expander inserts external audio into the system and extracts audio from the system. This unit has control inputs and outputs for external interfacing. It can route its audio inputs permanently or conditionally to any of the zones or to other audio outputs. The routing conditions are configured using the configuration software. The audio output can be programmed to get its signal from any of the audio inputs. The equipment can be used freestanding (tabletop) or in a 19" rack.

Functions

The audio expander has four transformer isolated analog audio inputs. Two of these are selectable between microphone and line. The other two inputs are fixed line inputs. The expander has four transformer isolated analog audio line outputs. It has built-in digital audio processing capable of three parametric and two shelving equalizer sections for all audio in and outputs. They also have a selectable 20 kHz monitoring signal. The 2 x 16-character display and the rotary control enable local status enquiries.

The display shows the VU-meter reading when audio monitoring mode is active. Audio can also be monitored by using a headphone.

The eight control inputs are freely programmable for system actions, and priorities can be assigned to these inputs. Each control input has the ability to monitor the attached line for open and short-circuits. Five control outputs are freely programmable for faults and call-related actions.

The audio expander supports redundant network cabling. The network can be either single branch or redundant loop. The unit is powered from the network controller via the network cable. The expander is self-monitoring and continuously reports its status to the network controller.

Controls and Indicators

- Two x 16-character LCD status display
- Rotary/push control for menu control and headphone volume

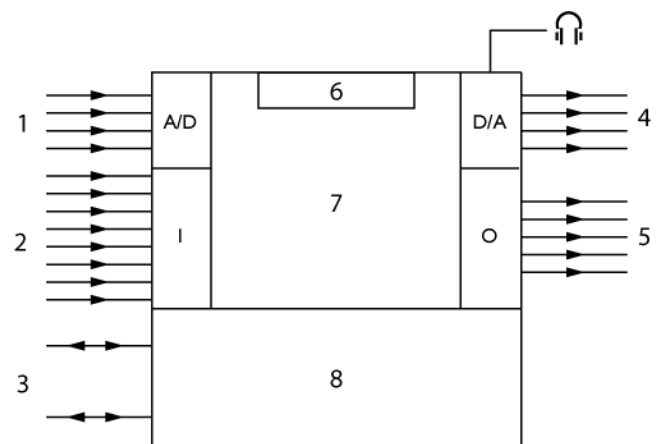
Interconnections

- Two system network connections
- Eight control inputs
- Two mic/line inputs
- Two line inputs
- Four line outputs
- Five control outputs
- Headphone output

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity SOLAS TUV Certificate IEC60849
Safety		acc. to IEC 60065-98
Immunity		acc. to EN 55103-2
Emissions		acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)		acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Audio inputs
- 2 Control inputs
- 3 Plastic optical fiber network
- 4 Audio outputs
- 5 Control outputs
- 6 Display and control
- 7 Network processor and DSP
- 8 Network redundancy switching

Parts Included

Quantity Component

- | | |
|---|---------------------------------------|
| 1 | LBB 4402/00 Audio Expander |
| 1 | Set of mounting brackets for 19" rack |
| 1 | Set of feet |
| 1 | Set of connectors |

Technical Specifications

Electrical

Power consumption	5.6 W (DC)
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Performance

Frequency response	20 Hz to 20 kHz (-3 dB)
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Line inputs

Connectors	3-pin XLR and 2 cinch (for each line)
S/N	>87 dBA at maximum level
CMRR	>40 dB

Input range	+6 dBV to +18 dBV (XLR) -6 dBV to +6 dBV (cinch)
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Mic / line inputs

Connector	3-pin XLR and 2 cinch (for each line)
Nominal Input Level	-57 dBV
S/N	>62 dBA with 25 dB headroom
CMRR	>55 dB at 100 Hz

Input Impedance	1360 ohm
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Phantom supply	12 V ±1 V at 15 mA
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Input range	-7 dB to 8 dB ref nominal input level
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Line outputs

Connectors	XLR and 2 cinch (for each line)
Output Impedance	<100 ohm
S/N	>89 dBA at maximum level

Crosstalk	<-85 dB
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Signal range	-12 dBV to +18 dBV (XLR) -24 dBV to +6 dBV (cinch)
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Distortion at 1 kHz	<0.05%
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Mechanical

Dimensions (H x W x D)

for tabletop, with feet	92 x 440 x 400 mm (3.6 x 17.3 x 15.7 in)
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for 19" rack, with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
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in front of brackets	40 mm (1.6 in)
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behind brackets	360 mm (14.2 in)
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Weight	7 kg (15.4 lbs)
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Mounting	Tabletop, 19"-rack
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Color	Charcoal (PH 10736) with silver
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Environmental

Operating temperature	-5 °C to +55 °C (23 °F to 131 °F)
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Storage temperature	-20 °C to +70 °C (-4 °F to 158 °F)
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Humidity	15% to 90%
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Air pressure	600 to 1100 hPa
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Ordering Information

LBB 4402/00 Audio Expander

LBB4402/00

inserts external audio into the system and extracts audio from the system.

LBB 4404/00 CobraNet Interface



Features

- ▶ **Four CobraNet™ audio inputs**
- ▶ **Four CobraNet™ audio outputs**
- ▶ **Eight supervised control inputs and 5 control outputs**
- ▶ **Redundant Praesideo network connection**
- ▶ **Redundant CobraNet™ network connection**
- ▶ **Headphone connection and VU-meter for audio monitoring**

The IF design award winning CobraNet™, developed by Peak Audio, is a network protocol for real-time uncompressed digital audio distribution over industry standard 100Base-T Ethernet networks. Typical applications are room coupling and audio distribution over long distances.

CobraNet™ audio channels can be configured as inputs to a system, where they can be routed permanently or conditionally to any of the zones or audio outputs. The routing conditions are configured using the configuration software. Calls and background music (BGM) sources can be routed to CobraNet™ channels. Digital audio data is directly converted between an audio system and CobraNet™, with no other audio processing than sample rate conversion. Control inputs and outputs are provided for external interfacing. The equipment can be used free-standing (tabletop) or in a 19" rack.

CobraNet™ is a registered trademark of Peak Audio, a Division of Cirrus Logic, Inc.

Functions

The CobraNet Interface can simultaneously interface up to four digital audio channels from CobraNet into an audio system (e.g. Praesideo, DCN) and up to four audio channels from an audio system into a CobraNet™ network. This includes converting between the 44.1 kHz sample rate used by Praesideo, and the 48 kHz sample rate that CobraNet™ uses, as well as conserving volume levels. It can also route audio channels between itself and other CobraNet Interfaces, in the same or in other audio system networks, or to third party CobraNet™ units. Only audio channels are routed via the interface, not control data. This means that if units are used to link multiple systems, a PC master must always access the network controllers through their open interfaces for control purposes.

The eight control inputs are freely programmable for system actions, and priorities can be assigned to these inputs. Five control outputs are freely programmable for faults and call-related actions. Control inputs can also be programmed for momentary or toggle operation using the configuration software. Each control input has the ability to monitor the attached line for open and short-circuits.

The 2 x 16-character display and the rotary control enable local status enquiries. The display shows the VU-meter reading when the audio monitoring mode is active. Audio can be monitored by headphone.

The interface supports redundant network cabling of both an audio system and CobraNet™ networks. It gets its power from the network controller via the network cable. The unit is self-monitoring and continually reports its status to the network controller.

Controls and indicators

- 2 x 16 character LCD status display
- Rotary/push control for menu control and headphone volume

Interconnections

- Two optical network connections
- Two RJ45 Ethernet connectors for the CobraNet™
- Eight control inputs to enable audio inputs and audio outputs
- Five control outputs to indicate channel engaged state
- One headphone output 3.5 mm (0.14 in) stereo

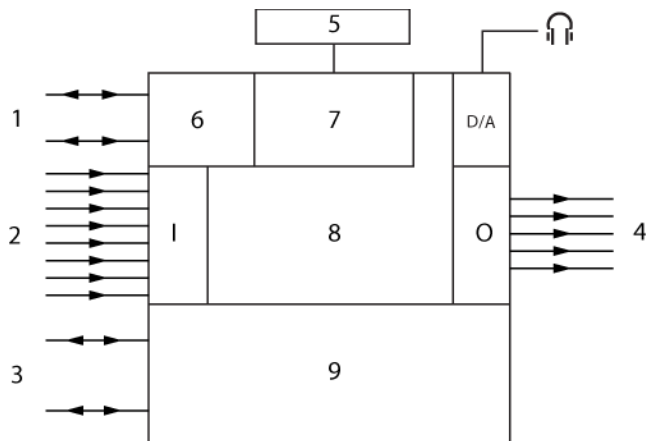


Rear view

Certifications and Approvals

Region	Certification	
Europe	CE	TUV Certificate IEC60849
Safety		acc. to IEC 60065-98
Immunity		acc. to EN 55103-2
Emissions		acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)		acc. to IEC 60849 / BS 5839-8

Installation/Configuration Notes



- 1 Ethernet network
- 2 Control inputs
- 3 Plastic optical fiber network
- 4 Control outputs
- 5 Display and control
- 6 CobraNet™ interface
- 7 Sample rate conversion
- 8 Network processor and DSP
- 9 Network redundancy switching

Parts Included

Quantity	Component
1	LBB 4404/00 CobraNet Interface
1	Set of mounting brackets for 19" rack
1	Set of feet
1	Set of connectors

Technical Specifications

Electrical

Supply voltage	24 to 48 VDC
Power consumption	11 W (DC)
Audio Transport	Ethernet
Channels	4 in / 4 out per interface Max 64 on CobraNet™
Compliance	IEEE 802.3
Audio Transport	16 / 20 / 24-bit
Sample Rate	48 kHz
Latency	5.33 ms
Integrity assurance	Watchdog

Mechanical

Dimensions (H x W x D)	
for tabletop, with feet	92 x 440 x 400 mm (3.6 x 17.3 x 15.7 in)
for 19" rack, with brackets	88 x 483 x 400 mm (3.5 x 19 x 15.7 in)
in front of brackets	40 mm (1.6 in)
behind brackets	360 mm (14.2 in)
Weight	7 kg (15.4 lbs)
Mounting	Tabletop, 19"-rack
Color	Charcoal (PH 10736) with silver

Environmental

Operating temperature	-5 °C to +55 °C (23 °F to +55 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

LBB 4404/00 CobraNet Interface

LBB4404/00

network protocol for real-time uncompressed digital audio distribution over industry standard 100Base-T Ethernet networks.

PRS-NSP Network Splitter



Features

- ▶ **Two current-limited network tap-offs**
- ▶ **Supports redundant network connection on main loop**
- ▶ **Can feed power from an external supply to the network**
- ▶ **Indicators for power and fault status**

The network splitter is used in a network to provide two branches from the main cable run. It can use an external DC power supply, or it can use the power supply from the network controller. The unit automatically switches to the local power supply unit when it is connected to it, reducing the power drain on the main network. The network splitter can also function as a repeater, effectively extending the length of the main network another 50 meters.

Functions

The splitter inserts Praesideo units connected to a tap-off into the main network, however without the redundancy of the main loop. The maximum current supplied for each of the two tap-offs is separately selectable. External power from the local supply is used only for the tap-offs, and is not fed into the main system cable. The network splitter has two LEDs for diagnostic purposes.

Controls and indicators

- Power status LED
- Fault status LED
- Jumpers to configure tap-offs power behavior

Interconnections

- Two system network connections for main network
- Two system network connection for network tap-offs
- External power supply input

Certifications and Approvals

Safety	acc. to IEC 60065-98
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 5839-8

Parts Included

Quantity Component

1	PRS-NSP Network Splitter
1	Mounting bracket
1	Power supply connector

Technical Specifications

Electrical

Power consumption	3.9 W (network)
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External power supply

Voltage	24 to 56 VDC, 48 VDC nominal
Current	2.5 A maximum (5 A peak <2 s)

Mechanical

Dimensions (H x W x D)

Without bracket	27 x 243 x 80 mm (1.1 x 9.6 x 3.1 in)
With bracket	34 x 243 x 84 mm (1.3 x 9.6 x 3.3 in)
Weight	0.7 kg (1.5 lb)
Mounting	Bracket (two screws)
Color	Charcoal

Environmental

Operating temperature	-5 °C to +45 °C (+23 °F to +113 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Relative humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

PRS-NSP Network Splitter

used in a network to provide two branches from the main cable run.

PRS-NSP

PRS-FIN, PRS-FINNA and PRS-FINS Fiber Interfaces



Features

- ▶ Redundant network connection
- ▶ Indicators for power and fault status
- ▶ Two supervised control inputs (not PRS-FINNA)
- ▶ Can use a local power supply

Most of the Praesideo system units have plastic fiber optic interfaces. Plastic fiber is used to interconnect nodes which are less than 50 meters apart. For distances of more than 50 meters, glass fiber optic cable is used. A fiber interface converts from plastic to glass fiber, and vice versa. The fiber interfaces have a power supply input to provide power to remote network sections, and two control inputs. The control inputs can pass on supervision information about the power supply connected to the fiber interface.

Functions

These units interface glass fiber optical cable with plastic fiber optical cable, and support redundant wiring topology. In many applications this is necessary, because glass fiber can bridge much longer distances than plastic fiber. Any conversion to glass fiber must be converted back to plastic fiber before other Praesideo units can be attached, since they all have plastic fiber interfaces. This means that these units are always used in pairs.

Each interface can use an external 48 VDC power supply to provide power for itself, as well as for remote parts of the network. If there is no external power source, the interface uses power from the network controller. The PRS-FIN and PRS-FINS have two control inputs. These can be used to accept e.g. the fault output of the external power supply

(UPS), allowing the units to monitor the power supply and report faults to the network controller. The fiber interfaces have two LEDs for diagnostic purposes.

The PRS-FINNA is the same as the PRS-FIN except that it has no network node address. This has the advantage that the unit does not occupy one of the 60 possible addresses in the network. It also has the disadvantage that without an address, it is not possible to access the status of the two control inputs, as it is with the PRS-FIN.

The PRS-FINS is the same as the PRS-FIN, except that it accepts single-mode glass optical fiber instead of multi-mode glass optical fiber. However, this does not increase the maximum permitted cable length of a Praesideo network.

Controls and indicators

- Power status LED
- Network status LED

Interconnections

- Network connection for plastic optical fiber
- Network connection for glass optical fiber
- External power supply input
- Two control inputs (not PRS-FINNA)

Certifications and Approvals

Safety	acc. to IEC 60065-98
Eye safety	acc. to IEC 60825-1
Immunity	acc. to EN 55103-2 / EN 50130-4
Emissions	acc. to EN 55103-1 / FCC-47 part 15B
EVAC (TÜV certified)	acc. to IEC 60849 / BS 58398

Installation/Configuration Notes

The PRS-FINNA and the PRS-FIN are often used in combination. The PRS-FINNA is placed in the local (POF) network, and connected to a (remote) PRS-FIN, which can then provide remote monitoring.

The PRS-FINS is mostly used in installations where single-mode (mono-mode) glass fiber is already present. Otherwise multi-mode glass fiber is a cheaper alternative.

Parts Included

Quantity	Component
1	PRS-FIN Fiber Interface or PRS-FINNA Fiber Interface Non-Addressable or PRS-FINS Fiber Interface Single Mode
1	Mounting bracket
1	Control input connector
1	Power supply connector

Technical Specifications

Electrical

Power consumption	4.6 W (DC)
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External power supply

Voltage	24 to 56 VDC, 48 VDC nominal
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Current	2.5 A maximum (5 A peak < 2 s)
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Control inputs

Connector	Screw terminals
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Operation	Closing contact (with supervision)
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Glass optical fiber interface

Connector (PRS-FIN and PRS-FINNA)	SC (Avago AFBR-5803Z transceiver)
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Connector (PRS-FINS)	SC (Avago AFCT-5805BZ transceiver)
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Wavelength	1300 nm
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Cable type (PRS-FIN and PRS-FINNA)	62.5/125 µm or 50/125 µm multi-mode
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Cable type (PRS-FINS)	9/125 µm single-mode
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Mechanical

Dimensions (H x W x D)

Without bracket	27 x 243 x 80 mm (1.1 x 9.6 x 3.1 in)
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With bracket	34 x 243 x 84 mm (1.3 x 9.6 x 3.3 in)
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Weight	0.7 kg (1.5 lb)
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Mounting	Bracket (2 screws)
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Color	Charcoal
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Environmental

Operating temperature	-5 °C to +45 °C (+23 °F to +113 °F)
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Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
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Humidity	15% to 90%
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Air pressure	600 to 1100 hPa
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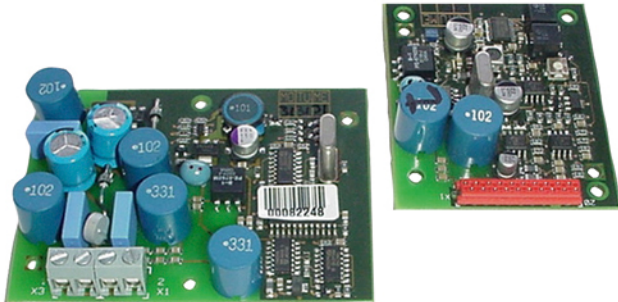
Ordering Information

PRS-FIN Fiber Interface full network address, multi-mode	PRS-FIN
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PRS-FINNA Fiber Interface Non-Addressable no network address, multi-mode	PRS-FINNA
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PRS-FINS Fiber Interface Single Mode full network address, single-mode	PRS-FINS
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LBB 4442/00 Line Supervision Set



Features

- ▶ Loudspeaker line monitoring without additional cabling
- ▶ Supervision-master mounting in the power amplifier
- ▶ Supervision-slave mounting at the end of the loudspeaker line
- ▶ Open-circuit fault detection
- ▶ Compatible with 100 V and 70 V loudspeaker lines
- ▶ Supervision-slave powered from the power amplifier

The Praesideo system uses a unique loudspeaker line monitoring principle, which requires no additional cable. The loudspeaker line itself is used to communicate with the supervision-slave installed at the end of the loudspeaker line.

The LBB 4442/00 contains the master and slave device for supervision of a single loudspeaker line. For supervision of multiple loudspeaker line branches and loudspeakers, the use of the LBB 4440/00 Supervision Control Board in conjunction with the LBB 4441/00 and LBB 4443/00 Supervision Boards is recommended.

Functions

Each amplifier channel in an LBB 442x/x0 Power Amplifier unit has an internal mechanical and electrical provision for an LBB 4442/00 master board. The slave board fits into the Bosch range of loudspeakers and can be mounted in the last speaker in the line, or in a separate housing at the end of the line. The short-to-ground and short-circuit detection for the lines are incorporated in the power amplifier. Line faults are detected and reported within 100 s. The pilot tone generator for speaker monitoring is generated in the amplifier and powers the slave unit. Line monitoring can be switched on and off from the configuration software.

Interconnections

- 20-pin flat cable connector (master)

- Two screw terminals (slave)

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity SOLAS TUV Certificate IEC60849
Immunity	EN 55103-2	
Emission	EN 55103-1 / FCC-47 part 15B	

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

Ceiling loudspeakers	Column loudspeakers	Sound projectors
LC1-WM06E	LBC 3210/00	LBC 3432/01
LC1-UM06E	LA1-UM20E	LS1-OC100E
LC1-UM12E	LA1-UM40E	
LC1-UM24E	Horn loudspeakers	
LBC 3510/40	LBC 3403/16	
LBC 3520/40	LBC 3404/16	
LBC 3530/40	LBC 3405/16	
Cabinet loudspeakers	LBC 3406/16	
LBC 3011/41	LH1-10M10E	
LBC 3011/51	LBC 3482/00	
LB1-UM06E	LBC 3483/00	
LBC 3018/00	LBC 3484/00	

Technical Specifications

Mechanical

Slave

Dimensions (H x W x D)	16 x 80 x 60 mm (0.6 x 3.1 x 2.3 inch)
Weight	50 g (1.7 ounces)
Mounting	2 screws

Master

Dimensions (H x W x D)	17 x 60 x 50 mm (0.7 x 2.3 x 2 inch)
Weight	30 g (1.1 ounces)
Mounting	Internally in all Praesideo Power Amplifiers

Environmental

Operating temperature	-5 °C to +55 °C (+23 to 131 °F)
Storage temperature	-20 °C to +70 °C (-4 to 158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

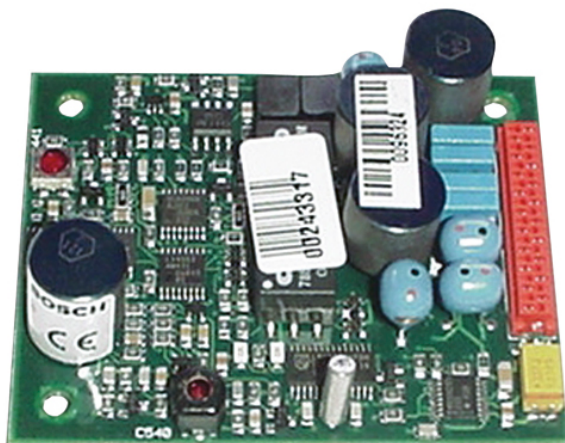
Ordering Information

LBB 4442/00 Line Supervision Set	LBB4442/00
contains the master and slave device for supervision of a single loudspeaker line.	

Accessories

LBB 4446/00 Set of Supervision Board Brackets (10 pcs)	LBB 4446/00
intended for mounting LBB 4442/00 Supervision Slave Boards.	

LBB 4440/00 Supervision Control Board



Features

- ▶ **Multiple speaker and line monitoring without additional cabling**
- ▶ **Mounted inside the power amplifier**
- ▶ **Controls up to 80 speaker and line supervision boards**
- ▶ **Open-circuit fault detection**
- ▶ **Compatible with 100 V and 70 V loudspeaker lines**

The board controls the communication between the Praesideo system and the loudspeaker or loudspeaker line supervision boards.

The LBB 4440/00 is the supervision control board, monitoring multiple supervision-slave boards (LBB 4441/00 and LBB 4443/00), which are mounted inside the loudspeakers on the line. With these boards working together, it is possible to supervise 16, 64, or up to 80 loudspeakers or loudspeaker lines on a 500-watt amplifier.

Functions

Each amplifier channel in an LBB 442x/10 Power Amplifier unit has an internal mechanical and electrical provision for an LBB 4440/00 control board. Communication between the supervision boards takes place inaudibly over the loudspeaker line, requiring no additional wiring. The audio signals on the lines do not affect communication.

Monitoring can be switched on and off from the configuration software. The monitoring of the presence of supervisor boards is continuous. Loudspeaker faults are detected and reported within 300 s, and line faults are detected and reported within 100 s.

Interconnections

20-pin connector and flat cable

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity TUV Certificate IEC60849
Immunity	EN 55103-2	
Emission	EN 55103-1 / FCC-47part 5B	

Installation/Configuration Notes

The following power amplifiers have a provision for installing a supervision control board:

- LBB 4421/10
- LBB 4422/10
- LBB 4424/10

Required loudspeaker line characteristics:

Preferred cable	Single twisted pair, 0.75 mm ² to 1.5 mm ²
Maximum length	1 km (including branches, max. 300 m adjacent to other supervised loudspeaker cables)
Maximum loop resistance	38 ohm
Maximum inductance	750 µH
Minimum total loudspeaker impedance	120 ohm @ 70 kHz (independent of amplifier power)
Maximum capacity	300 nF
Maximum number of supervision boards per amplifier channel	80 @ 500 W 40 @ 250 W 20 @ 125 W
Loudspeaker voltage	70 V, 100 V

Note The use of multi-wire cables is not recommended in combination with line supervision, because crosstalk between audio channels may influence the line supervision.

Note If the maximum load capacity for the power amplifier output is less than 300 nF, the maximum load capacity of the power amplifier is leading.

Technical Specifications

Mechanical

Dimensions (H x W x D)	60 x 50 x 17 mm without bracket (2.4 x 2.0 x 0.7 inch)
Weight	30 g (1 ounce)
Mounting	Internally in the power amplifier Plastic brackets for horizontal and vertical installation included

Environmental

Operating temperature	-5 °C to +55 °C (23 to 131 °F)
Storage temperature	-20 °C to +70 °C (-4 to 158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

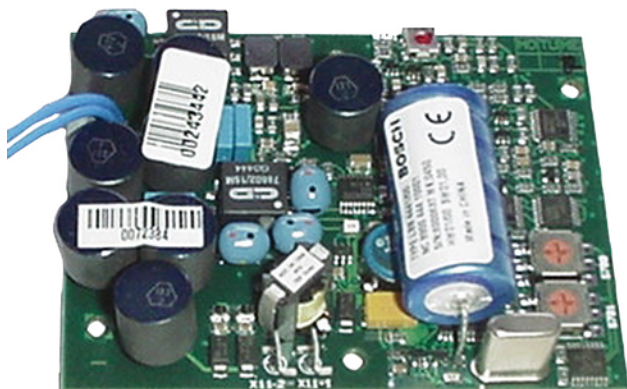
Ordering Information

LBB 4440/00 Supervision Control Board	LBB4440/00
for use in the power amplifier on each amplifier channel	

Accessories

LBB 4441/00 Loudspeaker Supervision Board	LBB4441/00
monitors the integrity of a loudspeaker.	
LBB 4443/00 End of Line (EOL) Supervision Board	LBB4443/00
monitors the integrity of a loudspeaker line.	

LBB 4441/00 Loudspeaker Supervision Board



Features

- ▶ **Loudspeaker and loudspeaker line monitoring without additional cabling**
- ▶ **Open-circuit fault detection**
- ▶ **Compatible with 100 V and 70 V loudspeaker lines**
- ▶ **Powering of the supervision-board from the power amplifier**
- ▶ **Communication is not affected by the audio signals on the loudspeaker line**

The board monitors the integrity of a loudspeaker. It works together with the LBB 4440/00 Supervision Control Board. The speaker status is communicated to the LBB 4440/00 via the existing loudspeaker cable.

Functions

The LBB 4441/00 is mounted inside the loudspeaker casing and communicates the status of the loudspeaker to the LBB 4440/00 Supervision Control Board via the existing loudspeaker cable. The board detects and reports loudspeaker faults within 300 s, line faults within 100 s.

Interconnections

- Two 30 cm flying leads
- Two faston connectors

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity TUV Certificate IEC60849

Immunity	EN 55103-2
Emission	EN 55103-1 / FCC-47part 15B

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

Ceiling loudspeakers	Column loudspeakers	Sound projectors
LC1-WM06E	LBC 3210/00	LBC 3432/01
LC1-UM06E	LA1-UM20E	LS1-OC100E
LC1-UM12E	LA1-UM40E	
LC1-UM24E	Horn loudspeakers	
LBC 3510/40	LBC 3403/16	
LBC 3520/40	LBC 3404/16	
LBC 3530/40	LBC 3405/16	
Cabinet loudspeakers	LBC 3406/16	
LBC 3011/41	LH1-10M10E	
LBC 3011/51	LBC 3482/00	
LB1-UM06E	LBC 3483/00	
LBC 3018/00	LBC 3484/00	

The board must be connected after the ceramic terminal block with the thermal fuse. In case of a fire, the thermal fuse will blow and disconnect the board from the loudspeaker line. The trip point of the thermal fuse that is connected to the ceramic block is lower than the melting point of the solder on the board to prevent short-circuits in the supervision board and the loudspeaker line.

When the loudspeaker does not contain a ceramic terminal block with a thermal fuse, use an LBC 1256/00 EVAC Connection Adapter

Technical Specifications

Mechanical

Dimensions (H x W x D)	78 x 60 x 22 mm (3.0 x 2.3 x 0.8 in)
Weight	70 g (2.4 ounces)
Mounting	Internally in the loudspeaker An optional mounting bracket, LBB 4446/00 is available

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

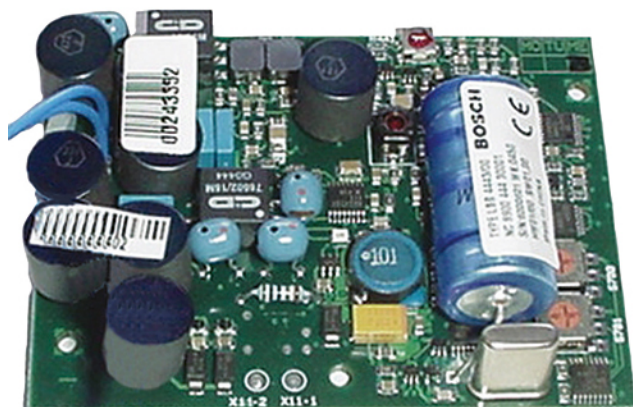
LBB 4441/00 Loudspeaker Supervision Board monitors the integrity of a loudspeaker.	LBB4441/00
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Accessories

LBB 4440/00 Supervision Control Board for use in the power amplifier on each amplifier channel	LBB4440/00
--	-------------------

LBB 4446/00 Set of Supervision Board Brackets (10 pcs) intended for mounting LBB 4442/00 Supervision Slave Boards.	LBB 4446/00
--	--------------------

LBB 4443/00 End of Line (EOL) Supervision Board



Features

- ▶ **Loudspeaker line monitoring without additional cabling**
- ▶ **Open-circuit fault detection**
- ▶ **Compatible with 100 V and 70 V loudspeaker lines**
- ▶ **Powering of the supervision-board from the power amplifier**
- ▶ **Communication is not affected by the audio signals on the line**

The board monitors the integrity of a loudspeaker line. The boards work together with the LBB 4440/00 Supervision Control Board to monitor the status of the loudspeaker line and all of its branches. The line status is communicated to the LBB 4440/00 via the existing loudspeaker cable.

Functions

The board is mounted inside the case of the last loudspeaker on the loudspeaker line, or inside a separate case. Supervision of branched lines is possible. If a loudspeaker line has multiple branches, a separate LBB 4443/00 is required for the last loudspeaker in each branch. The board detects and reports line faults within 100 s.

Interconnections

- Two 30 cm flying leads
- Two faston connectors

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity TUV Certificate IEC60849
Immunity	EN 55103-2	
Emission	EN 55103-1 / FCC-47part 15B	

Installation/Configuration Notes

The following loudspeakers have a provision for installing a supervision board:

Ceiling loudspeakers	Column loudspeakers	Sound projectors
LC1-WM06E	LBC 3210/00	LBC 3432/01
LC1-UM06E	LA1-UM20E	LS1-OC100E
LC1-UM12E	LA1-UM40E	
LC1-UM24E	Horn loudspeakers	
LBC 3510/40	LBC 3403/16	
LBC 3520/40	LBC 3404/16	
LBC 3530/40	LBC 3405/16	
Cabinet loudspeakers		LBC 3406/16
LBC 3011/41	LH1-10M10E	
LBC 3011/51	LBC 3482/00	
LB1-UM06E	LBC 3483/00	
LBC 3018/00	LBC 3484/00	

Technical Specifications

Mechanical

Dimensions (H x W x D)	78 x 60 x 22 mm (3.0 x 2.3 x 0.8 in)
Weight	70 g (2.4 ounces)
Mounting	Internally in the loudspeaker An optional mounting bracket, LBB 4446/00 is available

Environmental

Operating temperature	-5 °C to +55 °C (+23 °F to +131 °F)
Storage temperature	-20 °C to +70 °C (-4 °F to +158 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

LBB 4443/00 End of Line (EOL) Supervision Board	LBB4443/00
--	-------------------

monitors the integrity of a loudspeaker line.

Accessories

LBB 4440/00 Supervision Control Board	LBB4440/00
--	-------------------

for use in the power amplifier on each amplifier channel

LBB 4446/00 Set of Supervision Board Brackets (10 pcs)	LBB 4446/00
---	--------------------

intended for mounting LBB 4442/00 Supervision Slave Boards.

LBB 4416/xx Network Cables



The network cables come in different lengths with connectors at both ends. The extension of the type number indicates the length of the cable. The LBB 4416/00 comes without connectors. The connectors (LBB 4417/00) are available for it separately.

Functions

LBB 4416 /01 /02 /05 /10 /20 /50

These are special cables with two plastic fibers for data communication and two copper cores for the power supply.

The cables all have the network connectors fitted. They connect the network controller to power amplifiers, audio expanders, call stations etc.

LBB 4416/00

This is a special cable with two plastic fibers for data communication and two copper cores for the power supply.

The cable is 100 meters long, and comes without network connectors. LBB 4417/00 connectors are fitted after the cable has been cut to the required length. It connects the network controller to power amplifiers, audio expanders, call stations etc.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity TUV Certificate IEC60849

Flame retardant	acc. to IEC 60332-1 60s
Halogen level	acc. to IEC 60754-2 pH >4.3, conductivity <10 uS/mm
Smoke level	acc. to IEC 61034-2 light transmission >60%

Installation/Configuration Notes

The cables have the following lengths

LBB4416/00	100 m (without connectors)
LBB4416/01	0.5 m
LBB4416/02	2 m
LBB4416/05	5 m
LBB4416/10	10 m
LBB4416/20	20 m
LBB4416/50	50 m

Technical Specifications

Electrical

Wire	Copper, stranded 1 mm ²
Resistance	<0.018 ohm/m

Optical

Fiber	PMMA, 1 mm
Numeric aperture	0.5
Attenuation	<0.17 dB/m @ 650 nm
Bending loss	<0.5 dB (r=20 mm, 90°) JIS C6861

Mechanical

Dimensions (diameter)	7 mm (0.28 in)
Color	Black
Pull force	150 N (max)

Environmental

Operating temperature	-40 °C to +65 °C (-40 °F to 149 °F)
Humidity	15% to 90%
Air pressure	600 to 1100 hPa

Ordering Information

LBB 4416/00 Network Cable 100m without the network connectors fitted	LBB4416/00
LBB 4417/00 Set Network Connectors (20 pcs) 20 connectors that can be used with the network cable.	LBB4417/00
LBB 4418/00 Cable Connector Tool Kit	LBB4418/00
LBB 4416/01 Network Cable Assembly 0.5m with the network connectors fitted	LBB4416/01

Ordering Information

LBB 4416/02 Network Cable Assembly 2m with the network connectors fitted	LBB4416/02
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LBB 4416/05 Network Cable Assembly 5m with the network connectors fitted	LBB4416/05
--	-------------------

LBB 4416/10 Network Cable Assembly 10m with the network connectors fitted	LBB4416/10
---	-------------------

LBB 4416/20 Network Cable Assembly 20m with the network connectors fitted	LBB4416/20
---	-------------------

LBB 4416/50 Network Cable Assembly 50m with the network connectors fitted	LBB4416/50
---	-------------------

Accessories

LBB 4419/00 Cable Couplers (10 pcs) used to couple LBB 4416/xx network cable as- semblies for extension.	LBB4419/00
---	-------------------

LBB 4417/00 Set Network Connectors (20 pcs)



The set contains 20 connectors that can be used with the network cable LBB 4416/00 to make up to ten custom cables. The cable/connector toolkit LBB 4418/00 is required for assembly.

Certifications and Approvals

Region	Certification	
Europe	CE	SOLAS
		TUV Certificate IEC60849

Ordering Information

LBB 4417/00 Set Network Connectors (20 pcs)	LBB4417/00
20 connectors that can be used with the network cable.	

LBB 4418/00 Cable Connector Tool Kit



Certifications and Approvals

Region	Certification	
Europe	CE	TUV Certificate IEC60849

Parts Included

Quantity	Component
1	Standard cutting pliers
1	Stripping pliers
1	Crimping pliers
1	Plastic optical fiber cutting/stripping tool
1	Plastic optical fiber positioning and indent tool
1	Torx screw driver
1	Spare cutting system

Ordering Information

LBB 4418/00 Cable Connector Tool Kit	LBB4418/00
---	-------------------

Accessories

LBB 4418/50 Spare cutting system	LBB4418/50
---	-------------------

LBB 4418/50 Spare Cutting System (2 pcs)



This set contains two replacements for the plastic optical fiber cutting/stripping tool contained in LBB 4418/00.

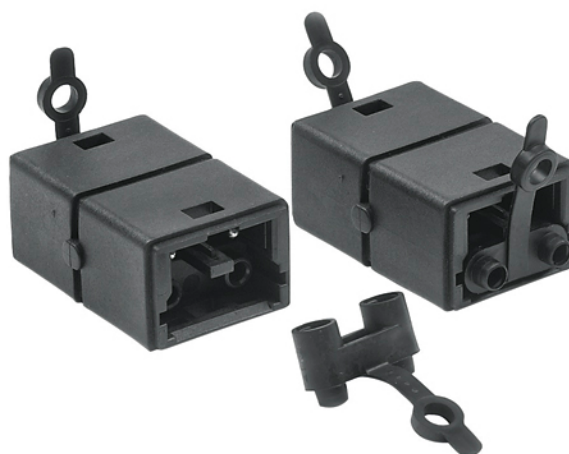
Installation/Configuration Notes

After 1260 cuts, the cutter/stripping tool in the LBB 4418/00 blocks automatically. In that case, the cutting system must be replaced.

Ordering Information

LBB 4418/50 Spare Cutting System (2 pcs) **LBB4418/50**
two replacement cutting systems for
LBB 4418/00

LBB 4419/00 Cable Couplers (10 pcs)



Cable couplers are used to couple LBB 4416/xx network cable assemblies for extension.

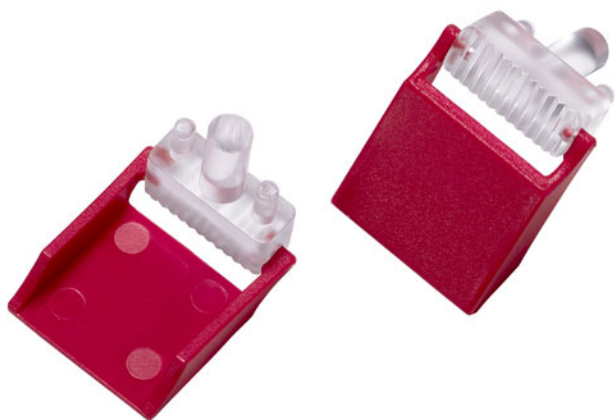
Certifications and Approvals

Region	Certification	
Europe	CE	SOLAS TUV Certificate IEC60849

Ordering Information

LBB 4419/00 Cable Couplers (10 pcs) **LBB4419/00**
used to couple LBB 4416/xx network cable as-
semblies for extension.

LBB 4436/00 Set of Key Covers (10 pcs)



The key covers are snap-on replacements for the original lenses on an LBB 4432/00 Call Station Keypad that protect the keys from being accidentally pressed.

Certifications and Approvals

Region	Certification	
Europe	CE	TUV Certificate IEC60849

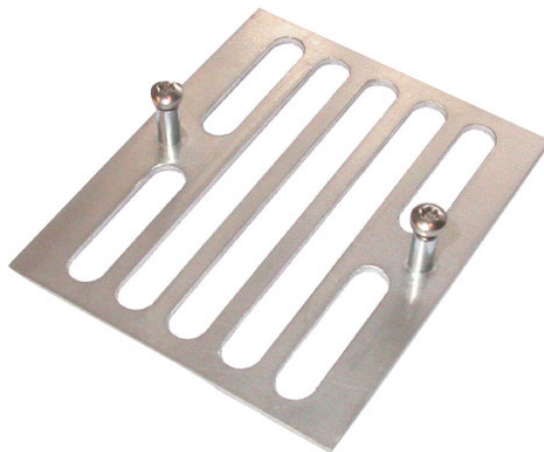
Parts Included

Quantity	Component
10	Key covers
10	Replacement lenses

Ordering Information

LBB 4436/00 Set of Key Covers (10 pcs)	LBB4436/00
10 key covers and 10 replacement lenses	

LBB 4446/00 Set of Supervision Board Brackets (10 pcs)



The supervision board brackets are intended for mounting LBB 4442/00 Supervision Slave Boards, LBB 4441/00 Loudspeaker Supervision Boards and LBB 4443/00 EOL Supervision Boards into or onto loudspeaker cabinets, or into junction boxes and equipment racks.

Parts Included

Quantity	Component
10	Supervision Board Brackets

Ordering Information

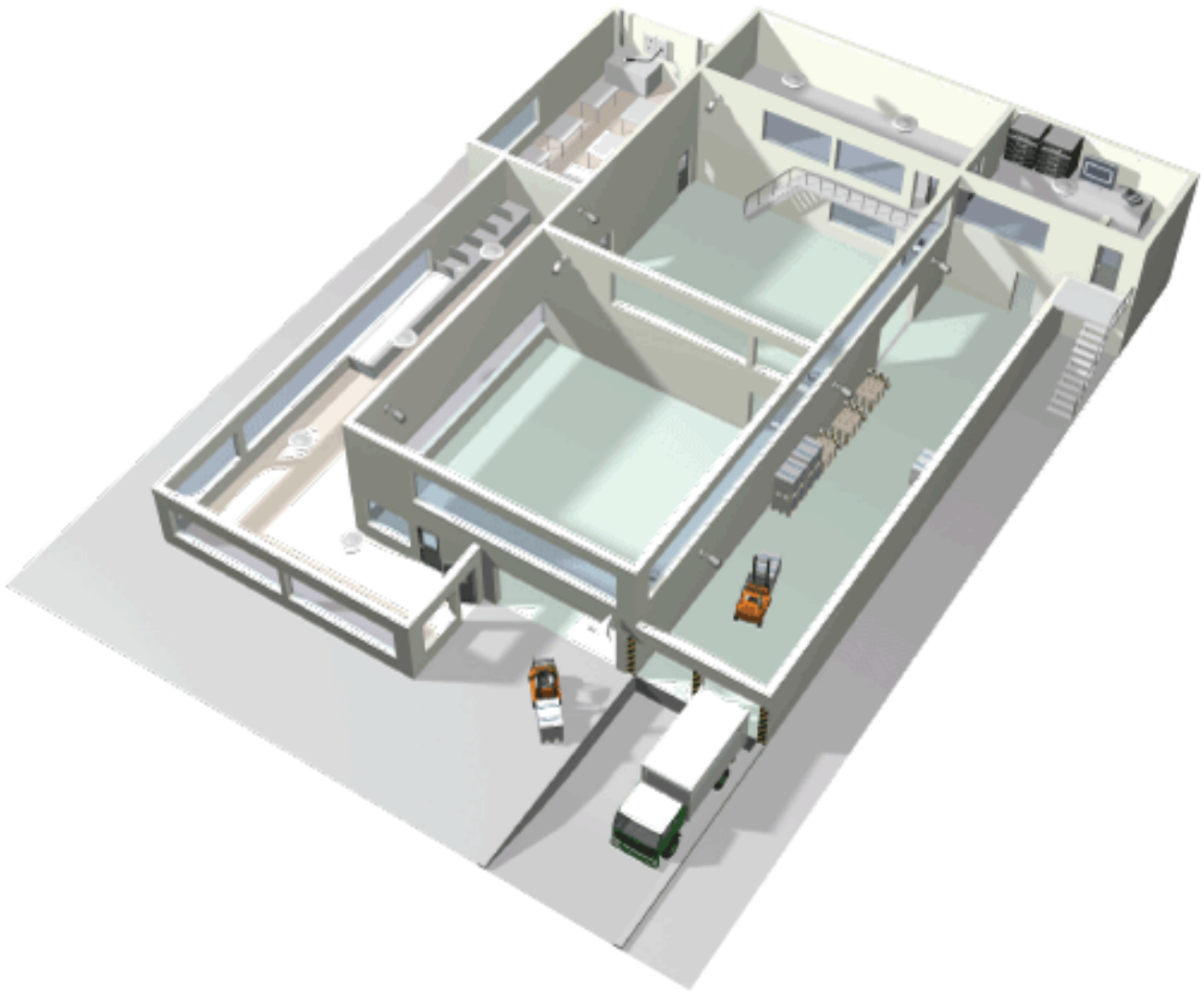
LBB 4446/00 Set of Supervision Board Brackets (10 pcs)	LBB 4446/00
intended for mounting LBB 4442/00 Supervision Slave Boards.	

Praesideo - Configuration Examples

2

The Praesideo system can be configured to meet any set of requirements, even for complex system functions. The three examples in this section demonstrate the versatility of the system, ranging from small applications to extensive and complex installations.

Example 1 - Factory



Example 1

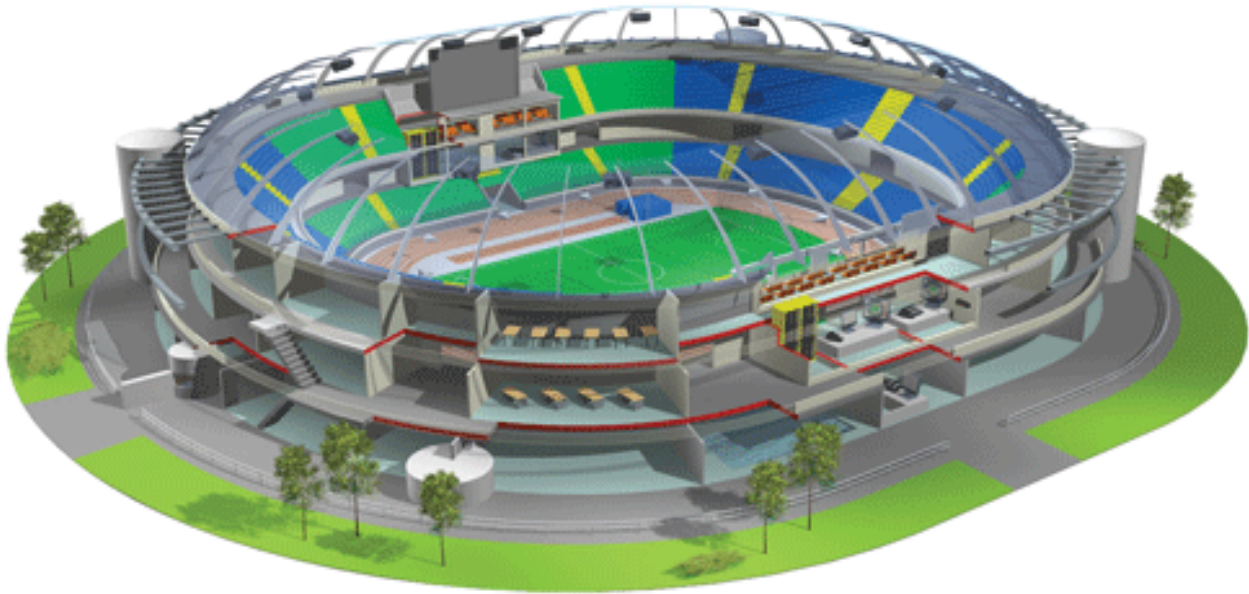
Example 1 describes a factory (a small size system) with:

- Production hall
- Offices
- Canteen
- Workshop
- Storage
- Reception desk
- Loading bay

Each of these has been configured as a separately addressable zone. Only the reception desk has a call station with keypads for making business calls or emergency announcements to one or more of the zones. In the canteen, a handheld microphone is available for local announcements. Some of the network controller's audio inputs are used to connect a music server that acts as a multichannel background music (BGM) source with low priority. Volume setting and routing of the BGM channels to selected zones is done from a call station keypad. However, in some areas, local wall panels connected to the control inputs of the amplifiers provide volume setting and channel selection.

The network controller makes automatic, scheduled announcements to indicate breaks and shift changes. Alert and evacuation messages, prerecorded on the flash card in the network controller, are triggered from the fire detection system connected to the control inputs. Four-channel amplifiers provide power to the zones. The built-in DSP parametric equalizer in each amplifier is set up for full and balanced sound from the connected ceiling loudspeakers, sound projectors and horn loudspeaker. A spare amplifier is connected; if one of the amplifiers fails, it will kick in automatically. Line supervision sets continually monitor the loudspeaker lines, inaudibly communicating with end-of-line boards directly over the loudspeaker lines, assuring that the connections are intact. The network controller logs calls and fault events internally for either remote viewing on a PC via Ethernet, or locally on its own LCD (last 200 faults).

Example 2 - Sports Stadium



Example 2

Example 2 describes a sports stadium (a medium size system) with:

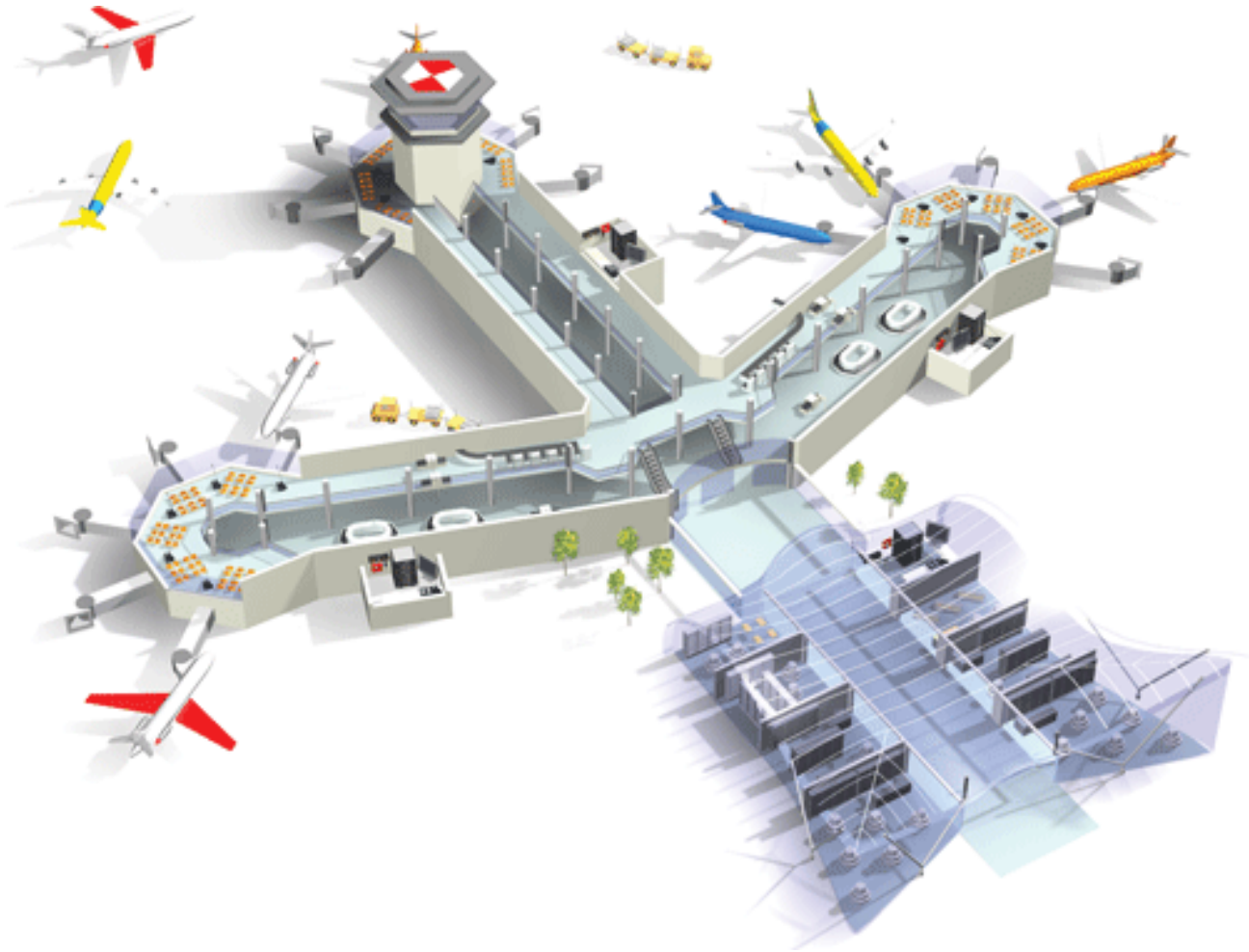
- Sports field
- Grandstand
- Offices
- Restaurants
- Food and beverage corners
- Treatment rooms
- Parking
- Technical room
- Control center
- Reception desk

All these public and non-public areas are separately addressable as zones. Power amplifiers are located on either side of the stadium, in the control room and technical room, allowing shorter cables to the loudspeakers. A redundant optical system bus loop provides a high level of system integrity and avoids disturbances from electromagnetic interference and ground loops.

The control center houses a call station with keypads for zone and function selections, and a mixing desk for commentators' microphones and music sources. For emergency purposes, the control room is equipped with a fireman's panel with synoptic zone switch layout, based on a call station kit and keypad kits. The reception desk uses a remote call station with keypads, connected via CAT-5 cable. Audio expanders provide transformer-isolated balanced outputs to television and radio recording equipment.

The smaller zones get their power from eight-channel amplifiers, with built-in automatic volume control (AVC) to adjust the sound level to the ambient noise. Ambient-sensing microphones are directly connected to the amplifiers. The high-power stadium loudspeakers are powered by a large number of high-efficiency basic amplifiers, connected to multi-channel interfaces, to provide a cost-effective solution. All system elements are monitored, from microphones and stored evacuation messages to amplifiers, loudspeaker lines and individual loudspeakers. Spare amplifiers and battery power supplies are on standby to take over automatically in case of amplifier malfunction or mains outage. Fault events are logged into a central database for viewing in the control room or remote access via Internet.

Example 3 - International Airport



Example 3

Example 3 describes an international airport (a large size system) with:

- Arrival hall
- Departure hall
- Baggage handling areas
- Terminal buildings
- Offices and conference rooms
- Lounges
- Restaurants and coffee corners
- Shopping areas

Four decentralized Praesideo systems cover this large airport, one for each terminal and one for the shopping area. Each subsystem can operate independently from the others, but they also operate as an integrated system. TCP/IP connections on the network controllers allow the flight information system to make calls in all subsystems. CobraNet interfaces create the audio interconnections between subsystems, using Ethernet. Operators can make calls to any zone in the combined network via LCD touch screen controllers. The fireman's panels in each terminal offer similar functionality for emergency calls. Praesideo's built-in supervision system monitors all system elements,

including the presence of connected TCP/IP clients. A building management system links the fire detection system to Praesideo via TCP/IP.

Announcements in the arrival and departure halls have good speech intelligibility, due to the built-in audio delay and parametric equalizer sections of the power amplifiers to acoustically align the column loudspeakers and suppress hall resonances.

Praesideo's 28 available audio channels in each subsystem allows for many simultaneous gate announcements from call stations at each gate, while audio channels are still left for BGM and airport-wide live and scheduled announcements. Long return lines from looped-through call stations use fiber interfaces to convert between the normally used plastic optical fiber and low-loss glass optical fiber.

In the shopping area, each shop can select a BGM channel from a configured licensed subset of available channels, selectable via wall panel controls.

Microphones

3

Wired	144
Wireless	158
Accessories	168

LBB 9080/00 Omnidirectional Dynamic Handheld Microphone



Features

- ▶ Excellent speech reproduction
- ▶ Rugged construction
- ▶ Easy to handle
- ▶ Remote switching contact
- ▶ Close talking applications
- ▶ Matt black finish

The LBB 9080/00 handheld microphone is designed for close talking applications, and is ideal for short announcements.

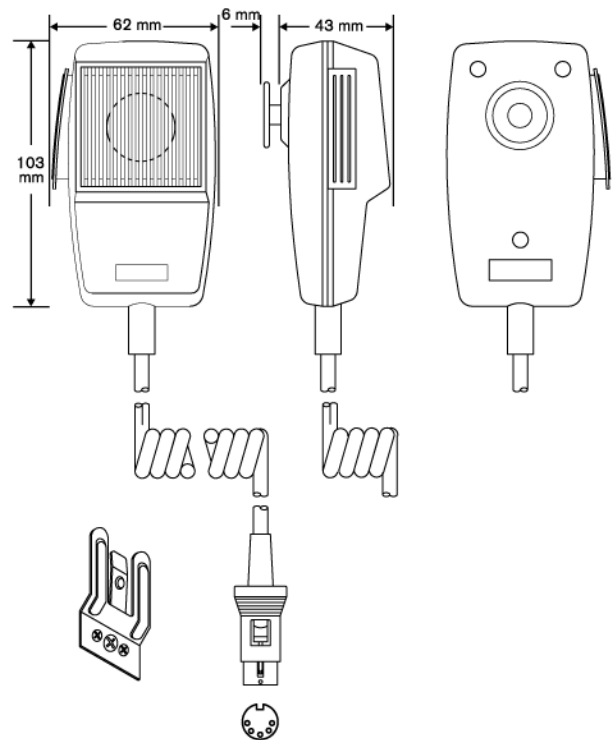
Functions

The microphone has a press to talk (PTT) switch on the side. The switch has additional contacts for remote control functions, if required.

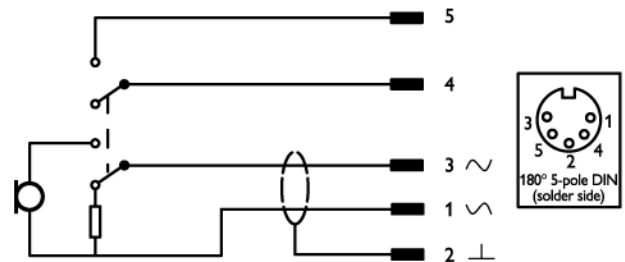
Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity

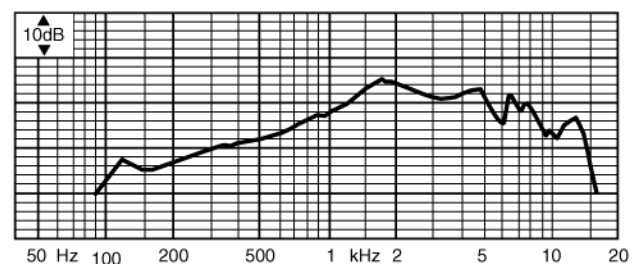
Installation/Configuration Notes



Dimensions in mm



Circuit diagram



Frequency response

Parts Included

Quantity	Component
1	LBB 9080/00 Omnidirectional Dynamic Handheld Microphone
1	Wall-mounting bracket

Technical Specifications

Electrical*

Type	Handheld
Polar pattern	Omnidirectional
Frequency range	280 Hz to 14 kHz
Sensitivity	3.1 mV/Pa $\pm$ 4 dB
Rated output impedance	500 ohm

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions (H x W x D)	103 x 62 x 43 mm (4.05 x 2.44 x 1.69 in)
Weight (incl. cable)	190 g (6.7 oz)
Color	Black
Switch	On/off with remote control contact
Cable type	2-core + 2-core screened (coiled)
Cable length	0.5 m (1.2 m extended)
Connector	5-pin 180° DIN (lockable)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 9080/00 Omnidirectional Dynamic **LBB9080/00**
Handheld Microphone
 with a lockable 5-pin DIN connector

LBB 9081/00 Omnidirectional Dynamic Handheld Microphone



Features

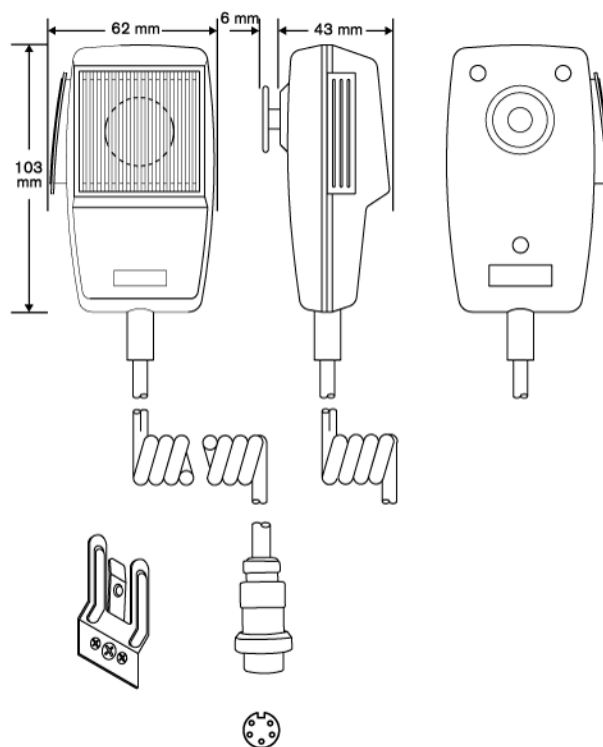
- ▶ Excellent speech reproduction
- ▶ Rugged construction
- ▶ Easy to handle
- ▶ Remote switching contact
- ▶ Close talking applications
- ▶ Dedicated for supervision purposes
- ▶ Matt black finish

The LBB 9081/00 handheld microphone is designed for close talking applications, and is ideal for short announcements.

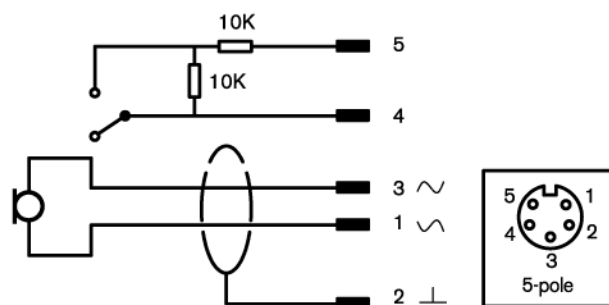
Functions

The microphone has a press to talk (PTT) switch on the side. The switch has additional contacts for remote control functions, if required. Resistors are already mounted in the switch circuit for supervision, and the microphone capsule is direct-connected, i.e. not switched.

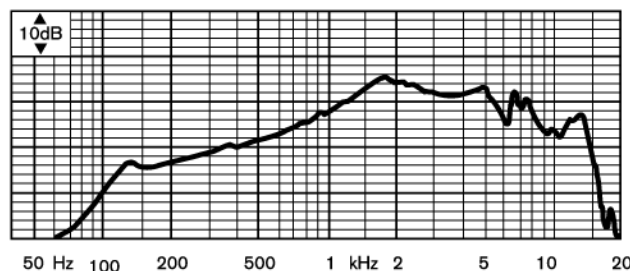
Installation/Configuration Notes



Dimensions in mm



Circuit diagram



Frequency response

Parts Included

Quantity	Component
1	LBB 9081/00 Omnidirectional Dynamic Handheld Microphone
1	Wall-mounting bracket

Technical Specifications

Electrical*

Type	Handheld
Polar pattern	Omnidirectional
Frequency response	280 Hz to 14 kHz
Sensitivity	3.1 mV/Pa ±4 dB
Rated output impedance	500 ohm

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions (H x W x D)	103 x 62 x 43 mm (4.05 x 2.44 x 1.69 inch)
Weight (incl. cable)	190 g (6.7 oz)
Color	Black
Switch	On/off with remote control contact
Cable type	2-core + 2-core screened (coiled)
Cable length	0.5 m (1.2 m extended)
Connector	5-pin CB (lockable)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 9081/00 Omnidirectional Dynamic **LBB9081/00**
Handheld Microphone
 with a lockable, 5-pin CB connector

LBB 9082/00 Unidirectional Gooseneck Microphone

3



Features

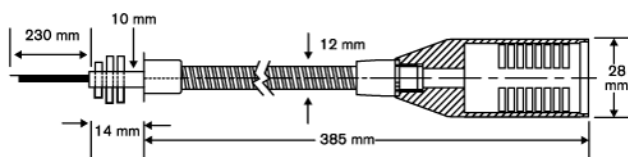
- ▶ Unidirectional dynamic microphone
- ▶ Flexible stem
- ▶ Excellent speech reproduction
- ▶ Rugged construction
- ▶ Built-in pop shield
- ▶ Flange mounting
- ▶ Matt black finish

The gooseneck microphone is a stylish high quality unidirectional dynamic microphone, mainly intended for public address applications.

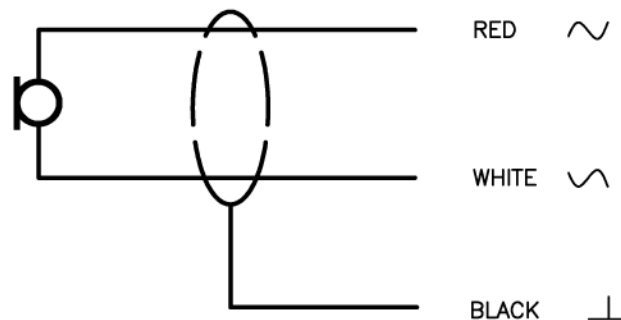
Functions

The flexible stem has an M10 screw fitting for mounting onto (fireman's) panels, lecterns or desktops.

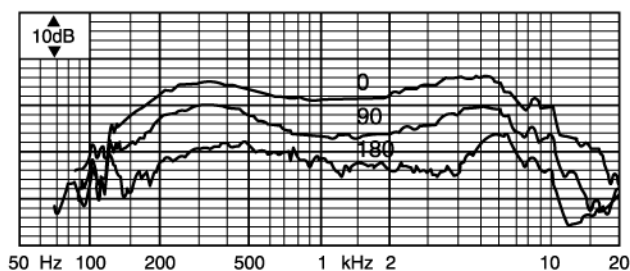
Installation/Configuration Notes



Dimensions in mm



Circuit diagram



Frequency response

Technical Specifications

Electrical*

Type	Gooseneck
Polar pattern	Unidirectional
Frequency response	100 Hz to 15 kHz
Sensitivity	1.2 mV/Pa $\pm$ 4 dB
Rated output impedance	500 ohm

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions	28 x 385 mm (1.10 x 15.16 in)
Weight	225 g (8 oz)
Color	Black
Cable type	2-core screened
Cable length	230 mm

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 9082/00 Unidirectional Gooseneck Microphone **LBB9082/00**
 unidirectional dynamic microphone with flexible stem

LBB 9099/10 Unidirectional Handheld Microphone



Features

- ▶ **Dynamic transducer**
- ▶ **Unidirectional handheld microphone**
- ▶ **High speech intelligibility**
- ▶ **Rugged construction**
- ▶ **Modern nonreflective dark gray finish**

This unidirectional handheld microphone provides cost-effective, high-quality speech intelligibility and is fully compatible with other public address equipment. It is based on a dynamic transducer element in a sturdy housing with shielding against wind and wind bursts (pops). The microphone has excellent cardioid directivity, greatly reducing acoustic feedback.

The microphone is intended for public address and sound reinforcement applications such as in leisure centers, assembly halls, and shops.

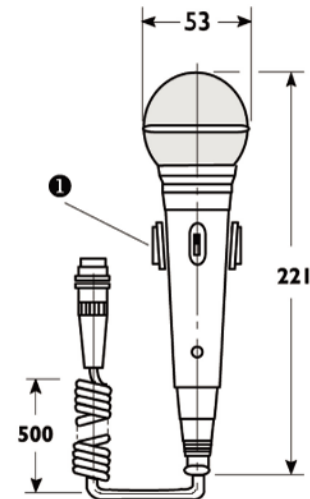
Functions

The LBB 9099/10 microphone features an on/off slide-switch with electrically isolated contacts for remote control switching, if required. This feature can switch off background music automatically, or sound announcement chimes when the microphone is activated.

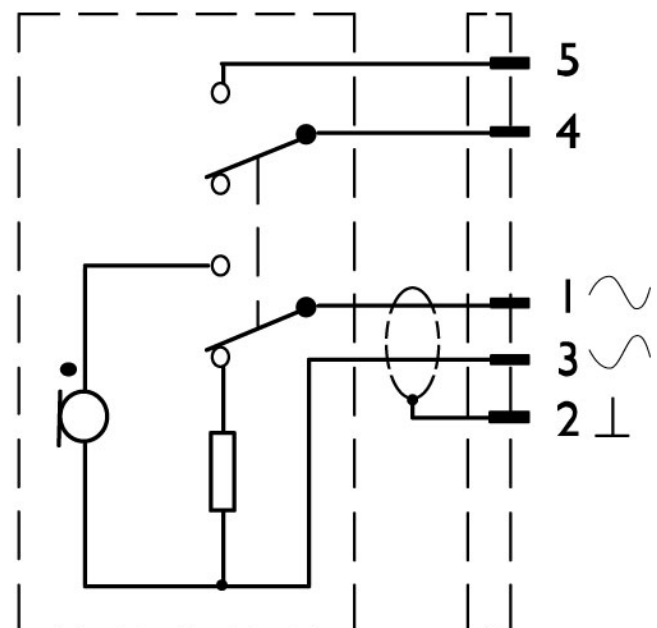
Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

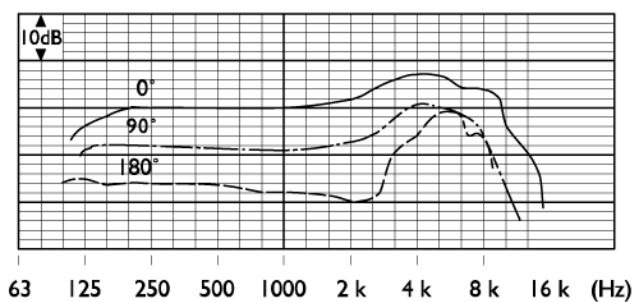
Installation/Configuration Notes



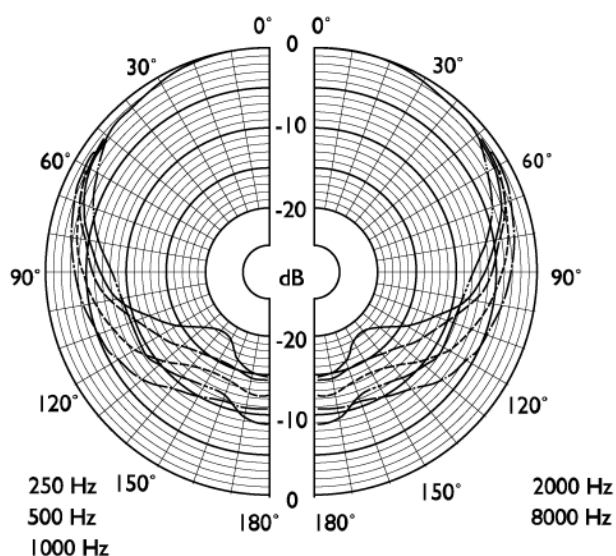
Dimensions in mm showing wall bracket (1)



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

Mechanical

Dimensions (L x D)	221 x 53 mm (8.7 x 2.09 in)
Weight	420 g (0.93 lb)
Color	Dark gray
Switch	On/off with remote control contact
Cable length	0.5 m (19.7 in) coiled 1.2 m (47.2 in) uncoiled
Connector	5-pin 180° DIN (lockable)

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 9099/10 Unidirectional Handheld Microphone	LBB9099/10
with a lockable 5-pin DIN connector	

Parts Included**Quantity Component**

1	LBB 9099/10 Unidirectional Handheld Microphone
1	Wall-mounting bracket

Technical Specifications**Electrical***

Type	Handheld
Polar pattern	Unidirectional
Frequency range	100 Hz to 13 kHz
Sensitivity	2 mV/Pa $\pm$ 4 dB
Rated output impedance	600 ohm

* Technical performance data acc. to IEC 60268-4

LBC 2900/xx Unidirectional Handheld Microphones



Features

- ▶ **Unidirectional dynamic microphone**
- ▶ **Handheld or stand-mounted use with clip (supplied)**
- ▶ **Rugged construction**
- ▶ **Modern non-reflective dark grey finish**

With this unidirectional microphone, Bosch provides impressive audio performance at an economical price. The LBC 2900/xx is based on a dynamic transducer element that is designed for high speech intelligibility. Its rugged enclosure is both stylish and easy to use in a wide range of public and sound reinforcement applications.

Functions

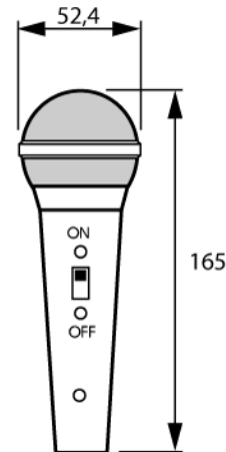
The LBC 2900/xx is a unidirectional microphone intended for either handheld or stand-mounted use. It has excellent cardioid directivity, which reduces acoustic feedback. The built-in on/off switch on the microphone body and the 3-pin lockable XLR connector at the base ensure that the microphone is easy to install and securely connected. Its modern design gives shielding against bursts (pops).

The LBC 2900/xx is ideal for use with Bosch mixing amplifiers, which are fitted with jack or XLR connectors for the input channels. Together, they provide affordable yet highly versatile public address solutions for shops, restaurants, leisure centers and other smaller applications.

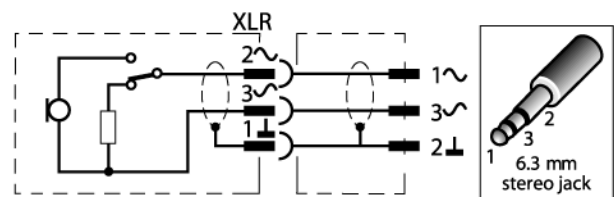
Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

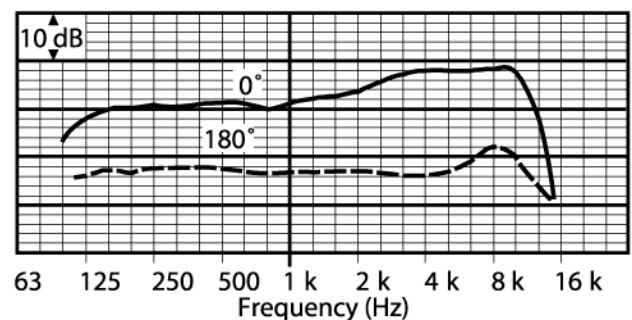
Installation/Configuration Notes



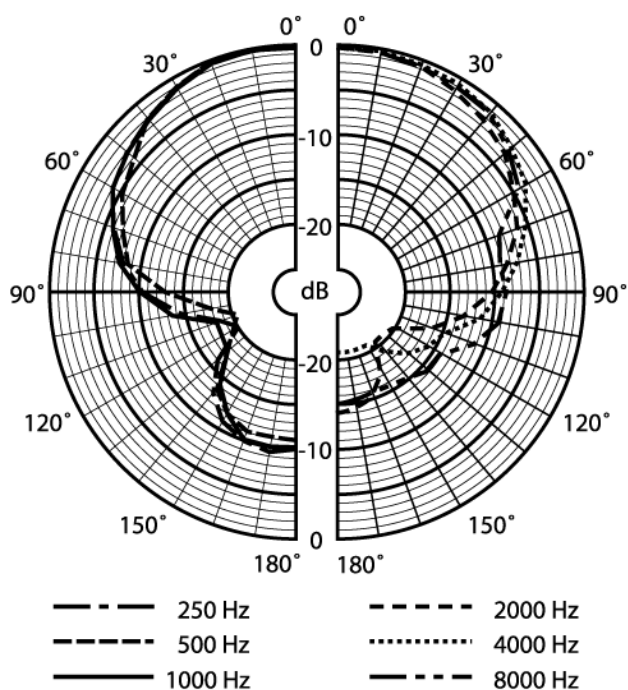
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram

Parts Included

Quantity	Component
1	LBC 2900/15 with 7 m (23 ft) shielded black cable terminated with a 6.3 mm (1/4") stereo jack plug or LBC 2900/20 with a 7 m (23 ft) shielded black cable terminated with an XLR male plug
1	Stand bracket with push-on clip for use with microphone stand, and screw-thread adapter for 3/8", 1/2", or 5/8" Whitworth-threaded stand

Technical Specifications

Electrical*

Type	Handheld
Polar pattern	Unidirectional
Frequency range	80 Hz to 12 kHz
Sensitivity	1.7 mV/Pa $\pm$ 3 dB
Rated output impedance	600 ohm

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions (D x L)	52.4 x 165 mm (2.06 x 6.49 in)
Weight	270 g (9.5 oz)
Color	Dark gray
Switch	On/off slide
Cable length	7 m (23 ft)
Connector (/15)	6.3 mm (1/4") stereo jack
Connector (/20)	3-pin XLR

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 2900/15 Unidirectional Handheld Microphone with a 6.3 mm (1/4") stereo jack plug; 7 m (23 ft) shielded black cable	LBC2900/15
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LBC 2900/20 Unidirectional Handheld Microphone with an XLR male plug; 7 m (23 ft) shielded black cable	LBC2900/20
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Accessories

LBC 1215/01 Microphone Clamp spring-loaded microphone holder, friction angular adjustment	LBC1215/01
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LBC 1221/01 Floor Stand Three folding legs, adjustable length with twist clamp.	LBC1221/01
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LBC 1227/01 Table Stand with 3/8" Whitworth stud; 130 mm (5.12 in) diameter	LBC1227/01
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LBC 1226/01 Adjustable Boom maximum reach of 670 mm (2.12 ft); length 840 mm (2.76 ft)	LBC1226/01
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LBB 1949/00 Gooseneck Condenser Microphone



Features

- ▶ **Unidirectional condenser microphone**
- ▶ **Flexible stem**
- ▶ **Phantom powered by amplifier**
- ▶ **On/off sliding switch with priority contact**
- ▶ **Supplied with fixed 2 m (78 in) cable and lockable DIN connector**
- ▶ **Separate DIN to XLR adapter**

The gooseneck microphone is a stylish high quality unidirectional condenser microphone, mainly intended for public address applications.

Functions

The flexible stem base has a screw fitting, and the microphone comes with a multi-thread adaptor (3/8", 1/2", and 5/8") for mounting onto floor-stands, lecterns, panels or desktops. The microphone runs off the phantom power supply from the amplifier to which it is connected.

The on-off sliding switch, not only switches on the microphone, but also provides priority contacts for remote control switching purposes. If the priority contacts are not required, the microphone can be connected to amplifiers with 3-pin XLR-inputs, using the DIN to XLR adapter.

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

Immunity	acc. to EN 55103-2
Emission	acc. to EN 55103-1

Parts Included

Quantity	Component
1	LBB 1949/00 Gooseneck Condenser Microphone
1	DIN to XLR adapter

Technical Specifications

Electrical*

Phantom power supply

Voltage range	12 to 48 V
Current consumption	<8 mA

Performance*

Sensitivity	0.7 mV @ 85 dB SPL (2 mV/Pa)
Maximum input sound level	110 dB SPL
Distortion	<0.6% (maximum input)
Equivalent input noise level	28 dBA SPL (S/N 66 dBA ref. 1 Pa)
Frequency response	100 Hz to 16 kHz
Output Impedance	< 200 ohm

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions (D x L)	30 x 500 mm (19.69 x 1.18 in)
Weight	Approx. 300 g (10.5 oz)
Color	Dark gray
Cable length	2 m (78 in)
Connector	5-pin DIN 180° (lockable)

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1949/00 Gooseneck Condenser Microphone	LBB1949/00
unidirectional condenser microphone with flexible stem	

Accessories

LBC 1208/40 Microphone Cable	LBC1208/40
3-pin XLR; 10 m (32.8 ft)	

LBB 1950/10 Plena Tabletop Unidirectional Condenser Microphone



Features

- ▶ **Stylish tabletop unidirectional condenser microphone on a flexible stem**
- ▶ **Phantom powered by amplifier**
- ▶ **Momentary or toggle PTT-key for calls with priority contact**
- ▶ **Green LED, indicating microphone active**
- ▶ **Stable metal base design with fixed 2 m cable and lockable DIN connector**
- ▶ **Separate DIN to XLR adapter**

The Plena tabletop microphone is a stylish, high-quality tabletop unidirectional condenser microphone, mainly intended for making calls in a public address system. Its heavy metal base and rubber feet ensure stability on any flat surface. The special design also allows the unit to be neatly flush-mounted in desktops.

Functions

The PTT-key (press-to-talk), not only switches on the microphone, but also provides priority contacts, that are compatible with the Plena range of amplifiers. The switching characteristic of the PTT-key can be configured internally for PTT-mode (on as long as pressed) or toggle-mode (press to switch on, press again to switch off).

It is equipped with a fixed, flexible 2 m cable and a 5-pin DIN connector for the balanced signal and the priority contacts. If the priority contacts are not required, the microphone can be connected to amplifiers with 3-pin XLR-inputs, using the DIN to XLR adapter.

A green LED indicates when the microphone is active.

Controls and indicators

- PTT-key
- PTT status LED

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Immunity		acc. to EN 55103-2
Emission		acc. to EN 55103-1

Parts Included

Quantity	Component
1	LBB 1950/10 PLENA Tabletop Unidirectional Condenser Microphone
1	DIN to XLR adapter

Technical Specifications

Electrical

Phantom power supply

Voltage range	12 to 48 V
Current consumption	<8 mA

Performance

Sensitivity	0.7 mV @ 85 dB SPL (2 mV/Pa)
Maximum input sound level	110 dB SPL
Distortion	<0.6% (maximum input)
Input noise level (equiv.)	28 dB SPLA (S/N 66 dBA ref. 1 Pa)
Frequency response	100 Hz to 16 kHz
Output impedance	200 ohm

Mechanical

Base dimensions (H x W x D)	40 x 100 x 235 mm (1.57 x 3.97 x 9.25 in)
Weight	Approx. 1 kg (2.2 lb)
Color	Charcoal with silver
Stem length with mic	390 mm (15.35 in)
Cable length	2 m (6.56 ft)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 1950/10 Plena Tabletop Unidirectional Condenser Microphone tabletop unidirectional condenser microphone on a flexible stem.	LBB1950/10
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Accessories

LBC 1080/00 Microphone Cable length 100 m; 2 x 0.13 mm ²	LBC1080/00
LBC 1082/00 Microphone Cable length 100 m; 2 x 0.75 mm ²	LBC1082/00
LBC 1081/00 Microphone Cable length 100 m; 4 x 0.14 mm ²	LBC1081/00

LBB 9600/20 Condenser Handheld Microphone



3

Features

- ▶ **Condenser transducer**
- ▶ **Unidirectional**
- ▶ **High speech intelligibility**
- ▶ **Low sensitivity to case noise and vibrations**
- ▶ **Phantom powered**
- ▶ **Rugged construction**
- ▶ **Modern non-reflecting matt black finish**

This condenser microphone is based on an electric transducer element in a sturdy housing with shielding against wind and wind bursts (pops). It is intended for public address and sound reinforcement applications, such as in churches, theaters, and congress centers.

Functions

The handheld LBB 9600/20 is an excellent microphone with almost frequency independent, unidirectional directivity. Its low equivalent input noise level and insensitivity to stray electrostatic and electromagnetic fields keep the audio signal free from spurious noise.

The microphone has an on/off slide-switch and a 3-pin, lockable XLR plug. It uses a phantom power supply, which is available on all microphone inputs on Bosch public address amplifiers.

It comes with a push-on clip with a Whitworth-threaded screw fitting, and a multi-thread adaptor (3/8", 1/2", and 5/8") for mounting. The supplied 7 m (23 ft) connection cable has 3-pin, lockable male and female XLR connectors.

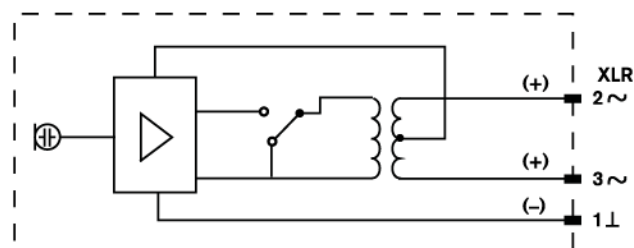
Accessories

A number of accessories, such as extension cables, table stands and floor stands are also available. See the separate microphone accessories data sheet.

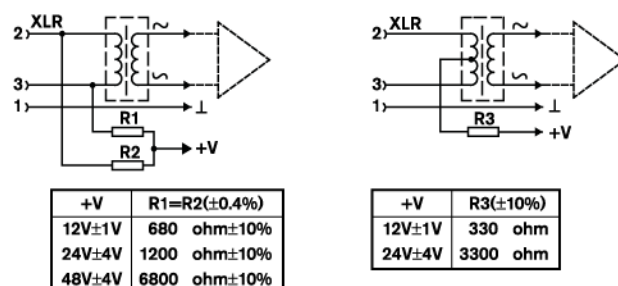
Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

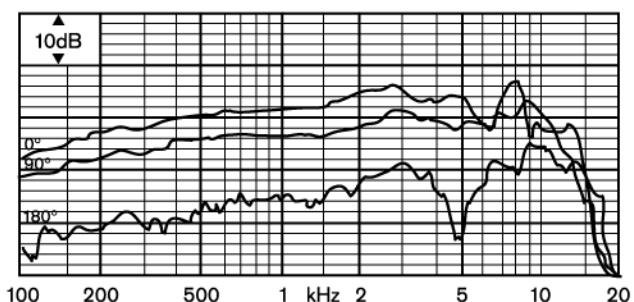
Installation/Configuration Notes



Circuit diagram



Circuit diagram



Frequency response

Technical Specifications

Electrical*

Phantom power supply

Voltage range	11 V to 52 V (acc. to DIN 45596 and IEC 268-15A)
Current consumption	<1.5 mA

Performance

Polar pattern	Unidirectional
Frequency range	100 Hz to 16 kHz
Sensitivity	2 mV/Pa +/-3 dB (-54 dB rel. to 1 V/Pa)
Rated output impedance	200 ohm
Equivalent input noise level	26 dB (A)

* Technical performance data acc. to IEC 60268-4

Mechanical

Dimensions (D x L)	54 x 170 mm (2.13 x 6.69 in)
Weight	245 g (8.64 oz)
Color	Black
Switch	On/off slide
Cable type	
Cable length	7 m (23 ft)
Connector	3-pin XLR (male)

Environmental

Operating temperature	-20 °C to +55 °C (-4 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBB 9600/20 Condenser Handheld Microphone	LBB9600/20
7 m (23 ft) cable, 3-pin lockable male and female XLR connectors	

Accessories

LBC 1221/01 Floor Stand	LBC1221/01
Three folding legs, adjustable length with twist clamp.	
LBC 1226/01 Adjustable Boom	LBC1226/01
maximum reach of 670 mm (2.12 ft); length 840 mm (2.76 ft)	
LBC 1227/01 Table Stand	LBC1227/01
with 3/8" Whitworth stud; 130 mm (5.12 in) diameter	

MW1-RX-Fx Wireless Microphone Receivers



Features

- ▶ 193 automatically selectable UHF channels
- ▶ PLL synthesized technology
- ▶ Pilot tone & noise squelch
- ▶ True diversity for stable reception
- ▶ Table top and 19" rack mountable

The MW1-RX-F1 and MW1-RX-F2 wireless microphone receiver is part of the Bosch wireless microphone system. The complete system consists of a microphone receiver, a wireless belt-pack transmitter with clip-on lavalier microphone (MW1-LTX-F1 or MW1-LTX-F2) or a wireless handheld transmitter (MW1-HTX-F1 or MW1-HTX-F2). The products are sold separately to offer optimal flexibility in the composition of a system.

The wireless microphone system is designed for public address in churches, restaurants, conference centers, hotels, shops and many other applications.

A dual rack mount kit (MW1-RMB) including, a front panel, and an antenna adapter kit for mounting up to two receivers in a 19" rack are also available.

Functions

Frequencies

The receivers operate in the UHF band, providing interference reduction, while 193 available frequencies ensure stable reception. The MW1-RX-F1 operates in the 790 to 814 MHz frequency band, and the MW1-RX-F2 operates in the 852 to 876 MHz band. The country overview lists the recommended type number for each country.

Operation

If the microphone is already set to a frequency, the receiver can scan the frequency band and automatically connect to the microphone. A lock function protects the receiver settings, making accidental changes impossible. This feature is also available on the Bosch hand-held microphone and the belt-pack transmitter. The LCD on the receiver shows the selected frequency, the RF and AF signal level, antenna indication and the battery status of the microphone which is used.

The microphone receiver has balanced XLR and unbalanced output for more convenience.

Controls and indicators

- Frequency up/down buttons
- Menu selection button
- Audio level knob
- LCD with backlight displaying: frequency, antenna A/B, mute status (squelch), RF/AF level, battery level

Interconnections

- 3-pin XLR male, balanced
- 6.3 mm jack, unbalanced

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity
CE Marking	acc. to R & TTE directive 1999/5/EC
EMC	acc. to ETSI EN 301489-1 acc. to ETSI EN 301489-9 acc. to ETSI EN 300422-2

Installation/Configuration Notes

Country Overview

Austria	MW1-RX-F1 / MW1-RX-F2
Belgium	MW1-RX-F1 / MW1-RX-F2
Czech republic	MW1-RX-F1
Denmark	MW1-RX-F1
Estonia	MW1-RX-F1 / MW1-RX-F2
Finland	MW1-RX-F2
France	MW1-RX-F1
Germany	MW1-RX-F1 / MW1-RX-F2
Hungary	MW1-RX-F1 / MW1-RX-F2
Ireland	MW1-RX-F2
Italy	MW1-RX-F1 / MW1-RX-F2
Liechtenstein	MW1-RX-F1 / MW1-RX-F2
Lithuania	MW1-RX-F1
Luxembourg	MW1-RX-F1 / MW1-RX-F2
Netherlands	MW1-RX-F2
Norway	MW1-RX-F1 / MW1-RX-F2
Poland	MW1-RX-F1 / MW1-RX-F2
Portugal	MW1-RX-F1

Slovakia	MW1-RX-F2
Switzerland	MW1-RX-F1
Sweden	MW1-RX-F2
United Kingdom	MW1-RX-F2
Australia	MW1-RX-F1
China	MW1-RX-F1
Indonesia	MW1-RX-F1 / MW1-RX-F2
Japan	MW1-RX-F1
Korea	MW1-RX-F1
Philippines	MW1-RX-F1 / MW1-RX-F2
Taiwan	MW1-RX-F1
Thailand	MW1-RX-F1 / MW1-RX-F2
Vietnam	MW1-RX-F1 / MW1-RX-F2
MW1-RX-F1	790 to 814 MHz
MW1-RX-F2	852 to 876 MHz

Parts Included

Quantity	Components
1	MW1-RX-F1 Wireless Microphone Receiver or MW1-RX-F2 Wireless Microphone Receiver
1	User manual
1	1.5 m 3-pin XLR male/female cable
1	AC/DC adapter with power cord

Technical Specifications

Electrical

Power source	12 V to 18 V, 500 mA
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Performance

Modulation	FM
Frequency selection	PLL synthesized control
Frequency range	MW1-RX-F1: 790 to 814 MHz MW1-RX-F2: 852 to 876 MHz
Channels	193 channels in steps of 125 kHz
Frequency stability	±0.005%
Technology	True diversity system
S/N ratio	>100 dB

Antenna

	2 x
Connector	BNC
HF impedance	50 ohm

Output

	2 x
Connector	XLR-3 male, balanced
Output level	-12 dBV (max)
Output impedance	600 ohm
Connector	6.3 mm jack, unbalanced
Output level	0 dBV (max)
Output impedance	2.2 kohm
Squelch	Pilot tone and noise mute

Mechanical

Dimensions (H x W x D)	40 x 211 x 152 mm
Color	Charcoal
Weight	Approx. 1 kg
Antenna length	50 mm (½ λ)

Environmental

Operating temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%

Ordering Information

MW1-RX-F1 UHF Wireless Microphone Receiver frequency range 790 to 814 MHz	MW1-RX-F1
MW1-HTX-F1 UHF Wireless Handheld Microphone frequency range 790 to 814 MHz	MW1-HTX-F1
MW1-LTX-F1 UHF Wireless Belt-pack Transmitter frequency range 790 to 814 MHz	MW1-LTX-F1
MW1-RX-F2 UHF Wireless Microphone Receiver frequency range 852 to 876 MHz	MW1-RX-F2
MW1-HTX-F2 UHF Wireless Handheld Microphone frequency range 852 to 876 MHz	MW1-HTX-F2
MW1-LTX-F2 UHF Wireless Belt-pack Transmitter frequency range 852 to 876 MHz	MW1-LTX-F2
Accessories	
MW1-RMB Dual Rack-mounting Kit for use with MW1-RX-Fx	MW1-RMB

MW1-HTX-Fx Wireless Handheld Microphones



Features

- ▶ **193 selectable UHF channels**
- ▶ **PLL synthesized technology**
- ▶ **LCD with battery status and frequency indication**
- ▶ **Lock function**
- ▶ **Approximately 15 hours operation on alkaline batteries**

The MW1-HTX-F1 and MW1-HTX-F2 wireless handheld microphones are part of the Bosch wireless microphone system. The complete system consists of a microphone receiver (MW1-RX-F1 or MW1-RX-F2), a wireless handheld microphone (MW1-HTX-F1 or MW1-HTX-F2) or a wireless belt-pack transmitter with clip-on lavalier microphone (MW1-LTX-F1 and MW1-LTX-F2). The products are sold separately to offer optimal flexibility in the composition of a system.

The wireless microphone system is designed for public address in houses of worship, restaurants, conference centers, hotels, shops and many other applications.

Functions

Frequencies

The microphones operate in the UHF band providing interference reduction, while the true diversity ensures stable reception. The MW1-HTX-F1 operates in the 790 to 814 MHz frequency band, and the MW1-RX-F2 operates in the 852 to 876 MHz band, each providing 193 selectable frequencies. The country overview lists the recommended type number for each country.

Operation

The handheld microphones can operate approximately 15 hours on alkaline batteries. A lock function protects the microphone settings, making accidental changes impossible. This feature is also available on the Bosch microphone receiver and the belt-pack transmitter. An LCD on the handheld microphones shows the selected frequency and the battery status.

Accessories

The microphones come with a case to protect them from damage. Different color microphone caps are provided for applications, where multiple microphone systems are used simultaneously. The microphones also come with an adapter for microphone stands.

Controls and indicators

- Frequency up/down buttons
- LCD displaying frequency and battery level

Certifications and Approvals

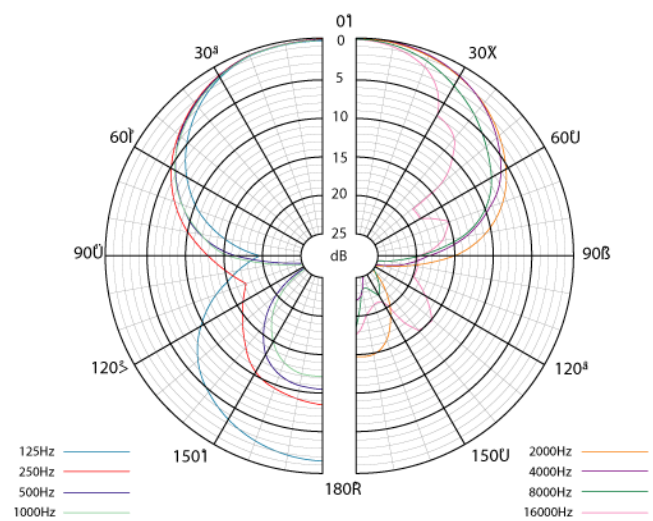
Region	Certification
Europe	CE Declaration of Conformity
CE Marking	acc. to R & TTE directive 1999/5/EC
EMC	acc. to ETSI EN 301489-1 acc. to ETSI EN 301489-9 acc. to ETSI EN 300422-2

Installation/Configuration Notes

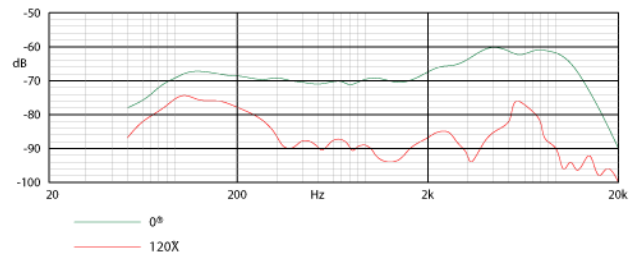
Country Overview

Austria	MW1-RX-F1 / MW1-RX-F2
Belgium	MW1-RX-F1 / MW1-RX-F2
Czech republic	MW1-RX-F1
Denmark	MW1-RX-F1
Estonia	MW1-RX-F1 / MW1-RX-F2
Finland	MW1-RX-F2
France	MW1-RX-F1
Germany	MW1-RX-F1 / MW1-RX-F2
Hungary	MW1-RX-F1 / MW1-RX-F2
Ireland	MW1-RX-F2
Italy	MW1-RX-F1 / MW1-RX-F2
Liechtenstein	MW1-RX-F1 / MW1-RX-F2
Lithuania	MW1-RX-F1
Luxembourg	MW1-RX-F1 / MW1-RX-F2
Netherlands	MW1-RX-F2
Norway	MW1-RX-F1 / MW1-RX-F2
Poland	MW1-RX-F1 / MW1-RX-F2
Portugal	MW1-RX-F1
Slovakia	MW1-RX-F2
Switzerland	MW1-RX-F1
Sweden	MW1-RX-F2

United Kingdom	MW1-RX-F2
Australia	MW1-RX-F1
China	MW1-RX-F1
Indonesia	MW1-RX-F1 / MW1-RX-F2
Japan	MW1-RX-F1
Korea	MW1-RX-F1
Philippines	MW1-RX-F1 / MW1-RX-F2
Taiwan	MW1-RX-F1
Thailand	MW1-RX-F1 / MW1-RX-F2
Vietnam	MW1-RX-F1 / MW1-RX-F2
MW1-RX-F1	790 to 814 MHz
MW1-RX-F2	852 to 876 MHz



Polar diagram



Frequency response



Detail of microphone holder



Protective case with wireless, handheld microphone and accessories

Parts Included

Quantity	Components
1	MW1-HTX-F1 Wireless Handheld Microphone or MW1-HTX-F2 Wireless Handheld Microphone
1	Microphone holder
1	Protective case
2	LR5/AA batteries
6	Color caps

Technical Specifications

Electrical

Batteries	2 x LR6/AA/UM3 1.5 V
Battery life time	Approx. 15 hrs
Modulation	FM frequency modulation
Frequency selection	PLL synthesized control
Frequency range	MW1-HTX-F1: 790 to 814 MHz MW1-HTX-F2: 852 to 876 MHz
Channels	193 channels in steps of 125 kHz
Frequency stability	±0.005%
Frequency deviation	± 48 kHz
S/N ratio	>102 dB
RF output	10 mW

Spurious rejection	>60 dBc
Dynamic range	>110 dB
Response	50 Hz ~ 15 kHz

Mechanical

Dimensions (H x W)	260 x 50 mm
Color	Charcoal
Weight	350 g
Antenna	Integrated

Environmental

Operating temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%

Ordering Information

MW1-HTX-F1 UHF Wireless Handheld Microphone frequency range 790 to 814 MHz	MW1-HTX-F1
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MW1-RX-F1 UHF Wireless Microphone Receiver frequency range 790 to 814 MHz	MW1-RX-F1
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MW1-HTX-F2 UHF Wireless Handheld Microphone frequency range 852 to 876 MHz	MW1-HTX-F2
--	-------------------

MW1-RX-F2 UHF Wireless Microphone Receiver frequency range 852 to 876 MHz	MW1-RX-F2
---	------------------

MW1-LTX-Fx Wireless Belt-pack Transmitters



Features

- ▶ **193 selectable UHF channels**
- ▶ **PLL synthesized technology**
- ▶ **LCD with battery status and frequency indication**
- ▶ **Lock function**
- ▶ **Approximately 15 hours operation on alkaline batteries**

The MW1-LTX-F1 and MW1-LTX-F2 wireless belt-pack transmitters are part of the Bosch wireless microphone system. The complete system consists of a microphone receiver (MW1-RX-F1 or MW1-RX-F2), a wireless belt-pack transmitter with clip-on lavalier microphone (MW1-LTX-F1 or MW1-LTX-F2), a wireless handheld microphone (MW1-HTX-F1 or MW1-HTX-F2). The products are sold separately to offer optimal flexibility in the composition of the system.

The wireless microphone system is designed for public address in houses of worship, restaurants, conference centers, hotels, shops and many other applications.

The lavalier microphone (MW1-LMC) can be ordered separately without the belt-pack transmitter. An optional head-worn microphone (MW1-HMC) can also be ordered separately.

Functions

Frequencies

This microphone system operates in the UHF band providing interference reduction, while 193 available frequencies ensure stable reception. The MW1-LTX-F1 operates in the 790 to 814 MHz frequency band, and the MW1-LTX-F2 operates in the 852 to 876 MHz band. The country overview lists the recommended type number for each country.

Operation

The belt-pack transmitter can operate approximately 15 hours on alkaline batteries. A lock function protects the transmitter settings, making accidental changes impossible. This feature is also available on the Bosch microphone receiver and the belt-pack transmitter. An LCD on the transmitter shows the selected frequency and the battery status.

The belt-pack transmitter comes with a case to protect it from damage, and a lavalier clip-on microphone (MW1-LMC).

Controls and indicators

- Frequency up/down buttons
- LCD displaying frequency and battery level

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity
CE Marking	acc. to R & TTE directive 1999/5/EC
EMC	acc. to ETSI EN 301489-1 acc. to ETSI EN 301489-9 acc. to ETSI EN 300422-2

Installation/Configuration Notes

Country Overview

Austria	MW1-RX-F1/MW1-RX-F2
Belgium	MW1-RX-F1/MW1-RX-F2
Czech republic	MW1-RX-F1
Denmark	MW1-RX-F1
Estonia	MW1-RX-F1/MW1-RX-F2
Finland	MW1-RX-F2
France	MW1-RX-F1
Germany	MW1-RX-F1/MW1-RX-F2
Hungary	MW1-RX-F1/MW1-RX-F2
Ireland	MW1-RX-F2
Italy	MW1-RX-F1/MW1-RX-F2
Liechtenstein	MW1-RX-F1/MW1-RX-F2
Lithuania	MW1-RX-F1
Luxembourg	MW1-RX-F1/MW1-RX-F2
Netherlands	MW1-RX-F2

Norway	MW1-RX-F1/MW1-RX-F2
Poland	MW1-RX-F1/MW1-RX-F2
Portugal	MW1-RX-F1
Slovakia	MW1-RX-F2
Switzerland	MW1-RX-F1
Sweden	MW1-RX-F2
United Kingdom	MW1-RX-F2
Australia	MW1-RX-F1
China	MW1-RX-F1
Indonesia	MW1-RX-F1/MW1-RX-F2
Japan	MW1-RX-F1
Korea	MW1-RX-F1
Philippines	MW1-RX-F1/MW1-RX-F2
Taiwan	MW1-RX-F1
Thailand	MW1-RX-F1/MW1-RX-F2
Vietnam	MW1-RX-F1/MW1-RX-F2
MW1-RX-F1	790 to 814 MHz
MW1-RX-F2	852 to 876 MHz



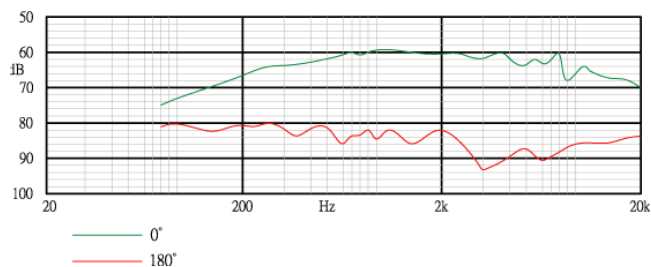
Protective case with wireless, belt-pack and accessories



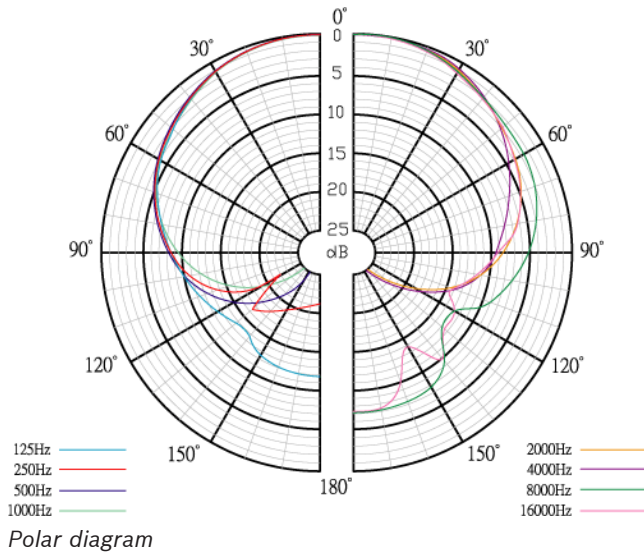
Belt-pack rear view



Lavalier microphone with clip



Frequency response



Parts Included

Quantity	Components
1	MW1-LTX-F1 Wireless Belt-pack Transmitter or MW1-LTX-F2 Wireless Belt-pack Transmitter
1	Protective case
2	LR5/AA batteries
1	MW1-LMC Lavalier Microphone
1	Windscreen
1	Clip

Technical Specifications

Electrical

Belt-pack

Batteries	2 x LR6/AA/UM3 1.5 V
Battery life time	Approx. 15 hr
Modulation	FM frequency modulation
Frequency selection	PLL synthesized control
Frequency range	MW1-LTX-F1: 790 to 814 MHz MW1-LTX-F2: 852 to 876 MHz
Channels	193 channels in steps of 125 kHz
Frequency stability	±0.005%
Frequency deviation	±48 kHz
S/N ratio	>102 dB
RF output	10 mW
Spurious rejection	>60 dBc
Dynamic range	>110 dB
Response	50 Hz to 15 kHz
Squelch	Pilot tone & noise mute

Lavalier microphone

Connector	Mini XLR (tiny QG)
Frequency range	100 Hz to 12 kHz
Polar pattern	Cardioid
Sensitivity (at 1 kHz)	-70 dB ± 3 dB
Impedance	2.2 kohm ±30%
Max SPL for 1% THD	130 dB(SPL)

Mechanical

Belt-pack

Dimensions (H x W x D)	105 x 78 x 34 mm without antenna
Color	Charcoal
Weight	176 g
Antenna	Flexible

Lavalier microphone

Dimensions (L x D)	30 x 16 mm
Color	Charcoal
Weight	20 g
Cable length	1 m
Operating temperature	-25 °C to +55 °C
Storage temperature	-40 °C to +70 °C
Relative humidity	<95%

Ordering Information

MW1-LTX-F1 UHF Wireless Belt-pack Transmitter frequency range 790 to 814 MHz	MW1-LTX-F1
MW1-RX-F1 UHF Wireless Microphone Receiver frequency range 790 to 814 MHz	MW1-RX-F1
MW1-LTX-F2 UHF Wireless Belt-pack Transmitter frequency range 852 to 876 MHz	MW1-LTX-F2
MW1-RX-F2 UHF Wireless Microphone Receiver frequency range 852 to 876 MHz	MW1-RX-F2
Accessories	
MW1-HMC Head-worn Microphone miniature condenser microphone with omni-directional pick-up pattern	MW1-HMC
MW1-LMC Lavalier Microphone	MW1-LMC

MW1-HMC Head-worn Microphone



Features

- **Optional use with belt-pack transmitters MW1-LTX-Fx**
- **Comfortable and lightweight**
- **Miniature condenser microphone with omni-directional pick-up pattern**
- **No proximity effect**

This head-worn microphone can be optionally used and connected to the Belt-pack transmitter MW1-LTX-Fx.

The sturdy, yet lightweight neck-strip combines secure fitting with comfortable wearing. The integrated drip ring protects the microphone capsule against humidity (sweat), guaranteeing longer operating life.

A storage bag and two windscreens are supplied as standard accessories.

Functions

Operation

Thanks to the omni-directional pick-up pattern, this microphone can be used unobtrusively, positioned next to the speaker's mouth.

Interconnections

- Mini XLR (tiny QG)

Parts Included

Quantity	Components
1	MW1-HMC Head-worn Microphone
1	Storage bag
2	Windscreens

Technical Specifications

Electrical

Power source	from Belt-pack transmitter MW1-LTX-Fx
Transducer	Condenser
Polar pattern	Omni-directional
Frequency range	60 to 15000 Hz
Sensitivity	10 mV/Pa
Max. SPL for 1% THD	130 dB (SPL)
Impedance	2200 ohm $\pm$ 30%

Mechanical

Dimensions (H x W)	160 x 140 mm (6.30 x 5.514 in)
Color	Charcoal with white
Weight	32 g (0.07 lb)
Cable length	1.45 m (4.76 ft)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

MW1-HMC Head-worn Microphone miniature condenser microphone with omni-directional pick-up pattern	MW1-HMC
---	----------------

Accessories

MW1-LTX-F1 UHF Wireless Belt-pack Transmitter frequency range 790 to 814 MHz	MW1-LTX-F1
MW1-LTX-F2 UHF Wireless Belt-pack Transmitter frequency range 852 to 876 MHz	MW1-LTX-F2

MW1-RMB Dual Rack-mounting Kit



The kit is for mounting MW1-RX-Fx Wireless Microphone Receivers in 19" racks. It can mount two units, side by side in a one-unit high rack space. When only one unit is used, the other half of the frame can be fitted with the supplied panel, which can mount the two antennas. These are connected to the receiver via the two supplied BNC cables.

Note The product photos include the MW1-RX-Fx Wireless Microphone Receiver

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

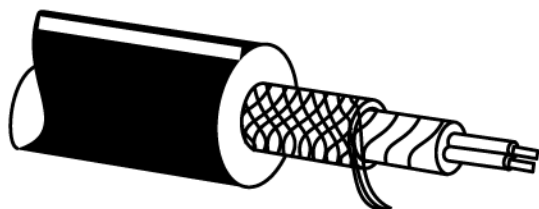
Parts Included

Quantity	Component
1	MW1-RMB Dual Rack-mounting Kit
4	Mounting screws for frame
1	Front panel with mounting holes for 2 BNC connectors
4	Mounting screws for panel
2	Double sided BNC connectors (for panel)
2	BNC/BNC cables (600 mm)

Ordering Information

MW1-RMB Dual Rack-mounting Kit for use with MW1-RX-Fx	MW1-RMB
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LBC 1080/00 Microphone Cable



Features

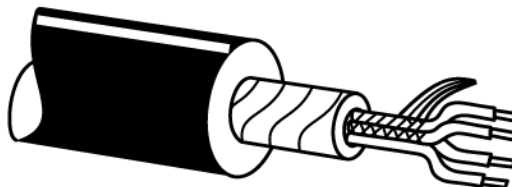
- ▶ Twin-core screened cable
- ▶ Black PVC sheath, 5.5 mm diameter
- ▶ Highly flexible, yet strong enough for temporary installations
- ▶ 0.13 mm² cross-section cores
- ▶ Supplied in 100 m reels

Ordering Information

LBC 1080/00 Microphone Cable
length 100 m; 2 x 0.13 mm²

LBC1080/00

LBC 1081/00 Microphone Cable



Features

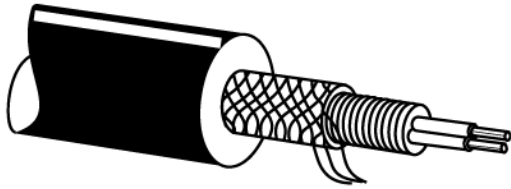
- ▶ Two-plus-two core screened cable
- ▶ Black PVC sheath, 5.5 mm diameter
- ▶ Two extra cores for remote control or priority functions
- ▶ For permanent installations
- ▶ 0.14 mm² cross-section cores
- ▶ Supplied in 100 m reels

Ordering Information

LBC 1081/00 Microphone Cable
length 100 m; 4 x 0.14 mm²

LBC1081/00

LBC 1082/00 Microphone Cable



Features

- ▶ Twin-core screened cable
- ▶ Black PVC sheath, 7 mm diameter
- ▶ Extra exterior PVC layer
- ▶ 0.75 mm² cross-section cores
- ▶ Supplied in 100 m reels

Ordering Information

LBC 1082/00 Microphone Cable
length 100 m; 2 x 0.75 mm²

LBC1082/00

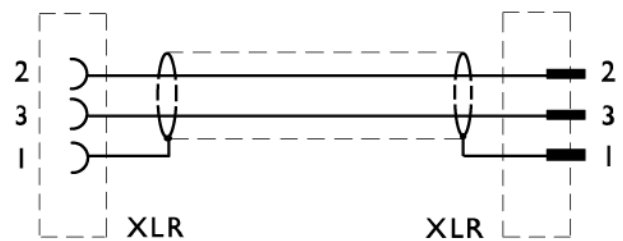
LBC 1208/40 Microphone Cable



Features

- ▶ 10 m (32.8 ft) extension cable
- ▶ Twin-core screened cable
- ▶ Three-pole lockable male and female XLR connectors (metal)

System Overview



LBC 1208/40 (10 m)

Technical Specifications

Mechanical

Length	10 m (32.8 ft)
Weight	420 g (1.13 lb)
Color	black

Ordering Information

LBC 1208/40 Microphone Cable
3-pin XLR; 10 m (32.8 ft)

LBC1208/40

LBC 1215/01 Microphone Clamp



Features

- ▶ Quick-release universal microphone clamp
- ▶ Spring-loaded microphone holder
- ▶ Friction angular adjustment
- ▶ Screws onto a 3/8", 1/2" or 5/8" Whitworth thread
- ▶ Holds microphone stem with 19 to 32 mm diameter

The 1215/01 Microphone Clamp is available for all Bosch hand-held microphones.

Technical Specifications

Mechanical

Weight	60 g (0.13 lb)
Color	Matt black

Ordering Information

LBC 1215/01 Microphone Clamp	LBC1215/01
spring-loaded microphone holder, friction angular adjustment	

LBC 1221/01 Floor Stand



Features

- ▶ Adjustable from 850 to 1600 mm (2.79 to 5.25 ft) with twist clamp
- ▶ Three folding legs (360 mm; 1.18 ft) for stability
- ▶ Column terminates in male 3/8" Whitworth thread

Technical Specifications

Mechanical

Dimensions (folded)	850 x 110 mm (33.46 x 5.25 in)
Weight	2.4 kg (6.43 lb)
Color	matt black

Ordering Information

LBC 1221/01 Floor Stand	LBC1221/01
Three folding legs, adjustable length with twist clamp.	

Accessories

LBC 1226/01 Adjustable Boom	LBC1226/01
maximum reach of 670 mm (2.12 ft); length 840 mm (2.76 ft)	

LBC 1226/01 Adjustable Boom



Features

- ▶ Adjustable in reach and angle (quick-release screw clamp)
- ▶ Maximum reach of 670 mm (2.12 ft)
- ▶ Fits onto 3/8" Whitworth thread

Technical Specifications

Mechanical

Length	840 mm (2.76 ft)
Weight	700 g (1.88 lb)
Color	matt black

Ordering Information

LBC 1226/01 Adjustable Boom	LBC1226/01
maximum reach of 670 mm (2.12 ft); length 840 mm (2.76 ft)	

Accessories

LBC 1221/01 Floor Stand	LBC1221/01
Three folding legs, adjustable length with twist clamp.	

LBC 1227/01 Table Stand



Features

- ▶ Heavy-duty table stand
- ▶ 3/8" Whitworth stud
- ▶ Shock-absorbing under surface

Technical Specifications

Mechanical

Diameter	130 mm (5.12 in)
Weight	995 g (2.66 lb)
Color	matt black

Ordering Information

LBC 1227/01 Table Stand	LBC1227/01
with 3/8" Whitworth stud; 130 mm (5.12 in) diameter	

Loudspeakers

4

Cabinet	174
Column	208
XLA 3200 Line Array	220
Intellivox - DDC Active Line Array	240
Ceiling	303
Sound Projectors	341
Horn	366
Accessories	397
Ingress Protection Definition	414

LBC 3011/x1 Panel Loudspeakers



4

Features

- ▶ **High-quality speech and music reproduction**
- ▶ **Two-way system**
- ▶ **Simple power setting**
- ▶ **Flush-mounting in walls, ceilings, or furniture**
- ▶ **Surface-mounting and flush mounting boxes**
- ▶ **Available with or without integral volume control**
- ▶ **Compliance with international installation and safety regulations**
- ▶ **BS 5839-8 compliance**

The Bosch panel loudspeakers and matching mounting boxes are ideal for built-in sound installations in shops, department stores, schools, offices, hotels and restaurants. They are manufactured and finished to the same exacting standards as all Bosch public address systems and components, guaranteeing high quality, and compatibility throughout the range.

Functions

The 9 W (max. power) panel is equipped with a woofer and tweeter, enabling excellent quality speech and music reproduction. They are available with or without an integral volume control (LBC 3011/51 and LBC 3011/41, respectively). Nominal output power can be preset to full, half, or quarter-power radiation (in 3 dB steps) by connecting the 100 V line to the appropriate primary taps on the matching transformer via a 2-pole screw connector. The off-white (RAL 9010) panels are injection-molded from self-extinguishing, high-impact ABS material (according to UL 94V0). They are finished with an attractive perforated metal grill.

The panel loudspeakers flush-mount into rectangular cutouts in cavity walls, ceilings, furniture or custom-made cabinets. The panels have provision on the rear side for mounting an optional line/loudspeaker supervision board.

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.

Certifications and Approvals

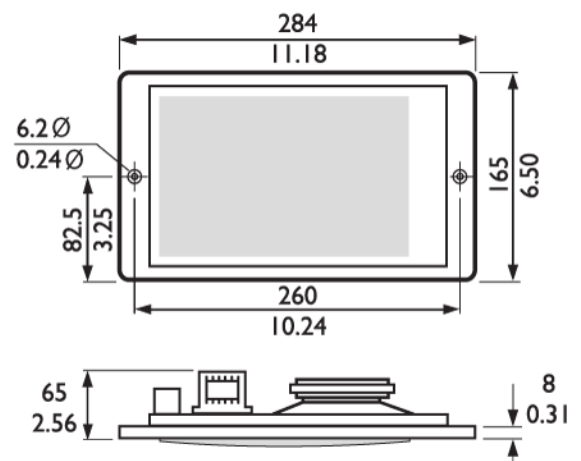
Voice alarm loudspeakers are specifically designed for use in buildings, where performance of systems for verbal evacuation announcements is governed by regulations. The LBC 3011/x1 is designed for use in voice alarm systems and is compliant with British Standard BS 5839-8.

Region Certification

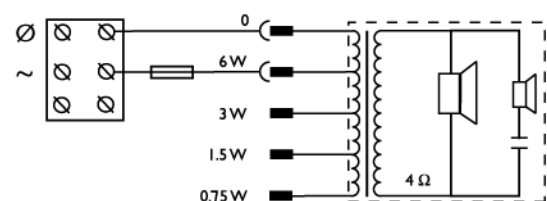
Europe	CE
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
Self-extinguishing	acc. to UL 94 V0

Installation/Configuration Notes

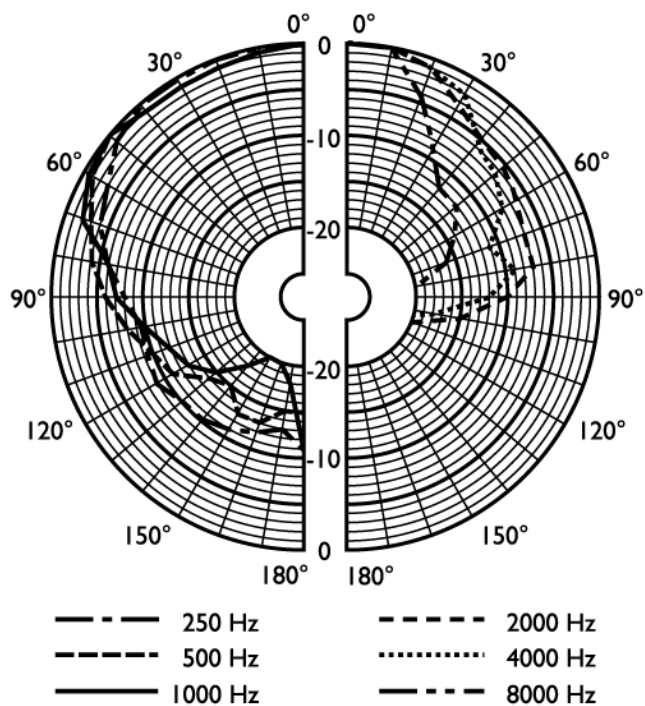
LBC 3011/41



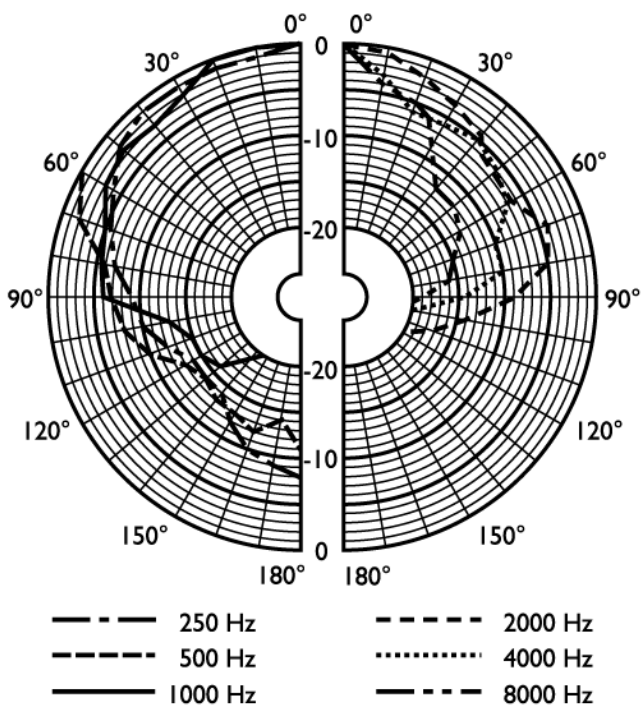
Dimensions in mm (in)



Circuit diagram

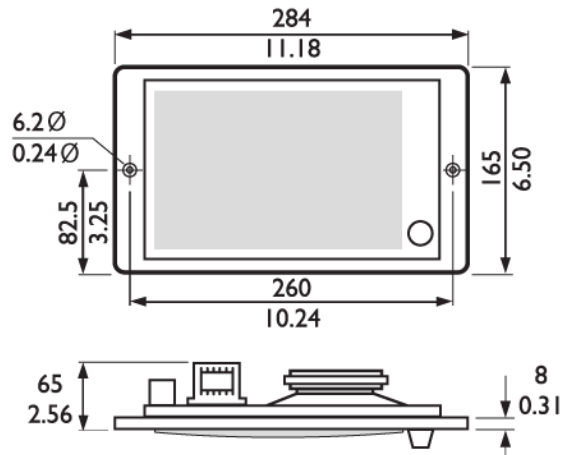


Polar diagram horizontal (measured with pink noise)

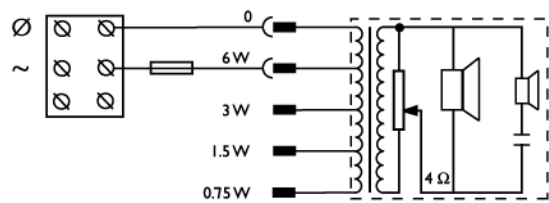


Polar diagram vertical (measured with pink noise)

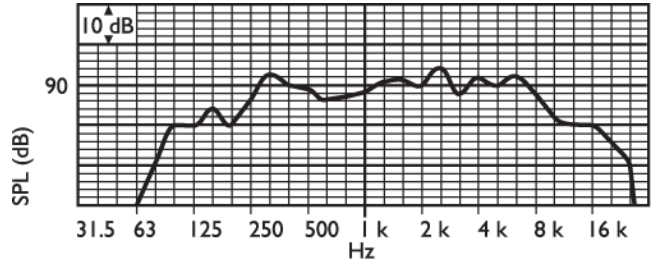
LBC 3011/51



Dimensions in mm (inch)



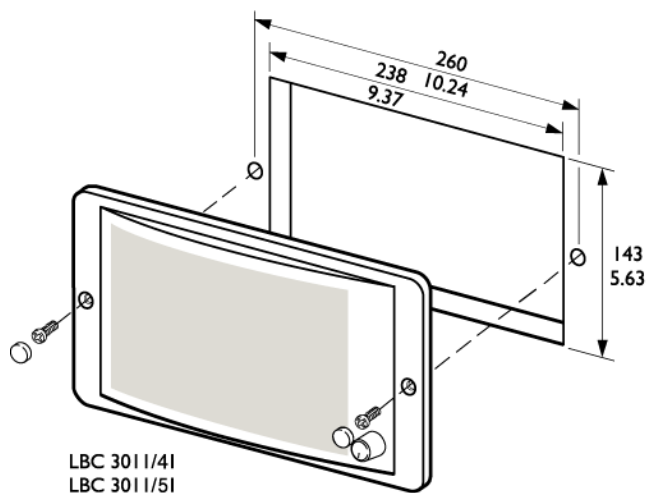
Circuit diagram



Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	85	90	88	88	92	90	89
SPL max.	93	98	96	96	100	98	97
Q-factor	5.1	3.9	2.1	3.7	7.4	9.1	31.6
Efficiency	0.08	0.32	0.37	0.21	0.27	0.14	0.03
H. angle	180	180	160	160	115	85	45
V. angle	180	180	160	180	85	100	50

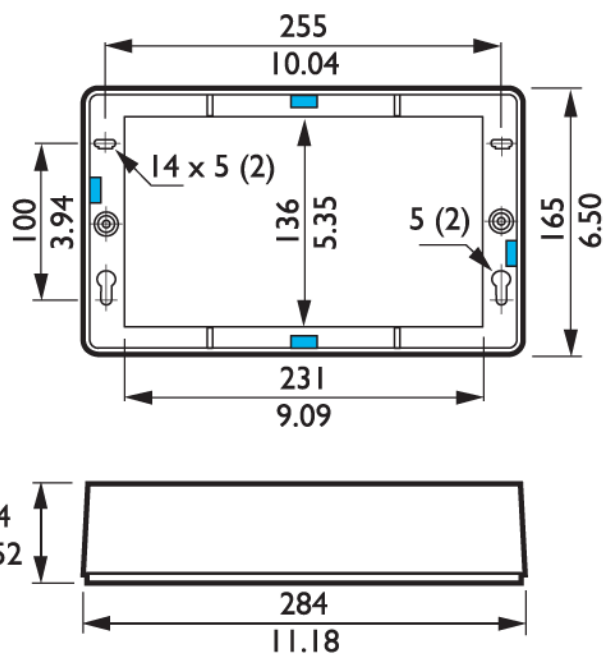
Acoustical performance specified per octave



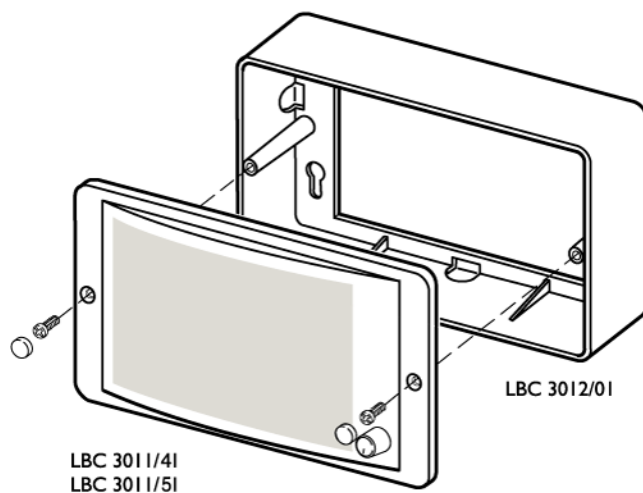
Recessed mounting in walls and ceilings. Dimensions in mm (inch)

Two mounting boxes are available for surface mounting onto hard surfaces or flush-mounting into non-cavity walls. The LBC 3012/01 accommodates the panel loudspeaker for a self-contained unit for surface mounting.

LBC 3012/01 Mounting box for surface mounting

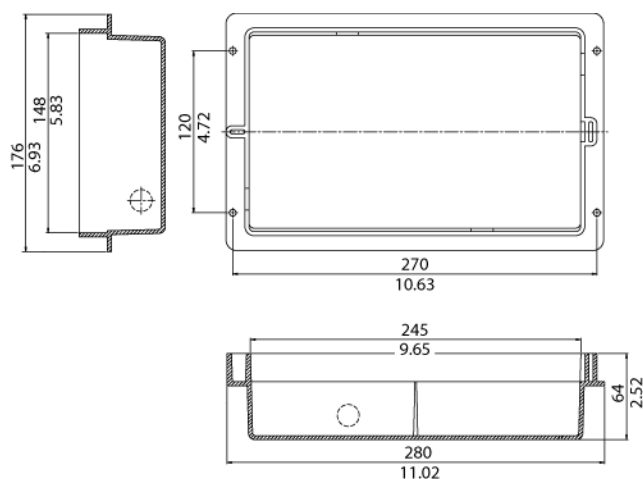


Dimensions in mm (in) with knockout boxes

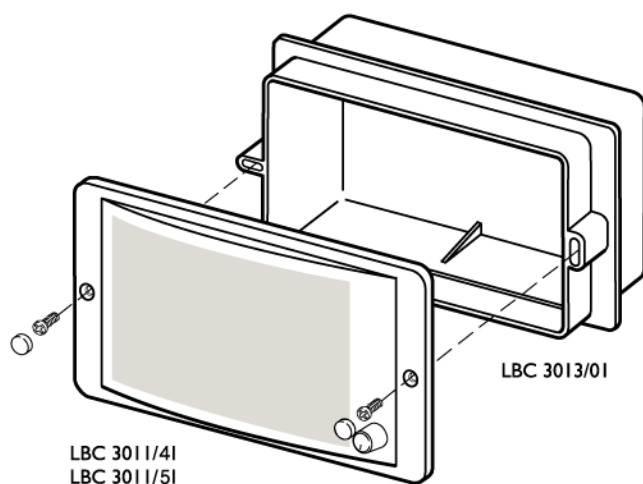


Surface mounting

LBC 3013/01 Mounting box for flush mounting



Dimensions in mm (in)



Flush mounting

Technical Specifications

Electrical* LBC 3011/41 and LBC 3011/51

Max power	9 W
Rated power (PHC)	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	96 dB / 88 dB (SPL)
Effective frequency range (-10 dB)	75 Hz to 18 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	160° / 85°
vertical	180° / 100°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	2-pole screw

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	165 x 284 x 59.5 mm (6.49 x 11.18 x 2.34 inch)
Mounting cut-out (H x W)	143 x 238 mm (5.63 x 9.37 inch)
Weight	1.2 kg (2.64 lb)
Color	White (RAL 9010)
Speaker size	2" / 4"
Magnet weight	48 g / 150 g (1.7 oz / 5.3 oz)

Mechanical LBC 3012/01

Dimensions (H x W x D)	165 x 284 x 64 mm (6.49 x 11.18 x 2.52 inch)
Weight	238 g (8.40 oz)
Color	White (RAL 9010)

Mechanical LBC 3013/01

Dimensions (H x W x D)	176 x 280 x 64 mm (6.49 x 11.18 x 2.52 inch)
Weight	307 g (10.83 oz)
Color	White (RAL 9010)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3011/41 Panel Loudspeaker without Volume Control	LBC3011/41
LBC 3011/51 Panel Loudspeaker with Volume Control	LBC3011/51
Accessories	
LBC 3012/01 Surface Mounting Box	LBC3012/01
LBC 3013/01 Flush Mounting Box	LBC3013/01

LB1-UM06E Metal Cabinet Loudspeaker



4

Features

- ▶ Suitable for speech and music reproduction
- ▶ Robust metal enclosure
- ▶ Surface and/or recessed mounting
- ▶ Provision for internal mounting of the optional line/loudspeaker supervision boards
- ▶ Recommended for voice evacuation systems
- ▶ Compliant with international installation and safety regulations
- ▶ BS 5839-8 and EN 60849 compliant

The LB1-UM06E circular metal cabinet EVAC loudspeaker delivers professional performance from a robust, yet aesthetically designed metal enclosure. It is an ideal loudspeaker for indoor use in offices, schools, car parks, shopping centers, and in areas where vandalism is a potential hazard.

Functions

Voice alarm

Voice alarm loudspeakers are specifically designed for use in buildings, where the performance of PA systems is subject to official regulations. The LB1-UM06E is designed for voice alarm systems, and is compliant with British Standard BS 5839-8 and EN 60849.

Protection

The loudspeaker has built-in protection to ensure that in the event of a fire damage does not cause failure of the connected circuit. In this way, system integrity is maintained, ensuring loudspeakers in other areas can still be used to inform people of the situation.

Connections and safety

The loudspeaker has a ceramic terminal block, thermal fuse, and heat-resistant, high-temperature wiring. The cabinet has a provision for internally mounting the optional line/loudspeaker supervision board.

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 the speakers can withstand two times their rated power for short durations. This ensures extra reliability under extreme conditions, leading to greater customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

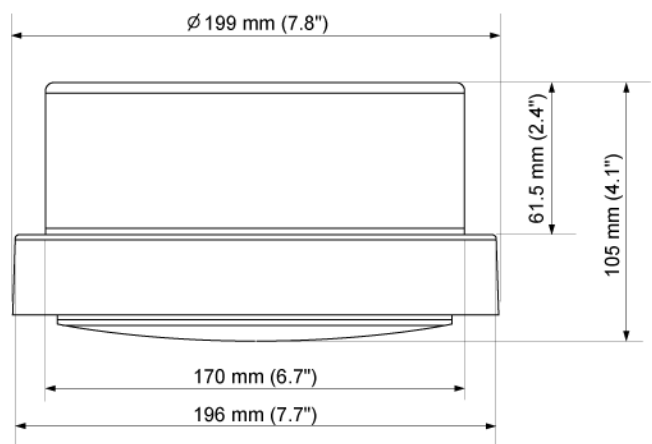
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
	acc. to EN 60849

Installation/Configuration Notes

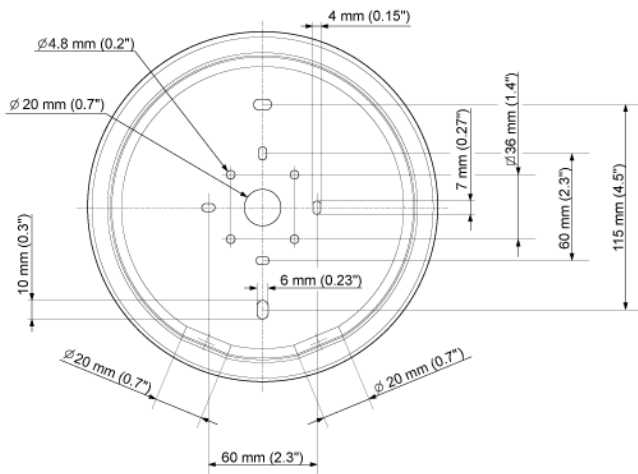
The cabinet is designed for both surface and recessed mounting on walls. The back box provides a selection of mounting holes, even for mounting on U40 and MK installation boxes. The back box has two knockout holes on the topside for two cable glands (not included) for loop-through connection. For extra installation convenience, a safety cord from the back box lets the installer temporarily hang the front grille unit during installation.

The cabinet has a three-way terminal block with screw connections suitable for loop-through wiring (including earth).

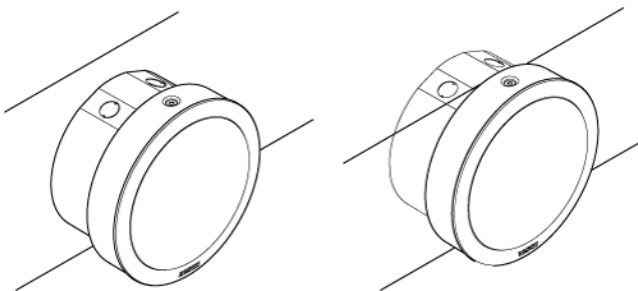
Four primary taps on the matching transformer allow selection of nominal full-power, half-power, quarter-power or eighth power radiation (in 3 dB steps).



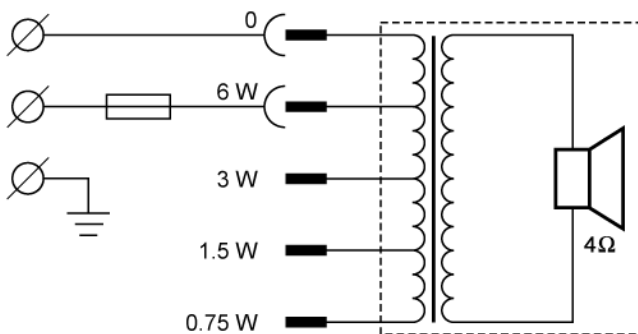
Dimensions in mm (in)



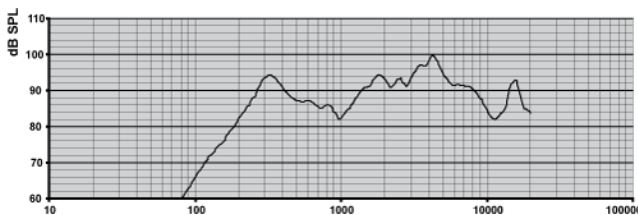
Back / Installation dimensions in mm (in)



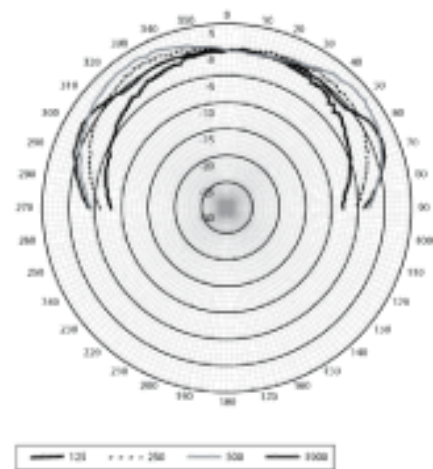
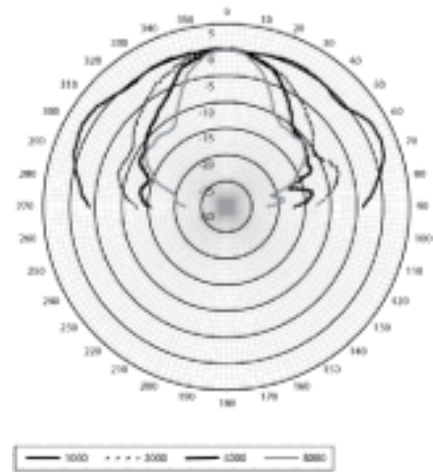
Surface mounted (left) and recessed mounted (right)



Circuit diagram



Frequency response



Polar diagrams (measured with pink noise)

Octave band sensitivity*

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	73.3	-	-
250 Hz	90.4	-	-
500 Hz	89.0	-	-
1000 Hz	86.0	-	-
2000 Hz	92.4	-	-
4000 Hz	96.6	-	-
8000 Hz	89.9	-	-
A-weighted	-	89.9	96.8
Lin-weighted	-	90.1	96.0

Octave band opening angles

	Horizontal	Vertical
125 Hz	180	180
250 Hz	180	180
500 Hz	180	180
1000 Hz	180	180
2000 Hz	80	80
4000 Hz	56	56
8000 Hz	40	40

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dB SPL)

Parts Included

Quantity	Components
1	LB1-UM06E
1	Installation instruction

Technical Specifications

Electrical*

Maximum power	9 W
Rated power (PHC)	6 W
Power tapping	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	94 / 86 dB (SPL)
Effective frequency range (-10 dB)	160 Hz to 20 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	180° / 56°
Rated input voltage	100 V
Rated impedance	1667 ohm
Connector	3-pole screw block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (W x D)	199 x 105 mm (7.8 x 4.1 in)
Weight	1.23 kg (2.71 lb)
Color	White (RAL 9010)
Material (back box and grille)	Steel
Speaker size	152.4 mm (6 in)
Magnet weight	53 g (1.9 oz)
Connector	3-pole screw

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-UM06E Metal Cabinet Loudspeaker **LB1-UM06E**
6 W

LBC 3018/00 Metal Cabinet Loudspeaker



Features

- ▶ Suitable for speech and music reproduction
- ▶ Robust metal enclosure
- ▶ Surface and/or recessed mounting
- ▶ Unobtrusive in virtually all interiors
- ▶ Recommended for voice evacuation systems
- ▶ Compliancy with international installation and safety regulations
- ▶ BS 5839-8 compliancy

The LBC 3018/00 cabinet loudspeaker delivers professional performance from a robust, yet aesthetically designed metal enclosure. It is an ideal loudspeaker for indoor use in offices, schools, car parking, shopping centers and in areas where vandalism is a potential hazard.

Functions

Voice alarm loudspeakers are specifically designed for use in buildings, where the performance of PA-systems is subject to official regulations. The LBC 3018/00 is designed for voice alarm systems, and is compliant with British Standard BS 5839-8.

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.

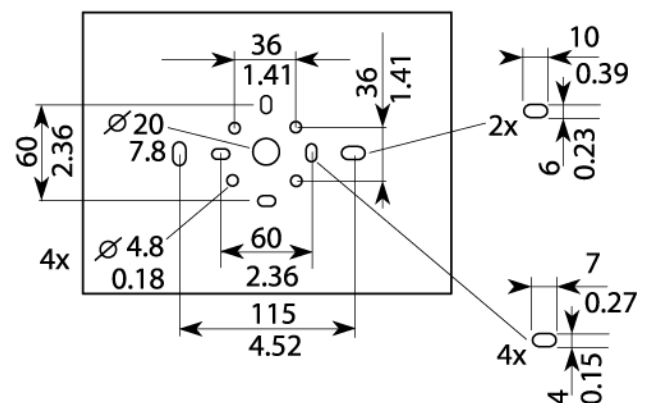
The cabinets are equipped with a high efficiency, dual-cone loudspeaker offering a wide frequency range suitable for both speech and music reproduction.

Certifications and Approvals

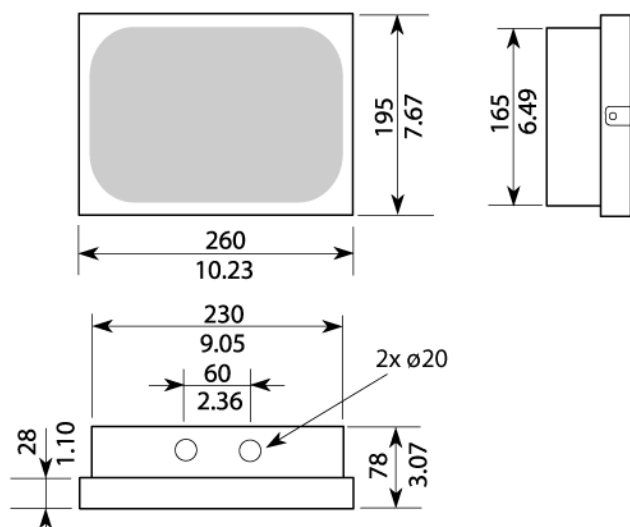
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	
EVAC	acc. to BS 5839-8	

Installation/Configuration Notes

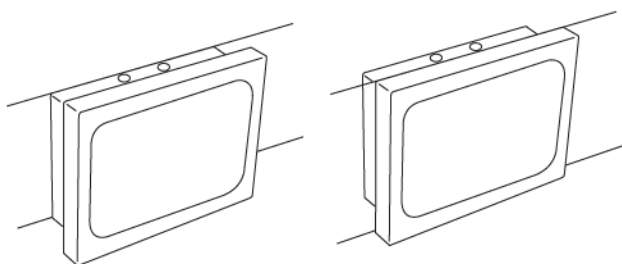


Mounting dimensions in mm (in)



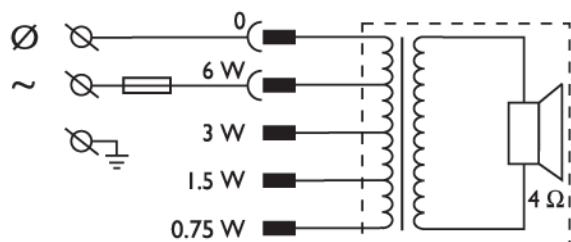
Dimensions in mm (in)

The cabinet is designed for both surface mounting on walls and recessed mounting into brick or concrete walls. The backbox of the cabinet provides a selection of mounting holes, even for mounting onto U40 and MK installation boxes. The backbox has two knockout holes on the topside for two cable glands for loop-through connection. For extra convenience, a safety cord from the backbox lets the installer temporarily hang the front grille unit during installation.

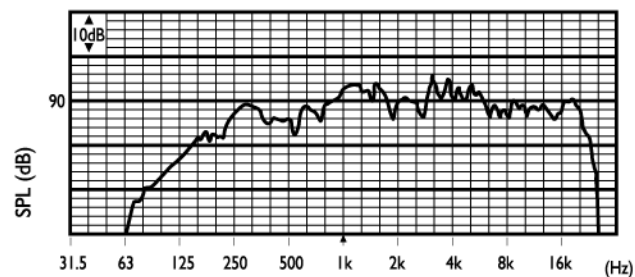


Surface mounted (left) and recessed (right) mounted

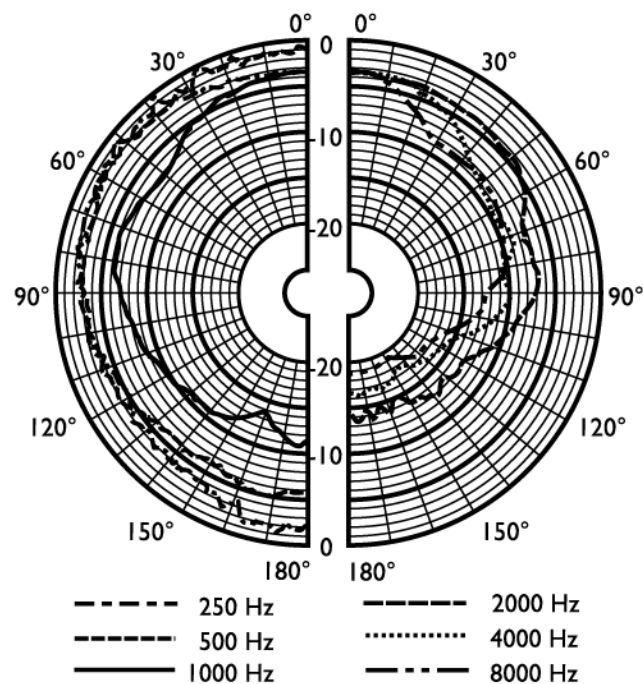
The cabinet has a three-way terminal block with screw connections suitable for loop-through wiring (including earth). Four primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power, quarter-power or eighth power radiation (in 3 dB steps).



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	84	93	94	97	97	93
SPL max.	92	101	102	105	105	103
Q-factor	2.5	3.3	7.9	8.5	12.9	14.2
Efficiency	0.32	2.2	4	7.1	5.6	2.5
H. angle	180	180	120	85	55	40
V. angle	180	180	80	110	60	35

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	9 W
Rated power (PHC)	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	102 dB / 94 dB (SPL)
Effective frequency Range (-10 dB)	150 Hz to 20 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	120 ° / 55 °
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	3-pole screw

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	195 x 260 x 80 mm (7.68 x 10.24 x 3.15 in)
Weight	2.6 kg (5.78 lb)
Color	White (RAL 9010)
Speaker size	152.4 mm (6 in)
Magnet weight	150 g (5.3 oz)

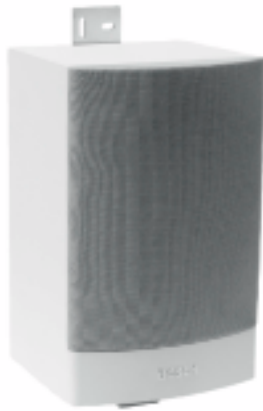
Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3018/00 Metal Cabinet Loudspeaker LBC3018/00

LB1-UW06-Fx Cabinet Loudspeakers



4

Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **Finished in white or black**
- ▶ **MDF construction**
- ▶ **Mounting brackets for wall or ceiling mounting**
- ▶ **Complies with international installation and safety regulations**

The LB1-UW06-Fx is a 6 W, general-purpose, cost-effective loudspeaker for indoor use. Two brackets, fixed to the rear panel, are provided for quick and easy mounting on a wall or ceiling. The cabinet is available in the colors black or white.

Functions

The robust, solid MDF (medium density fiberboard) enclosures are covered with a durable, easy-to-clean vinyl in a choice of white or black. The ABS fronts are covered with fine woven cloth in matching color.

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

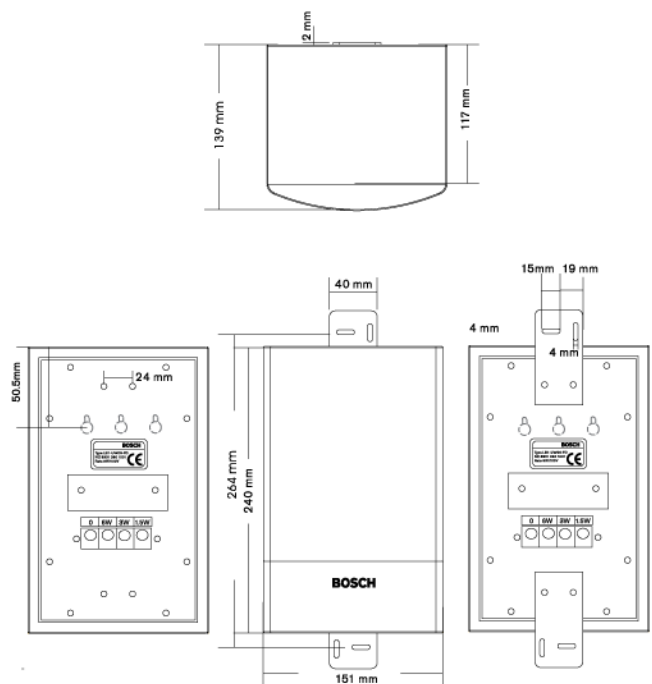
conditions, leading to higher customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

Region	Certification
Europe	CE
Safety	acc. to EN 60065

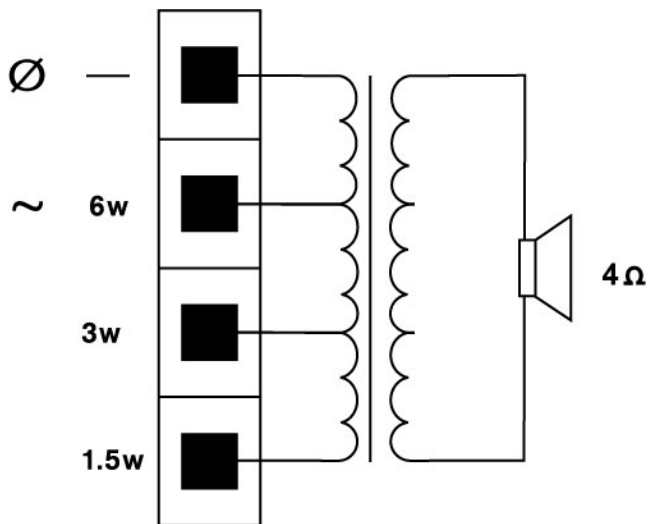
Installation/Configuration Notes

Two mounting brackets, fixed to the rear panel provide easy and quick wall mounting or ceiling mounting. If these are not desired, they can be removed, and the unit can still be wall mounted using the three keyholes in the rear panel.

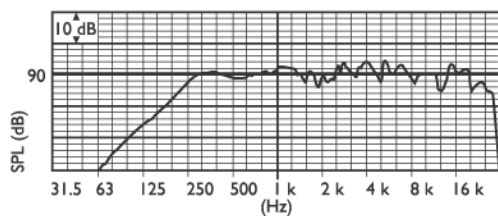
A convenient, easy-to-use, 4-pole push-in terminal block is on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100 volt matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



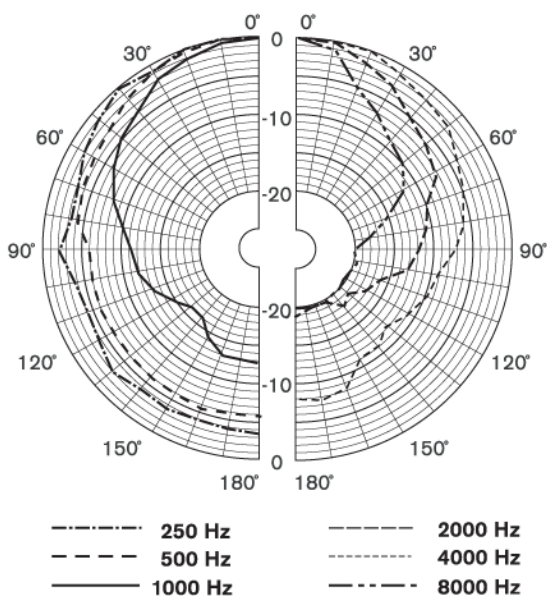
Dimensions in mm



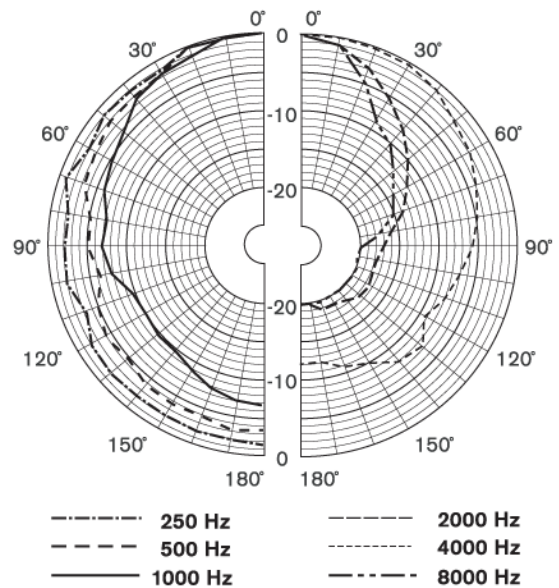
Circuit diagram



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	99 dB / 91 dB (SPL)
Effective frequency range (-10 dB)	180 Hz to 20 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	165° / 95°
vertical	158° / 73°
Rated input voltage	100 V
Rated impedance	1667 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	240 x 151 x 139 mm (9.4 x 5.9 x 5.5 in)
Weight	1.5 kg (3.3 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-UW06-FD Unidirectional Cabinet Loudspeaker 6 W, black	LB1-UW06-FD
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LB1-UW06-FL Unidirectional Cabinet Loudspeaker 6 W, white	LB1-UW06-FL
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LB1-UW06x-x Cabinet Loudspeakers



Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **Available in black or white**
- ▶ **MDF construction**
- ▶ **With or without integral volume control**
- ▶ **Complies with international installation and safety regulations**

The LB1-UW06x-x is a 6 W, general-purpose, cost-effective loudspeaker for indoor use, with or without volume control. Keyholes at the rear are provided for quick and easy wall mounting. The angled front baffle results in a better sound in the listening area. The cabinet is available in black or white.

Functions

The robust, solid MDF (medium density fiber board) enclosures are covered with a durable, easy-to-clean vinyl in a choice of white or black. The ABS fronts are covered with fine woven cloth in matching color. The angled front baffle results in improved high frequency reproduction in the listening area.

The speaker is available with or without a volume control.

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,

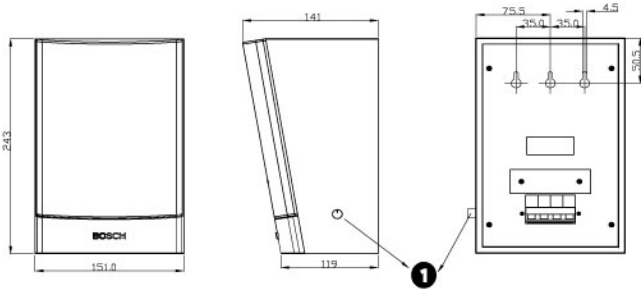
leading to higher customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

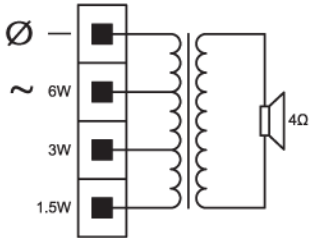
Installation/Configuration Notes

Three keyholes in the rear panel provide easy and quick wall mounting.

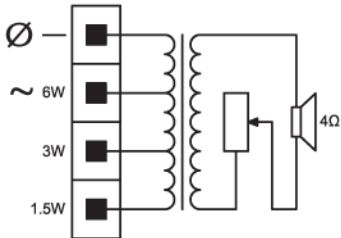
A convenient, easy-to-use, 4-pole push-in terminal block is on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100-volt, matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



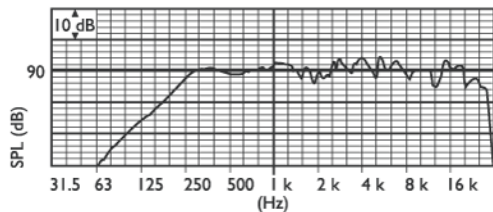
Dimensions LB1-UW06-x in mm showing volume control (1)



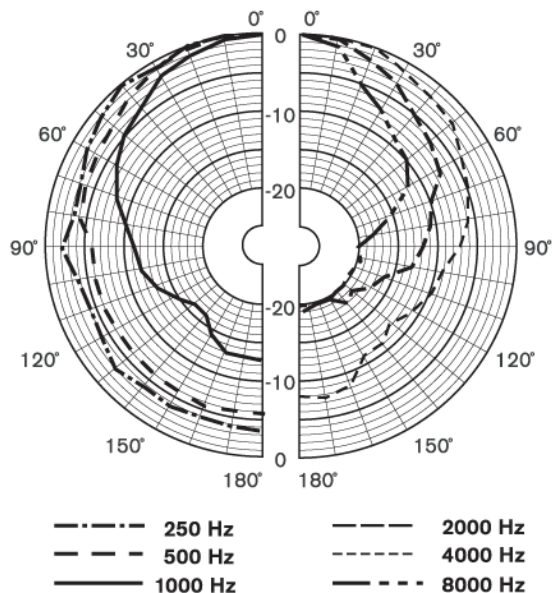
Circuit diagram LB1-UW06-x



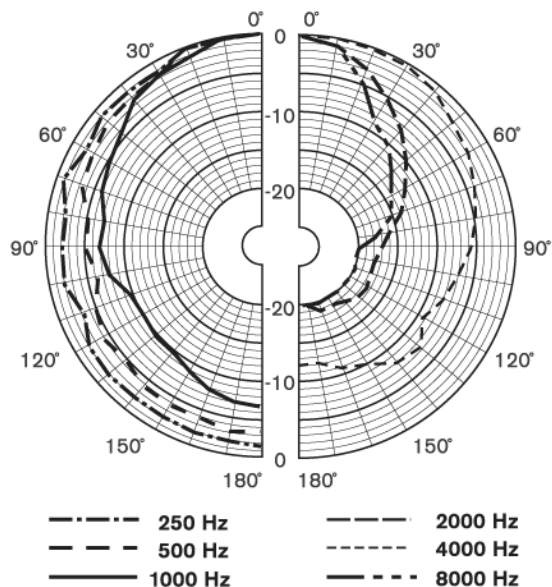
Circuit diagram LB1-UW06V-x



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	99 dB / 91 dB (SPL)
Effective frequency range	180 Hz to 20 kHz (-10 dB)
Opening angle horizontal	1 kHz / 4 kHz (-6 dB)
vertical	165° / 95°
Rated input voltage	100 V
Rated impedance	1667 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	243 x 151 x 141/119 mm (9.5 x 5.9 x 5.6/4.7 in)
Weight	0.9 kg (2 lb)
Color cabinet / cloth (D)	Black (D) or white (L)
cabinet / cloth (L)	Matches RAL 9004 / RAL 9004 Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-UW06-D Cabinet Loudspeaker 6 W, black	LB1-UW06-D
LB1-UW06V-D Cabinet Loudspeaker with Volume Control 6 W, black.	LB1-UW06V-D
LB1-UW06-L Cabinet Loudspeaker 6 W, white	LB1-UW06-L
LB1-UW06V-L Cabinet Loudspeaker with Volume Control 6 W, white	LB1-UW06V-L

LB1-CW06-x Corner Cabinet Loudspeakers



Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **Special shape for mounting in corners**
- ▶ **Available in black or white**
- ▶ **MDF construction**
- ▶ **Compliance with international installation and safety regulation**

The LB1-CW06-x is a 6 W, general-purpose cost-effective loudspeaker for indoor use. Two brackets with keyholes, fixed on one side provide quick and easy mounting in corners between two walls, or between a wall and ceiling. The cabinet is available in black or white.

Functions

The robust, solid MDF (Medium Density Fiber board) enclosures are covered with a durable, easy-to-clean vinyl in white or black. The ABS fronts are covered with fine woven cloth in matching color.

The cabinet shapes allow installation in corners between walls, and between wall and ceiling.

Certifications and Approvals

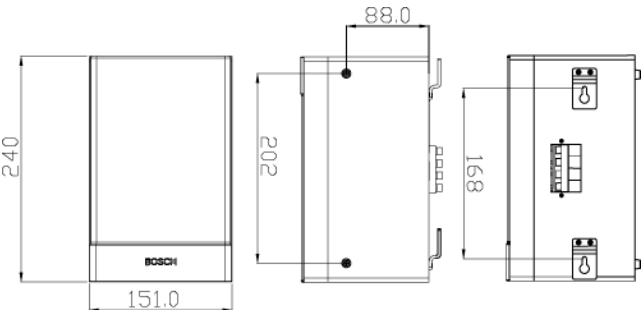
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

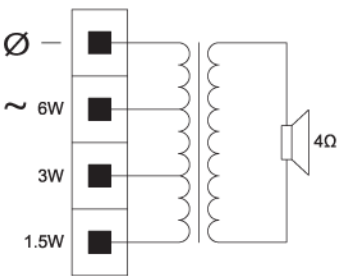
Installation/Configuration Notes

Two keyhole brackets at one side of the cabinet are provided for easy and quick wall mounting. The other side of the cabinet is provided with two rubber feet for absorbing unwanted vibrations and secure mounting.

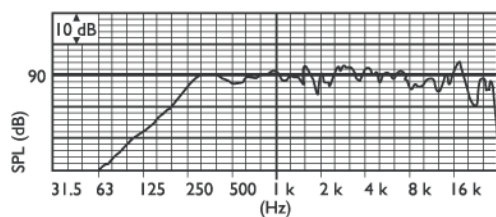
A convenient easy-to-use, 4-pole push-in terminal block is present on the side for on-site wiring. This terminal block has provision for power tapping on the 100-volt, matching transformer in the cabinet. It allows selection of nominal full-power, half-power, or quarter-power radiation (in 3 dB steps).



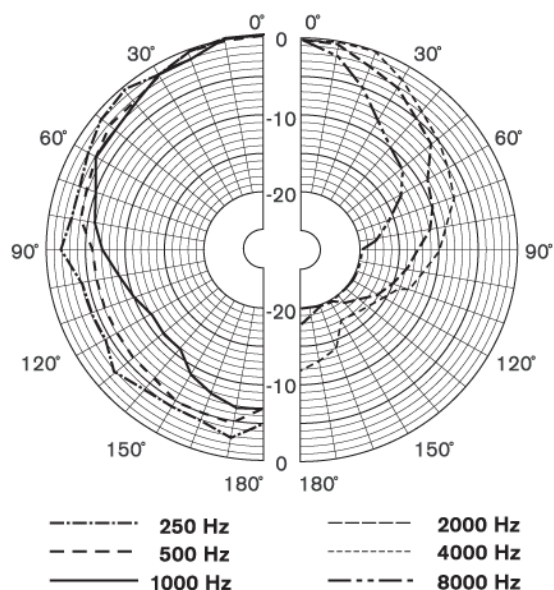
Dimensions in mm



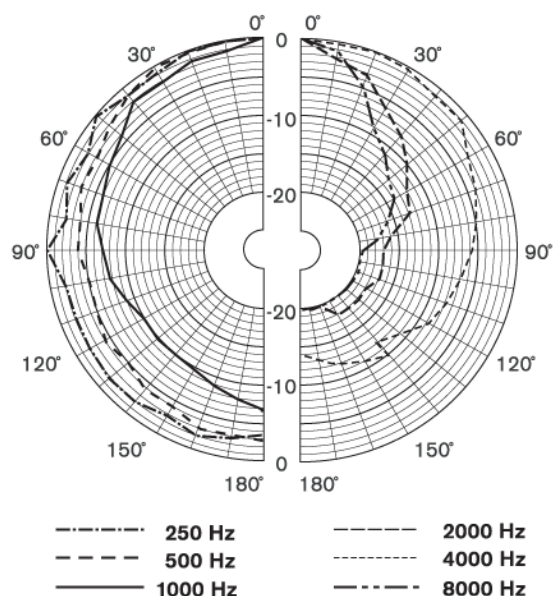
Circuit diagram



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	99 dB / 91 dB (SPL)
Effective frequency range (-10 dB)	180 Hz to 20 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	165° / 95°
vertical	150° / 75°
Rated input voltage	100 V
Rated impedance	1667 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	240 x 151 x 138 mm (9.5 x 5.9 x 5.6 in)
Weight	0.8 kg (1.8 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-CW06-D Corner Cabinet Loudspeaker 6 W, black	LB1-CW06-D
LB1-CW06-L Corner Cabinet Loudspeaker 6 W, white	LB1-CW06-L

LB1-UW12-x Cabinet Loudspeakers



leading to higher customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

Installation/Configuration Notes

Three keyholes in the rear panel provide easy and quick wall mounting. A convenient easy-to-use, 4-pole push-in terminal block is present on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100-volt, matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).

Features

- ▶ Good speech intelligibility and background music reproduction
- ▶ Available in black or white
- ▶ MDF construction
- ▶ Complies with international installation and safety regulations

The LB1-UW12-x is a 12 W, general-purpose, cost-effective loudspeaker for indoor use. Keyholes at the rear provide quick and easy wall mounting. The angled front baffle results in a better sound in the listening area. The cabinet is available in black or white.

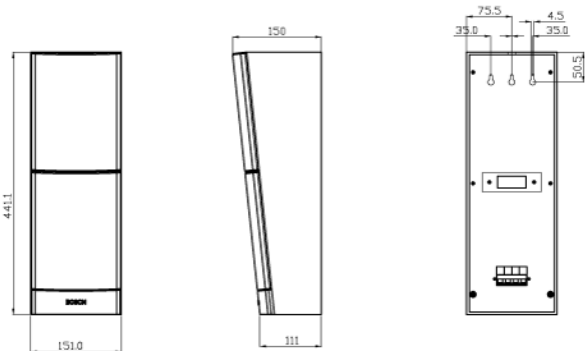
Functions

The robust, solid MDF (Medium Density Fiber board) enclosures are covered with a durable, easy-to-clean vinyl in a choice of white or black. The ABS fronts are covered with fine woven cloth in matching color.

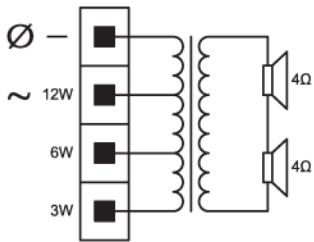
The angled front baffle results in improved high frequency reproduction in the listening area.

Certifications and Approvals

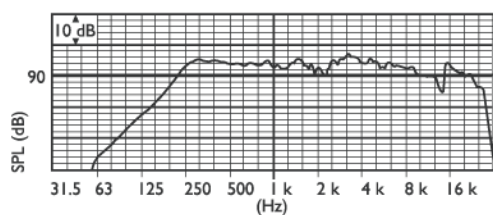
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated power for short durations. This ensures extra reliability under extreme conditions,



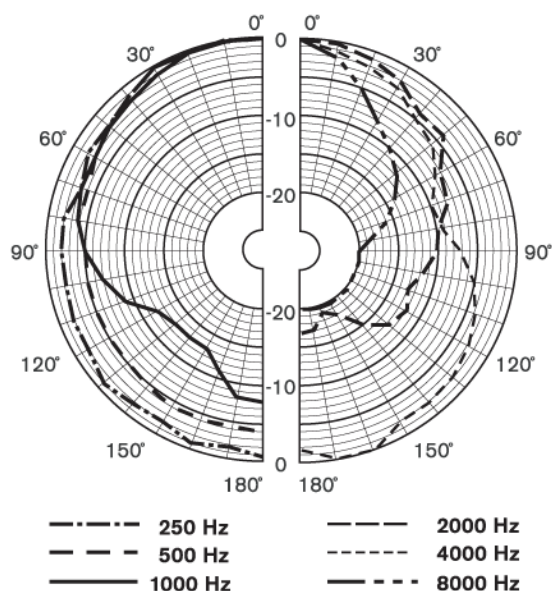
Dimensions in mm



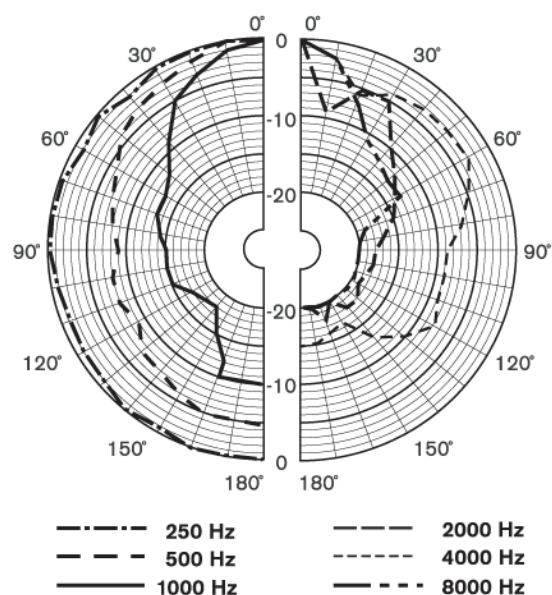
Circuit diagram



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	18 W
Rated power	12 / 6 / 3 W
Sound pressure level at 12 W / 1 W (1 kHz, 1 m)	104 / 93 dB (SPL)
Effective frequency range (-10 dB)	160 Hz to 20 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	195° / 95°
vertical	69° / 17°
Rated input voltage	100 V
Rated impedance	833 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	441 x 151 x 150/111 mm (17.4 x 5.9 x 5.9/4.4 in)
Weight	2.5 kg (5.5 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-UW12-D Cabinet Loudspeaker 12 W, black	LB1-UW12-D
LB1-UW12-L Cabinet Loudspeaker 12 W, white	LB1-UW12-L

LB1-BW12-x Bidirectional Cabinet Loudspeakers



Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **Wedge shaped design**
- ▶ **Available in black or white**
- ▶ **MDF construction**
- ▶ **Complies with international installation and safety regulations**

The LB1-BW12-x is a 12 W, cost-effective, bidirectional loudspeaker for indoor use. The baffle design creates a wide opening angle, making this loudspeaker very suitable for use in long corridors. Keyholes at the rear provide quick and easy wall mounting. The cabinet is available in black or white.

Functions

The robust, solid MDF (Medium Density Fiber board) enclosures are covered with a durable, easy-to-clean vinyl in a choice of white or black. The ABS fronts are covered with fine woven cloth in matching color.

The cabinets have two dual cone loudspeaker drivers, mounted on an angled baffle, providing a wide opening angle. This model is intended for use in long corridors, such as in shopping arcades.

Certifications and Approvals

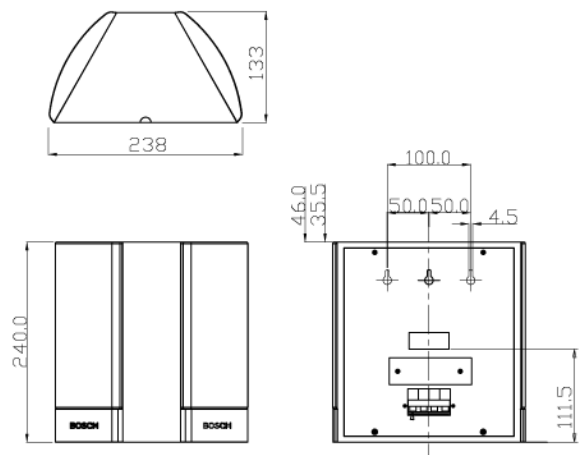
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

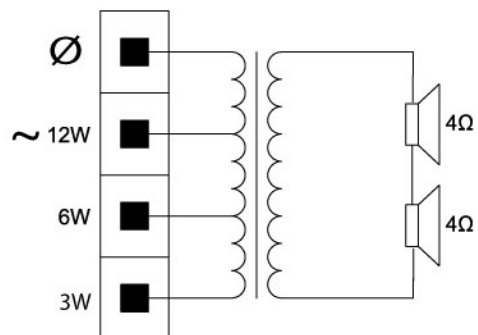
Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

Installation/Configuration Notes

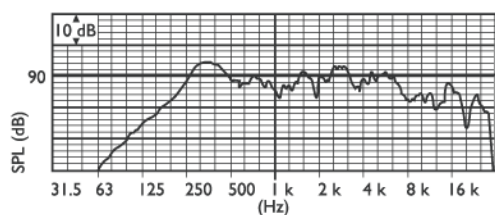
Three keyholes in the rear panel provide easy and quick wall mounting. A convenient, easy-to-use, four-pole push-in terminal block is present on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100-volt, matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



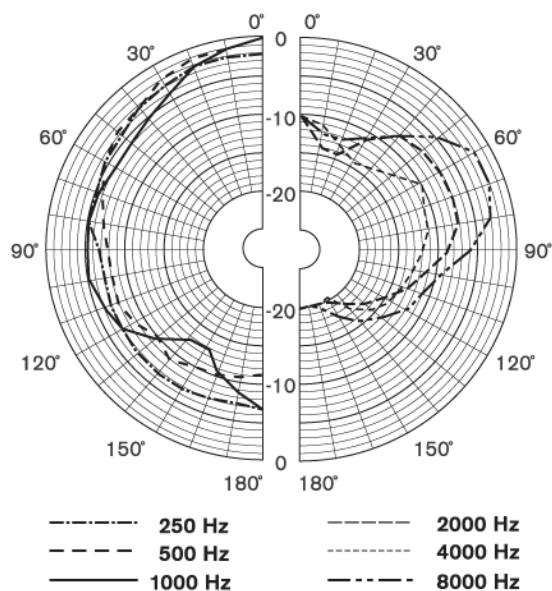
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	18 W
Rated power	12 / 6 / 3 W
Sound pressure level at 12 W / 1 W (1 kHz, 1 m)	97 / 86 dB (SPL)
Effective frequency range (-10 dB)	140 Hz to 20 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	270° / 165°
Rated input voltage	100 V
Rated impedance	833 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	240 x 238 x 133 mm (9.4 x 9.3 x 5.24 in)
Weight	1.5 kg (3.3 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LB1-BW12-D Bi-Directional Cabinet

LB1-BW12-D

Loudspeaker

12 W, black

LB1-BW12-L Bi-Directional Cabinet

LB1-BW12-L

Loudspeaker

12 W, white

LBC 341x/01 Cabinet Loudspeakers



Features

- ▶ **High-fidelity music and speech reproduction**
- ▶ **Extended frequency range**
- ▶ **Selectable 8 ohm and 100 V inputs**
- ▶ **Compact yet robust enclosure**
- ▶ **Perforated metal grille**
- ▶ **Supplied with adjustable wall-mounting bracket**
- ▶ **Horizontal and vertical mounting**
- ▶ **Complies with international installation and safety regulations**

Bosch loudspeakers offer a combination of quality, performance and innovation in public address. They are the result of over half a century's experience in professional audio, and meet virtually all sound reinforcement system requirements.

Bosch Cabinet loudspeakers deliver professional performance from a compact robust enclosure. They have been developed to meet the increasing demands for high-quality background music reproduction in indoor applications.

Functions

The range comprises two models, offering a choice of 10 W or 25 W power handling capacity. The compact enclosures are made from tough ABS material which guarantees excellent bass response. The solid construction and appealing design is augmented by a perforated metal grille, which covers the front of the enclosure.

The LBC 3410/01 is a 10 W loudspeaker cabinet. It is fitted with two loudspeakers, a high-frequency tweeter and a low-frequency woofer with dual voice coil, coupled using appropriate L-C filters.

The LBC 3411/01 loudspeaker cabinet delivers 25 W and is similar in construction to the lower power model, but has larger loudspeakers, and is housed in a larger enclosure.

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.

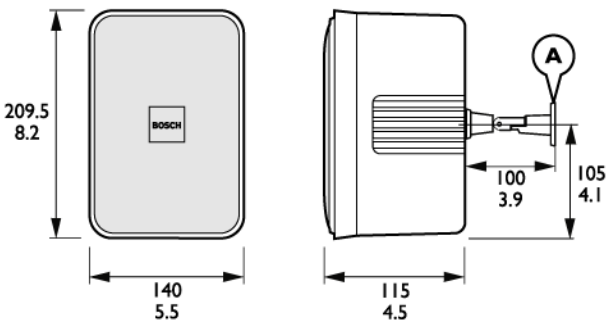
Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Self-extinguishing		acc. to UL 94 V0

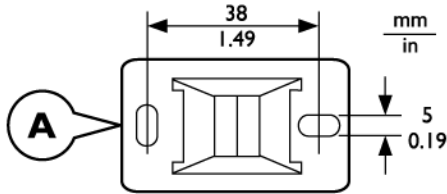
Installation/Configuration Notes

The cabinets can be mounted horizontally and/or vertically and are fitted with a rotatory logo. For wall mounting the loudspeakers, a sturdy mounting bracket is provided with two lockable swivel joints to allow the sound to be easily directed. The bracket is fitted to the rear of the enclosure, and is adjustable in two perpendicular planes.

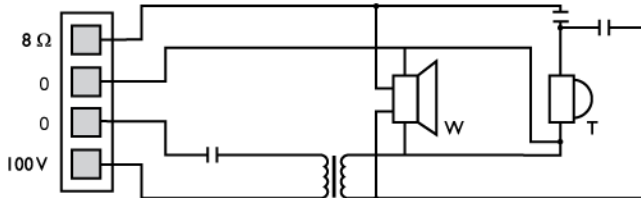
All models are supplied with a built-in 100 V line transformer and an separate 8 ohm connection (bypassing the line transformer). The loudspeakers can be connected for either 100 V or low-ohmic supply by means of a 4-pole push-in connector at the back of the enclosure.

LBC 3410/01

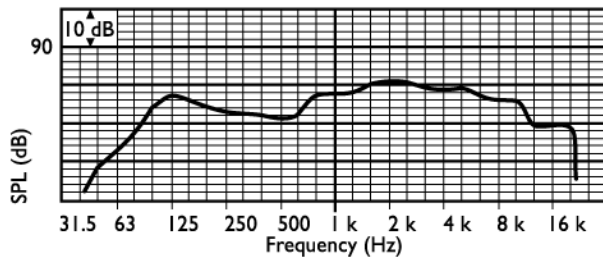




Dimensions in mm (in)



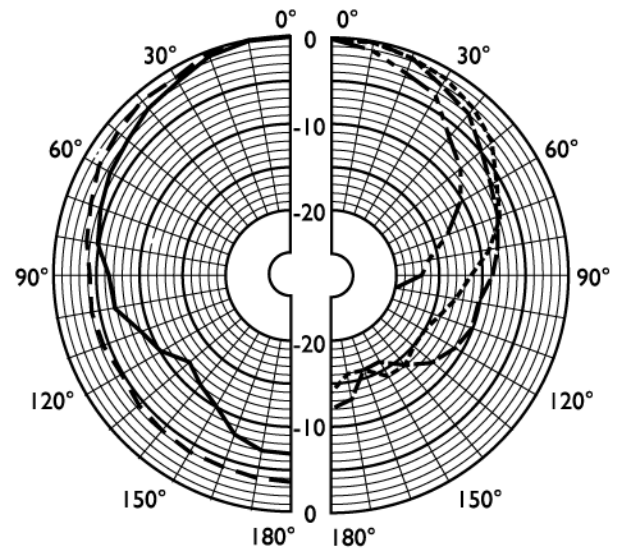
Circuit diagram



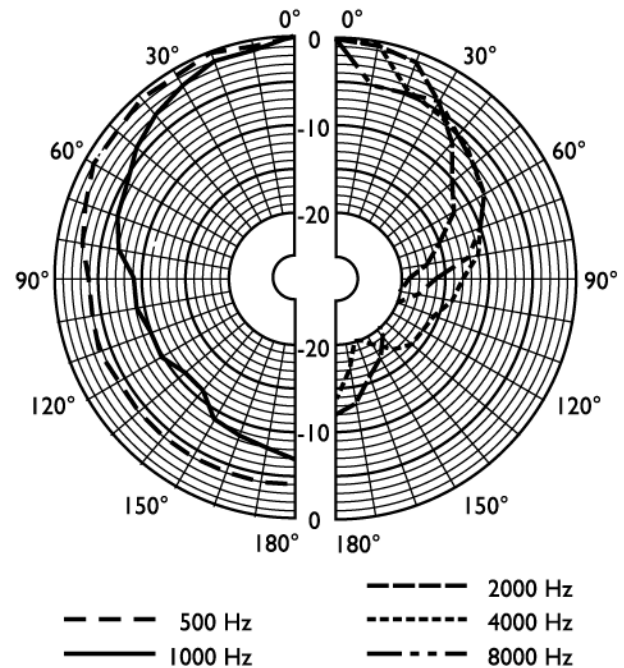
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	84	81	81	86	88	87	84
SPL max.	94	91	91	96	98	97	94
Q-factor	1.1	1.1	1.8	3.6	6.5	6	10
Efficiency	0.28	0.13	0.09	0.14	0.12	0.1	0.03
H. angle	360	360	360	170	120	130	80
V. angle	360	360	360	140	70	90	80

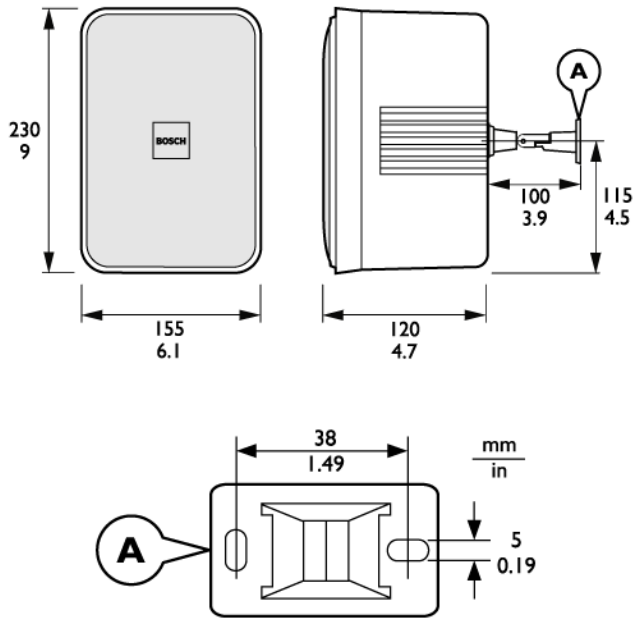
Acoustical performance specified per octave



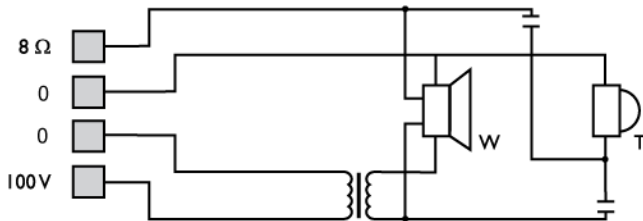
Polar diagram horizontal (measured with pink noise)



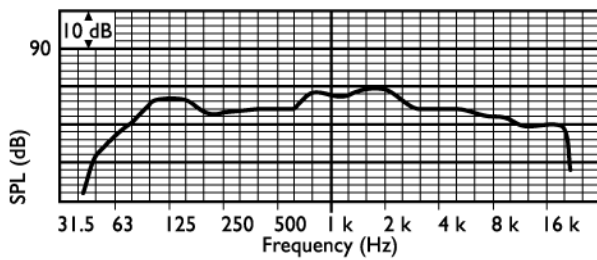
Polar diagram vertical (measured with pink noise)

LBC 3411/01

Dimensions in mm (in)



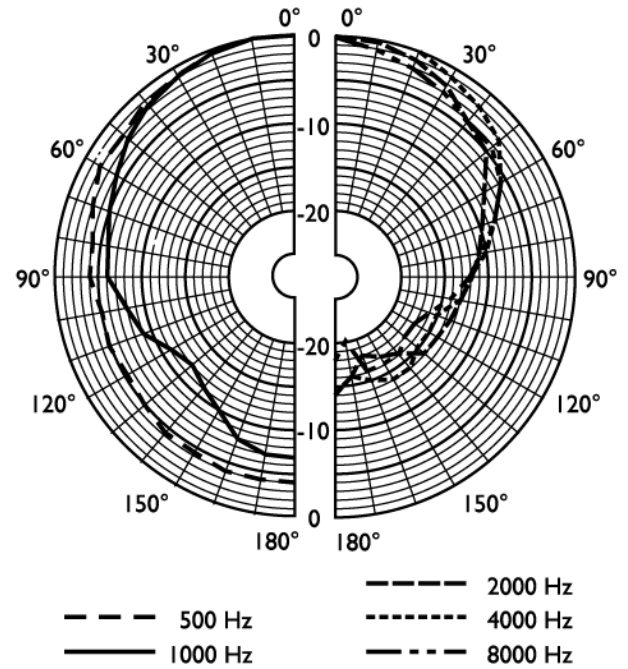
Circuit diagram



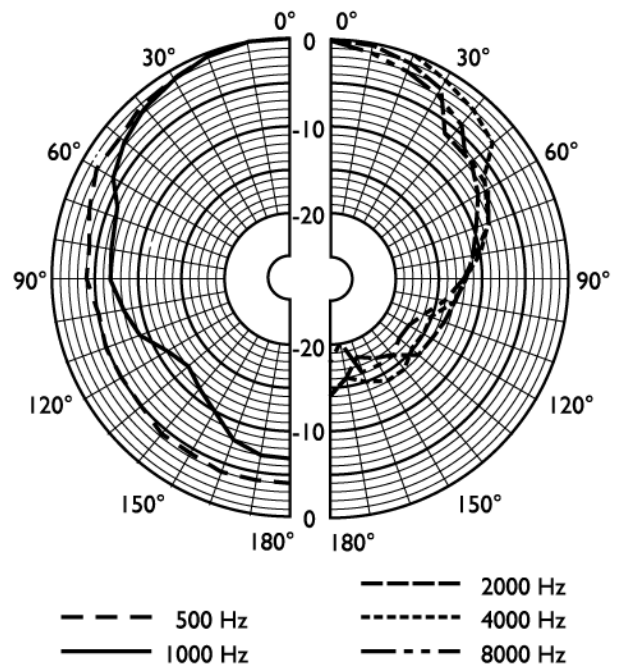
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	85	83	84	88	89	84	83
SPL max.	99	97	98	102	103	98	97
Q-factor	1.1	1.3	2.2	3.6	7.8	6.5	7.8
Efficiency	0.35	0.19	0.14	0.22	0.13	0.05	0.03
H. angle	360	360	360	180	110	120	120
V. angle	360	360	360	130	75	110	90

Acoustical performance specified per octave



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Parts Included**Quantity Component**

1	LBC 341x/01 Cabinet Loudspeaker
1	Wall mounting bracket

Technical Specifications

Electrical*

Product	LBC 3410/01	LBC 3411/01
Maximum power	15 W	40 W
Rated power	10 W	25 W
SPL at 10 W / 1 W (1 kHz, 1 m)	96 dB / 86 dB (SPL)	102 dB / 88 dB (SPL)
Opening angle	1 kHz / 4 kHz (-6 dB)	1 kHz / 4 kHz (-6 dB)
horizontal	170° / 130°	180° / 120°
vertical	140° / 90°	130° / 110°
Effective frequency range (-10 dB)	110 Hz to 20 kHz	100 Hz to 20 kHz
Rated voltage	100 V / 8.8 V	100 V / 14.1 V
Rated impedance	1000 / 8 ohm	400 / 8 ohm
Connector	4-pole push-in	4-pole push-in

* Technical performance data acc. to IEC 60268-5

Mechanical

Product	LBC 3410/01	LBC 3411/01
Dimensions (H x W x D)	209.5 x 140 x 121.5 mm (8.2 x 5.5 x 4.8 in)	230 x 155 x 126.5 mm (9.1 x 6.1 x 5 in)
Speaker diameters	1" and 4.5"	1" and 5"
Weight	2.1 kg (4.6 lb)	2.6 kg (5.7 lb)
Color	White (RAL 9010)	White (RAL 9010)
Magnet weights	3.5 oz and 8 oz	3.5 oz and 10 oz

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3410/01 Cabinet Loudspeaker, 10 W ABS, for indoor use	LBC3410/01
LBC 3411/01 Cabinet Loudspeaker, 25 W ABS, for indoor use	LBC3411/01

LBC 310x/1x Cabinet Loudspeakers



Features

- ▶ **High-quality music and speech reproduction**
- ▶ **Extended frequency range**
- ▶ **Wide opening angle**
- ▶ **Simple power setting with vari-tap switch**
- ▶ **Compact yet robust aluminum enclosure**
- ▶ **Adjustable wall mounting bracket**
- ▶ **Ball-proof**
- ▶ **Water and dust protected to IP 55**
- ▶ **Comply with international installation and safety regulations**

Bosch loudspeakers offer a combination of quality, performance and innovation in public address. They are the result of over half a century's experience in professional audio, and meet virtually all sound reinforcement system requirements.

Bosch cabinet loudspeakers deliver professional performance from a compact, robust enclosure. They have been developed to meet the increasing demands for high quality foreground and background music in indoor and outdoor sound reinforcement applications.

System Overview

Three models

The range comprises three models, offering a choice of 10, 20 or 30 W power handling capacity. The compact enclosures are made from die cast aluminum, which guarantees excellent bass response, a solid weatherproof construction and a pleasing appearance.

The LBC 3100/11 and /16 (dark grey and white respectively) are 10 W loudspeaker cabinets. They are fitted with two loudspeakers, a high-frequency tweeter and a low frequency woofer, coupled using appropriate LC filters.

The LBC 3101/11 and /16 (dark grey and white respectively) loudspeaker cabinets deliver 20 W and are similar in construction to the lower power models, but with larger loudspeakers and housed in a larger enclosure.

The LBC 3102/11 and /16 (dark grey and white respectively) loudspeaker cabinets deliver 30 W. They are fitted with three loudspeakers comprising two low-frequency woofers and a high-frequency tweeter, coupled with the appropriate L-C filters.

Functions

Their extended frequency range, particularly at both low and high frequencies provides excellent music reproduction in shops, bars and boutiques. They are also ideal loudspeakers for monitoring, exhibition areas, presentation environments, terraces and temporary installations.

The very wide opening angle ensures even sound distribution, so fewer loudspeakers are needed to cover a given area.

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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

Installation/Configuration Notes

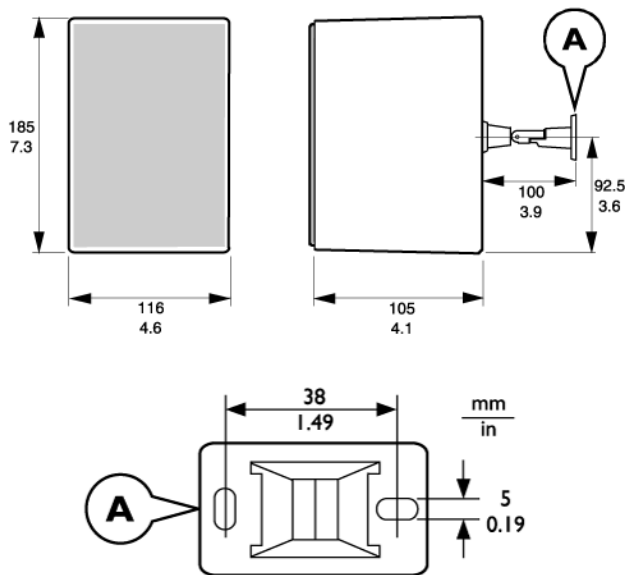
Mounting

For wall mounting the loudspeakers, a sturdy mounting bracket is provided with two lockable swivel joints to allow the sound to be easily directed. The bracket is fixed to the rear of the enclosure, and is adjustable in two perpendicular planes.

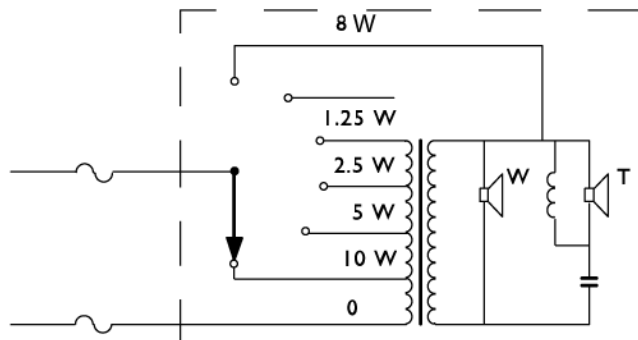
Simple power setting

All models are supplied with a built-in 100 V line transformer with taps on the primary winding for full-power, half-power, quarter power and one-eighth power radiation. These taps are connected to a rotary vari-tap switch located on a recessed panel on the rear of the enclosure to allow simple output power setting. An 8 ohm connection (by-passing line transformer) and an off position are also provided on the vari-tap switch. A two meter long twin-core loudspeaker cable is connected to the loudspeaker. The ends are stripped ready for use.

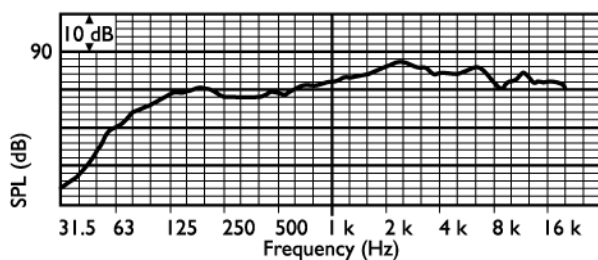
LBC 3100/11 and /16



Dimensions in mm (in)



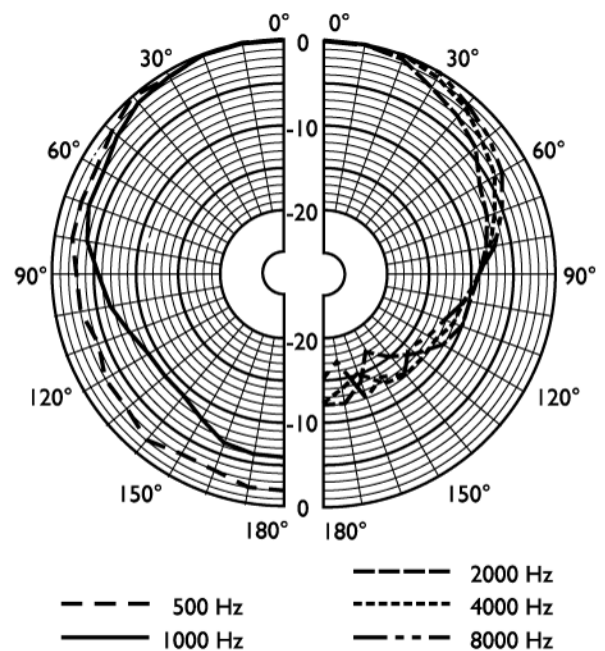
Circuit diagram



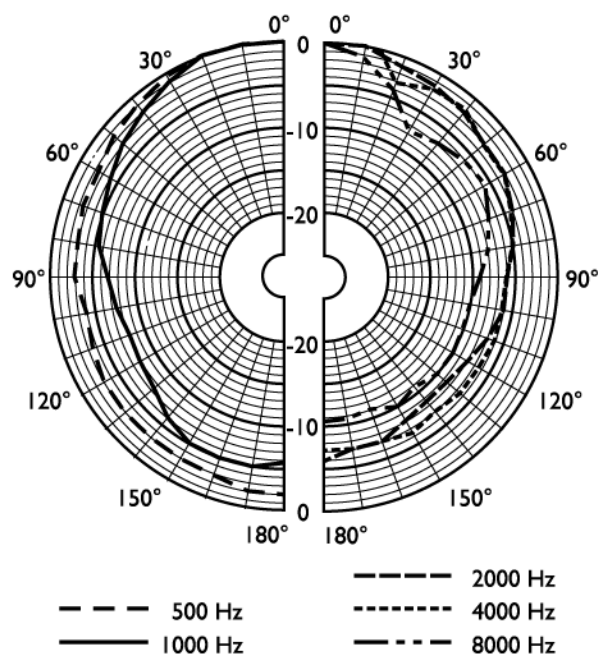
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	78	78	79	82	85	84	82
SPL max.	88	88	89	92	95	94	92
Q-factor	1.3	1.4	1.8	2.9	4.9	4.4	5
Efficiency	0.06	0.06	0.06	0.07	0.08	0.07	0.04
H. angle	360	360	360	190	130	145	130
V. angle	360	360	360	180	100	140	110

Acoustical performance specified per octave

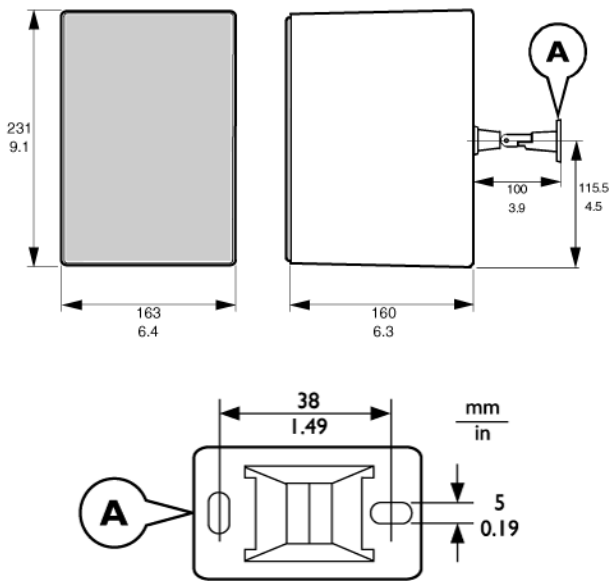


Polar diagram horizontal (measured with pink noise)

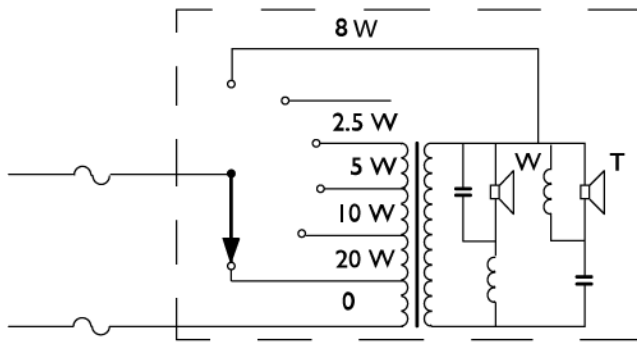


Polar diagram vertical (measured with pink noise)

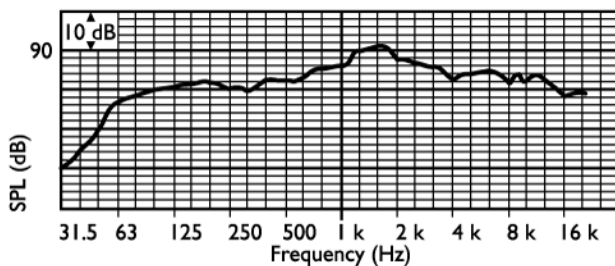
LBC 3101/11 and /16



Dimensions in mm (in)



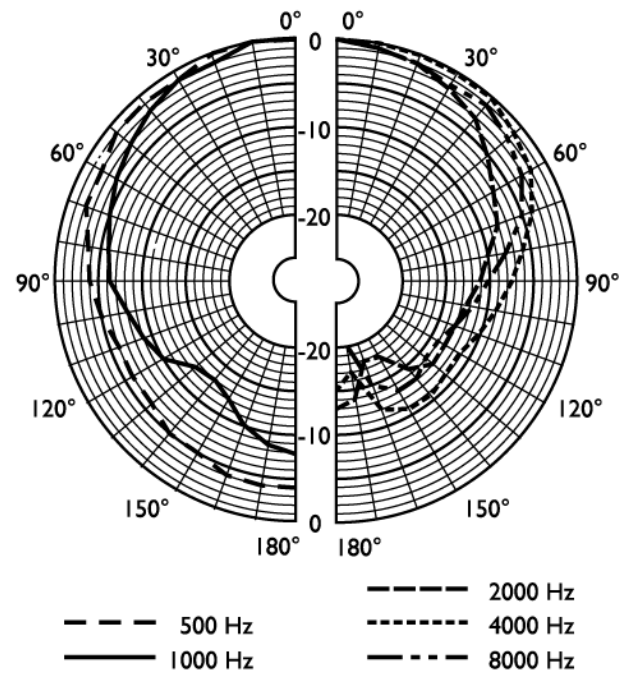
Circuit diagram



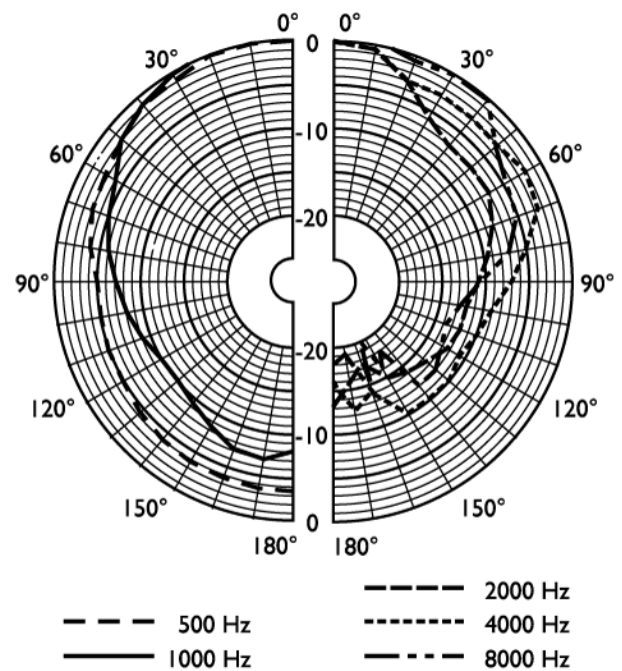
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	81	81	83	87	89	85	85
SPL max.	94	94	96	100	102	98	98
Q-factor	1.3	1.4	1.9	3.2	4.9	2.6	4
Efficiency	0.12	0.11	0.13	0.2	0.2	0.15	0.1
H. angle	360	360	360	180	120	150	130
V. angle	360	360	360	140	125	145	130

Acoustical performance specified per octave

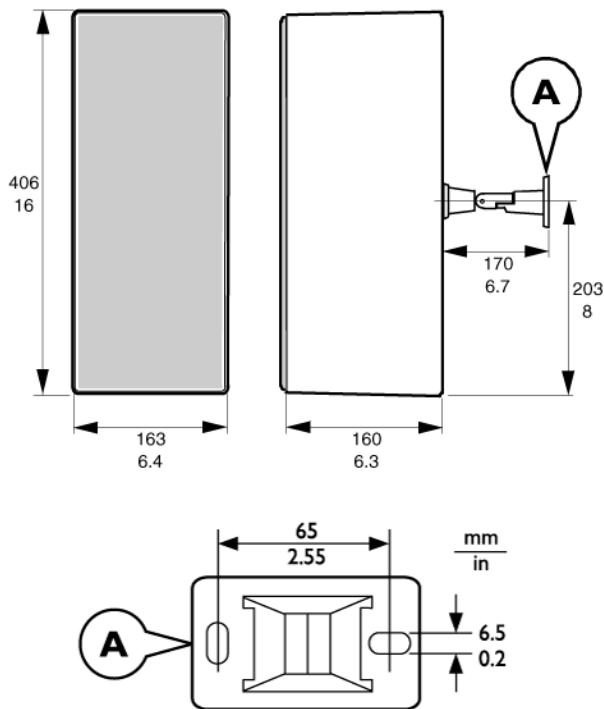


Polar diagram horizontal (measured with pink noise)

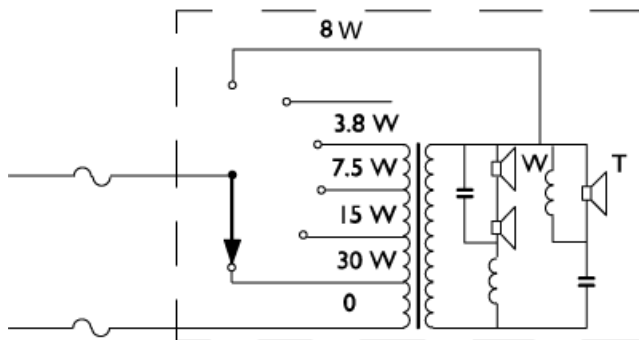


Polar diagram vertical (measured with pink noise)

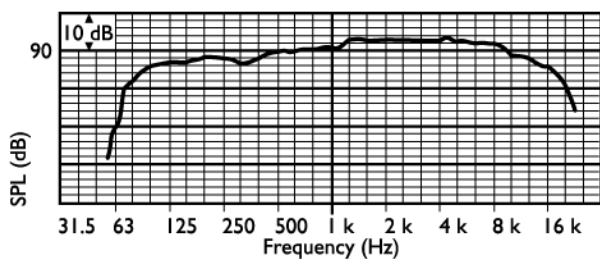
LBC 3102/11 and /16



Dimensions in mm



Circuit diagram

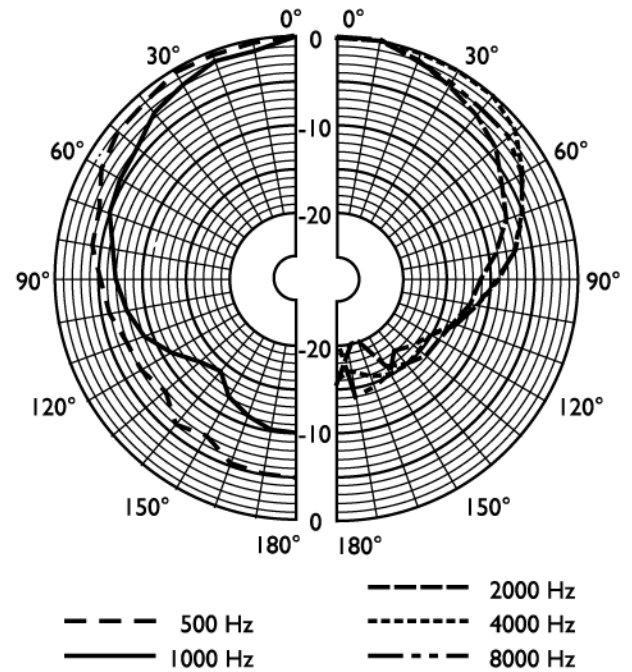


Frequency response

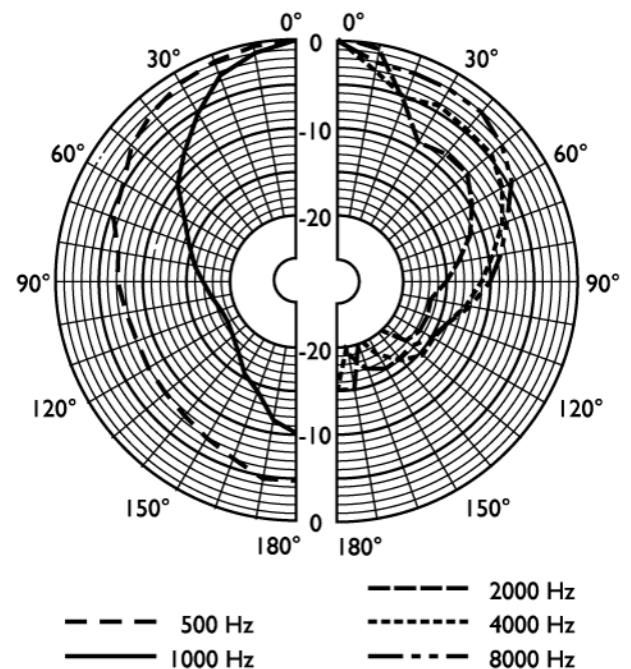
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	85	85	87	90	91	89	85
SPL max.	100	100	102	105	106	104	100
Q-factor	1.5	1.5	2.5	3.4	6	5	5.2
Efficiency	0.27	0.27	0.25	0.37	0.26	0.2	0.08

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
H. angle	360	360	360	180	100	125	120
V. angle	360	360	140	75	120	130	100

Acoustical performance specified per octave



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Parts Included

Quantity	Components
1	LBC 310x/1x Cabinet Loudspeaker
1	Wall mounting bracket

Technical Specifications**Electrical***

Product	LBC 3100/1x	LBC 3101/1x	LBC 3102/1x
Max power	15 W	35 W	45 W
Rated power	10/5/2.5/1.25 W	20/10/5/2.5 W	30/15/7.5/3.7 W
SPL at RP / 1 W (1kHz, 1m)	92 / 82 dB (SPL)	100 / 87 dB (SPL)	105 / 90 dB (SPL)
Effective frequency range (-10 dB)	80 Hz to 20 kHz	75 Hz to 20 kHz	70 Hz to 20 kHz
Opening angle horizontal	1 kHz/4 kHz (-6 dB)	1 kHz/4 kHz (-6 dB)	1 kHz/4 kHz (-6 dB)
vertical	190° / 145° 180° / 140°	180° / 150° 140° / 145°	180° / 125° 75° / 130°
Rated voltage	100 V / 8.9 V	100 V / 12.6 V	100 V / 15.5 V
Impedance	1000 / 8 ohm	500 / 8 ohm	333 / 8 ohm
Connector	2 m (78.7 in) 2-wire cable	2 m (78.7 in) 2-wire cable	2 m (78.7 in) 2-wire cable

* Technical performance data acc. to IEC 60268-5

Mechanical

Product	LBC 3100/1x	LBC 3101/1x	LBC 3102/1x
Dimensions (H x W x D) in mm	185 x 116 x 105 (7.3 x 4.6 x 4.1 in)	231 x 163 x 160 (9.1 x 6.4 x 6.3 in)	406 x 163 x 160 (16 x 6.4 x 6.3 in)
Speaker diameters	25.4 / 101.6 mm (1" / 4")	25.4 / 127 mm (1" / 5")	25.4 / 127 mm (1" / 5")
Weight	2.3 kg (5 lb)	4.5 kg (9.9 lb)	7 kg (15.4 lb)
Color*			
LBC 310x/11	White	White	White
LBC 310x/16	Dark grey	Dark grey	Dark grey
Magnet weights	3.6 oz and 8 oz	5.3 oz and 13.3 oz	5.3 oz and 10 oz

* White is RAL 9010, and black is RAL 7043.

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3100/11 Cabinet Loudspeaker, 10 W dark grey, die-cast housing, for in- and outdoor use	LBC3100/11
LBC 3100/16 Cabinet Loudspeaker, 10 W white, die-cast housing, for in- and outdoor use	LBC3100/16
LBC 3101/11 Cabinet Loudspeaker, 20 W dark grey, die-cast housing, for in- and outdoor use	LBC3101/11
LBC 3101/16 Cabinet Loudspeaker, 20 W white, die-cast housing, for in- and outdoor use	LBC3101/16
LBC 3102/11 Cabinet Loudspeaker, 30 W dark grey, die-cast housing, for in- and outdoor use	LBC3102/11
LBC 3102/16 Cabinet Loudspeaker, 30 W white, die-cast housing, for in- and outdoor use	LBC3102/16

LBC 3800/10 Cabinet Loudspeaker, 100 W



4

Features

- ▶ High-quality reproduction of speech and music
- ▶ Attractive MDF cabinet
- ▶ Trapezoidal shape
- ▶ Heavy-duty metal grille
- ▶ 12" high-power woofer
- ▶ Titanium high-frequency driver
- ▶ Self-restoring overload protection
- ▶ Attachment points for (suspended) mounting
- ▶ Bracket available for suspended mounting

This loudspeaker cabinet is part of the Bosch comprehensive range of audio products and accessories for sound reinforcement and public address. It is specifically designed for situations where both high quality speech and music reproduction are required, and is typically used for fixed installations in auditoriums, conference venues, community centers, theaters, multipurpose halls and sports halls.

The LBC 3800/10 100 W stage loudspeaker is compact yet powerful. Its excellent sound reproduction capability is attributed to the use of arrayed professional quality components. It contains a high-quality 12" woofer with a 1-3/8" voice coil titanium high-frequency driver, linked via a special crossover/equalizer network for optimal sound reproduction. A self-restoring passive element protects the high-frequency driver against incidental overload.

Functions

The cabinet is made of medium-density fiberboard (MDF), a durable material with excellent acoustic properties. It is finished with a durable matt black textured material that retains its look for many years.

Special trapezoidal design allows for easily-arrayable systems, and greatly reduces the build-up of standing waves inside an enclosure. Heavy-duty metal corner fittings prevent impact damage during transport and facilitate stacking.

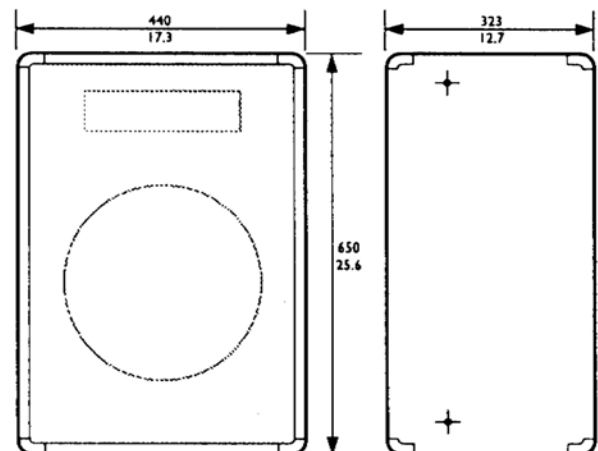
Certifications and Approvals

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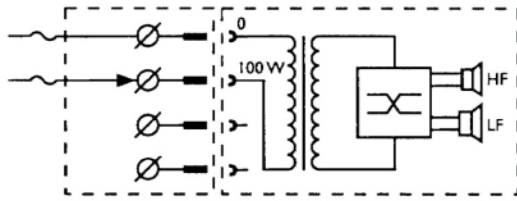
Region	Certification
Europe	CE Declaration of Conformity

Installation/Configuration Notes

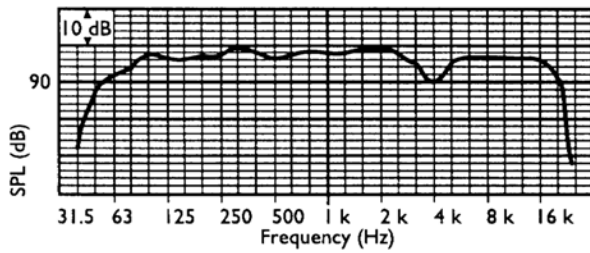
The LBC 3800/10 has 10 M8-threaded attachment points on the top (2), sides (2 each), base (2) and rear panel (2) for horizontal and vertical suspended mounting. A suspension bracket, LBC 1800/00, is available for vertical suspended mounting.



Dimensions in mm (in)



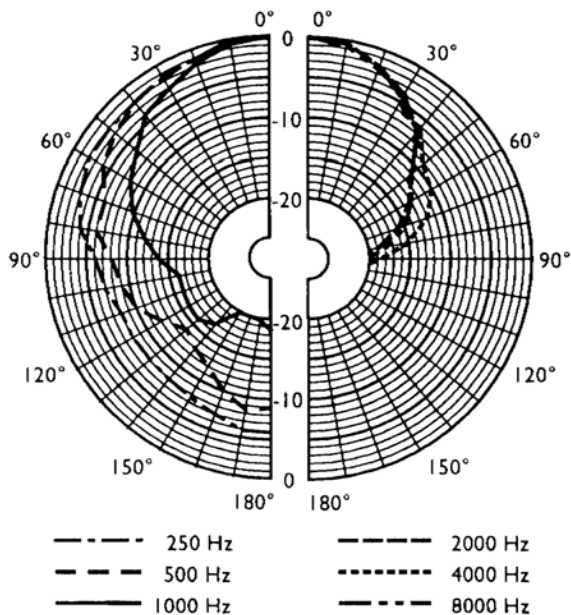
Circuit diagram



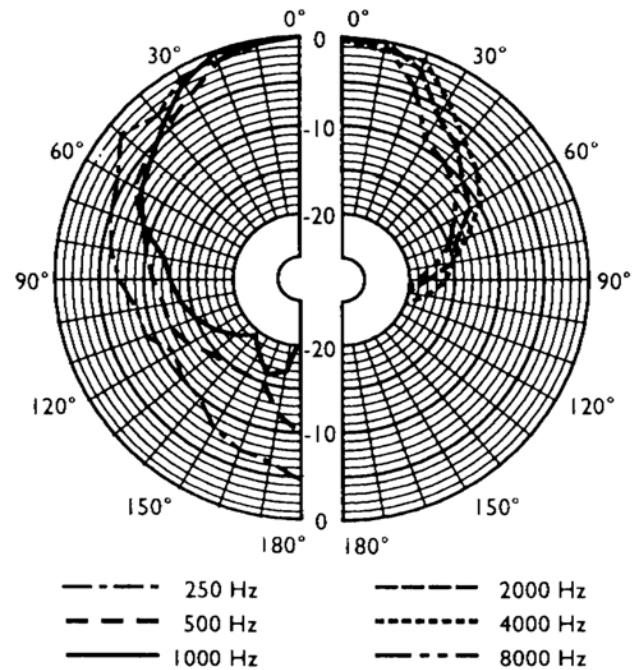
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	96	97	98	98	99	95	96
SPL max.	116	117	118	118	119	115	116
Q-factor	1.8	3	4.6	5.8	11	11.2	21
Efficiency	2.8	2.1	1.74	1.38	0.9	0.35	0.24
H. angle	360	180	140	110	80	65	65
V. angle	360	150	120	110	60	75	40

Acoustical performance specified per octave



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)



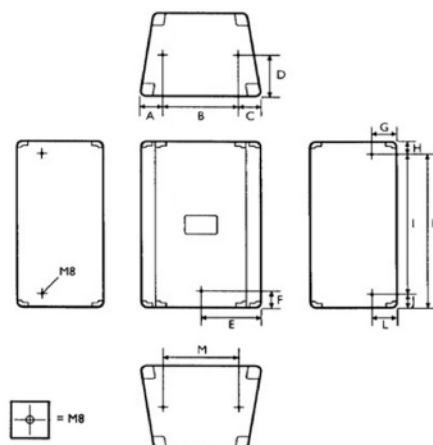
Horizontal suspension using LBC 1800/00 bracket



Chain used to tilt loudspeaker



Vertical suspension using chains



	A	B	C	D	
mm	80	280	80	100	
inches	3.2	11	3.2	3.9	
	E	F	G	H	
mm	220	100	100	58	
inches	8.7	3.9	3.9	2.3	
	I	J	K	L	M
mm	534	58	-	100	280
inches	21	2.3	-	3.9	11

Attachment points for vertical and horizontal mounting and tilting

Technical Specifications

Electrical*

Maximum power	
short term input	250 W
long term input	200 W
Rated power (PHC)	100 W
Sound pressure level	118 dB / 98 dB (SPL)
at 100 W / 1 W (1 kHz, 1 m)	
Effective frequency range (-10 dB)	70 Hz to 20 KHz
Crossover frequency	3.5 kHz (-12 dB)
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	110° / 65°
vertical	110° / 75°
Rated input voltage	100 V
Rated impedance	100 ohm
Connector	100 V quick-plug connector

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	650 x 440 x 323 mm (25.6 x 17.3 x 12.7 in)
Color	Black (matt)
Weight	24 kg (52.8 lbs)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3800/10 Cabinet Loudspeaker, 100 W	LBC3800/10
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Accessories

LBC 1800/00 Suspension bracket	LBC1800/00
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LA1-UW24-x Column Loudspeakers



4

Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **For applications where directivity is important**
- ▶ **High sensitivity**
- ▶ **Swivel wall-mounting bracket supplied as standard**
- ▶ **Available in black or white**
- ▶ **MDF construction**
- ▶ **Complies with international installation and safety regulations**

The LA1-UW24-x is a 24 W, general-purpose, cost-effective column loudspeaker for indoor use where beaming is desirable, such as places of worship, congress venues, meeting rooms, and canteens. A swivel wall-mounting bracket is supplied as standard. The column loudspeaker is available in black and white.

Functions

The robust, solid MDF (Medium Density Fiber board) enclosures are covered with a durable, easy-to-clean vinyl in a choice of black or white. The ABS fronts are covered with fine woven cloth in matching color.

These powerful column loudspeakers are fitted with four dual-cone, high-sensitivity, loudspeaker drivers.

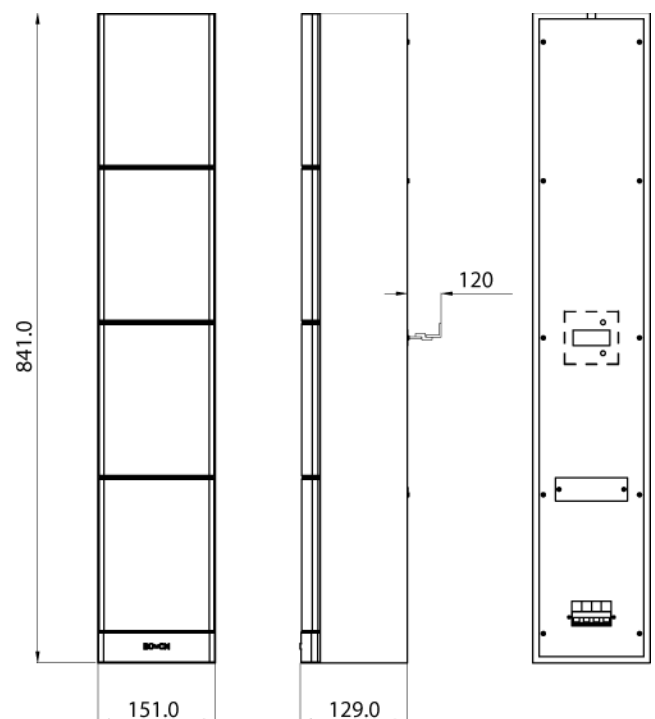
Certifications and Approvals

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.

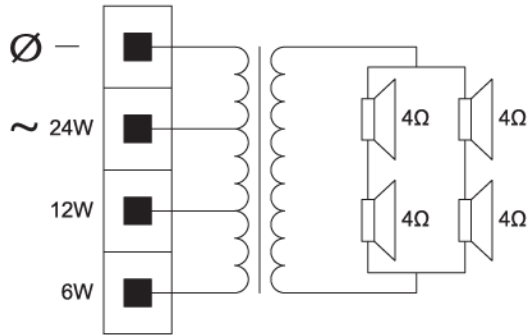
Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

Installation/Configuration Notes

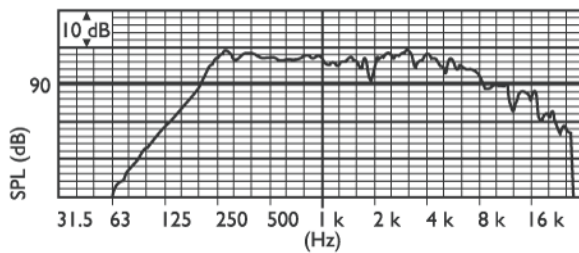
The column loudspeakers can be wall mounted using the supplied swivel bracket, allowing accurate positioning. A convenient, easy-to-use, four-pole push-in terminal block is present on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100 V, matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



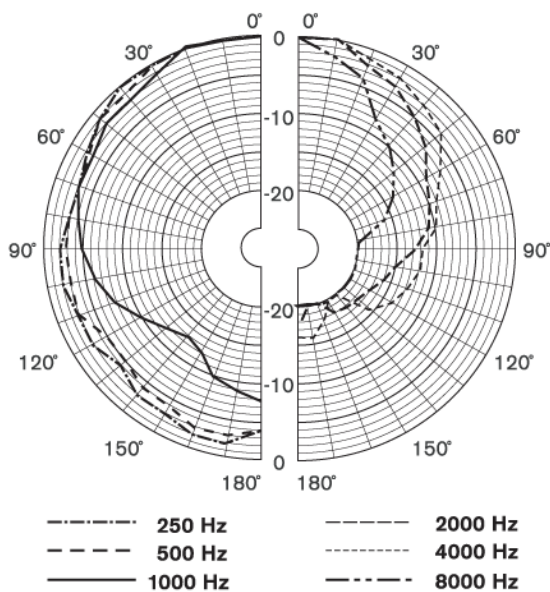
Dimensions in mm



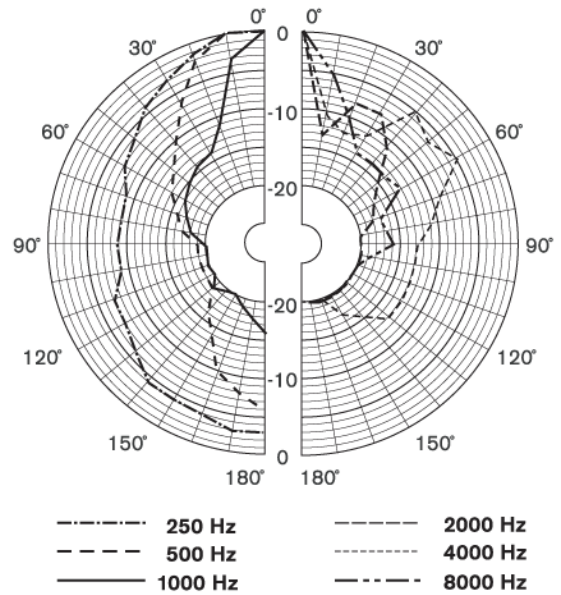
Circuit diagram



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Parts Included

Quantity	Component
1	LA1-UW24-x Column Loudspeaker
1	Swivel wall mounting bracket

Technical Specifications

Electrical*

Maximum power	36 W
Rated power	24 / 12 / 6 W
Sound pressure level at 24 W / 1 W (1 kHz, 1 m)	110 dB / 96 dB (SPL)
Effective frequency range (-10 dB)	165 Hz to 16 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	190° / 88°
vertical	30° / 8°
Rated input voltage	100 V
Rated impedance	417 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	841x 151 x 129 mm (33.1 x 5.9 x 5.1 in)
Weight	5.5 kg (12.1 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

Environmental

Operating temperature	-25 °C to +55°C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LA1-UW24-D Column Loudspeaker 24 W, black	LA1-UW24-D
LA1-UW24-L Column Loudspeaker 24 W, white	LA1-UW24-L

LA1-UW36-x Column Loudspeakers



Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **For applications where directivity is important**
- ▶ **High sensitivity**
- ▶ **Swivel wall mounting bracket supplied as standard**
- ▶ **Available in black or white**
- ▶ **MDF construction**
- ▶ **Complies with international installation and safety regulations**

The LA1-UW36-x is a 36 W, general-purpose, cost-effective column loudspeaker for indoor use where beaming is desirable, such as places of worship, congress venues, meeting rooms and canteens. A swivel wall mounting bracket is supplied as standard. The column loudspeaker is available in black and white.

Functions

The robust, solid MDF (Medium Density Fiber board) enclosures are covered with a durable, easy-to-clean vinyl in a choice of black or white. The ABS fronts are covered with fine woven cloth in matching color.

These powerful column loudspeakers are fitted with four dual cone high sensitivity loudspeaker drivers.

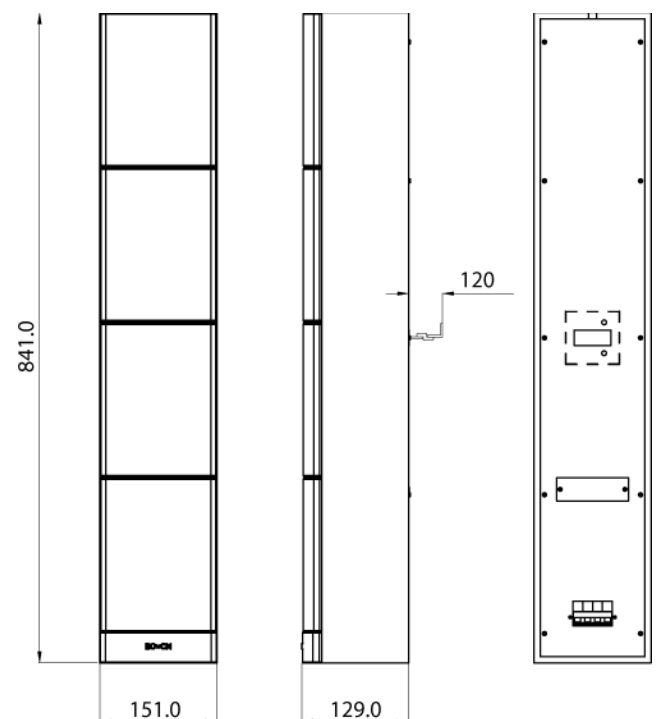
Certifications and Approvals

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.

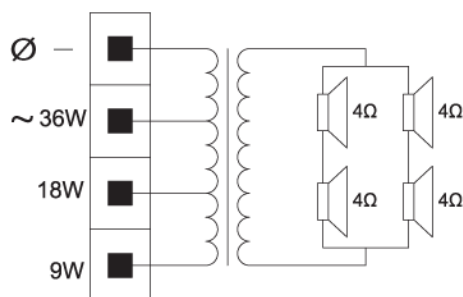
Region	Certification
Europe	CE
Safety	acc. to EN 60065

Installation/Configuration Notes

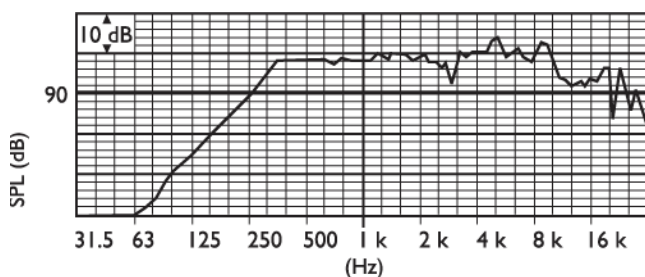
The column loudspeakers can be wall mounted using the supplied swivel bracket, allowing accurate positioning. A convenient, easy-to-use, four-pole push-in terminal block is present on the rear panel for on-site wiring. This terminal block has provision for power tapping on the 100 V, matching transformer in the cabinet. It allows selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



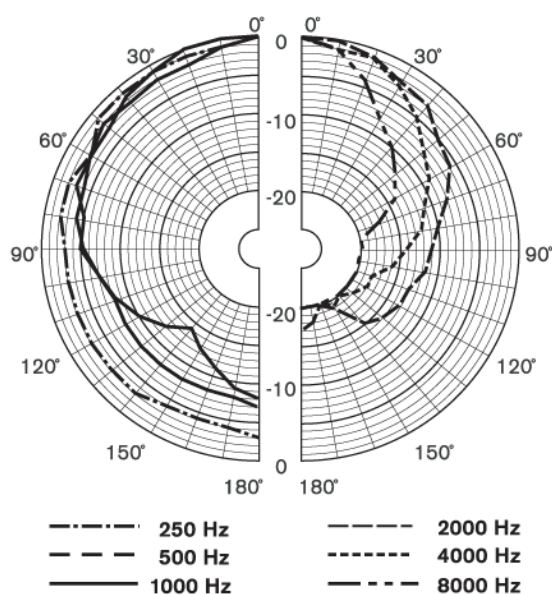
Dimensions in mm



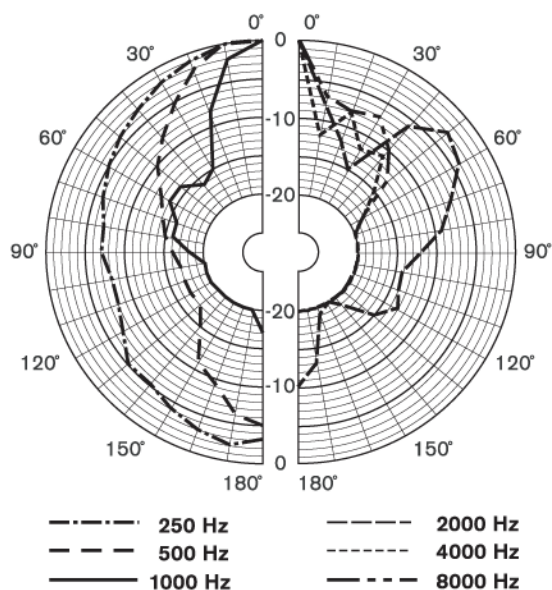
Circuit diagram



Frequency response



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Parts Included

Quantity	Component
1	LA1-UW36-x Column Loudspeaker
1	Swivel wall mounting bracket

Technical Specifications

Electrical*

Maximum power	54 W
Rated power	36 / 18 / 9 W
Sound pressure level at 36 W / 1 W (1 kHz, 1 m)	114 dB / 98 dB (SPL)
Effective frequency range (-10 dB)	160 Hz to 19 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	190° / 88°
vertical	30° / 8°
Rated input voltage	100 V
Rated impedance	278 ohm
Connector	4-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	841x 151 x 129 mm (33.1 x 5.9 x 5.1 in)
Weight	6 kg (13.2 lb)
Color	Black (D) or white (L)
cabinet / cloth (D)	Matches RAL 9004 / RAL 9004
cabinet / cloth (L)	Matches RAL 9010 / RAL 7044

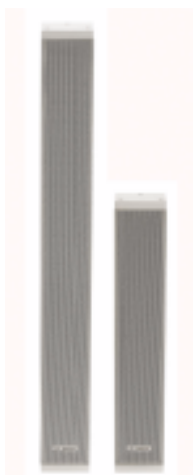
Environmental

Operating temperature	-25 °C to +55°C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LA1-UW36-D Column Loudspeaker 36 W, black	LA1-UW36-D
LA1-UW36-L Column Loudspeaker 36 W, white	LA1-UW36-L

LA1-UMx0E Metal Column Loudspeakers



4

Features

- ▶ **Good speech intelligibility and background music reproduction**
- ▶ **For applications where directivity is important**
- ▶ **Slim-line weatherproof design**
- ▶ **Swivel wall mounting bracket supplied as standard**
- ▶ **Robust aluminum construction**
- ▶ **Switchable between 100 V line and 8 Ohms**
- ▶ **Provision for inside mounting of the optional line/loudspeaker supervision board**
- ▶ **Recommended for voice evacuation systems**

The LA1-UM20E and LA1-UM40E metal column loudspeakers deliver professional performance from a robust, yet aesthetically designed aluminum enclosure in a white finish.

It is an ideal loudspeaker column where sound beaming is required, for both indoor and outdoor use in passenger terminals, places of worship, congress venues, theme parks, swimming pools, factories, exhibition areas.

A swivel wall mounting bracket is supplied as standard, allowing accurate positioning.

Functions

Voice alarm

Voice alarm loudspeakers are specifically designed for use in applications, where the performance of PA systems is subject to official regulations. The LA1-UM20E and LA1-UM40E are designed for voice alarm systems, and are compliant with British Standard BS 5839-8 and EN 60849.

Protection

Both loudspeaker columns have built-in protection to ensure that in the event of a fire damage does not cause failure of the connected circuit. In this way, system integrity is maintained; ensuring loudspeakers in other areas can still be used to inform people of the situation.

Connections and safety

The loudspeaker columns have a ceramic terminal block, thermal fuse, and heat-resistant, high-temperature wiring. The column has a provision for internally mounting the optional line/loudspeaker supervision board.

Loudspeaker output power setting

Four primary taps are provided on the built-in matching transformer. Loudspeaker output power setting is done on the build-in transformer and connected to a rotary vary-tap switch located in the back of the enclosure to allow simple output power setting. An 8 ohms setting and switch-off position is also provided on the rotary vary-tap switch.

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 the speakers can withstand two times their rated power for short durations. This ensures extra reliability under extreme conditions, leading to greater customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

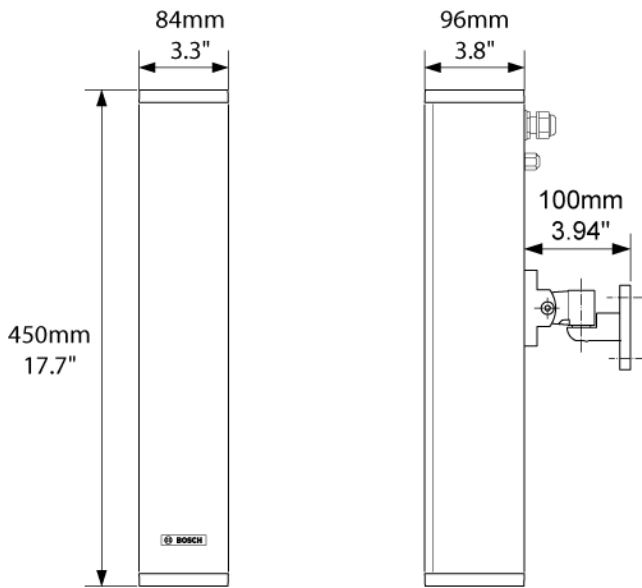
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
	acc. to EN 60849
Water / dust protection	acc. to EN 60529 IP 65

Installation/Configuration Notes

The column loudspeakers can be wall mounted using the swivel wall bracket standard supplied, or directly onto a floor stand LBC 1259/00 with an M10 threaded bolt without additional accessories. The bracket is attached on a slider, which can be placed and secured in any desired position along the rear of the enclosure.

Standard supplied with 2 m connection cable, but these can be replaced during installation with any other type of connection cable.

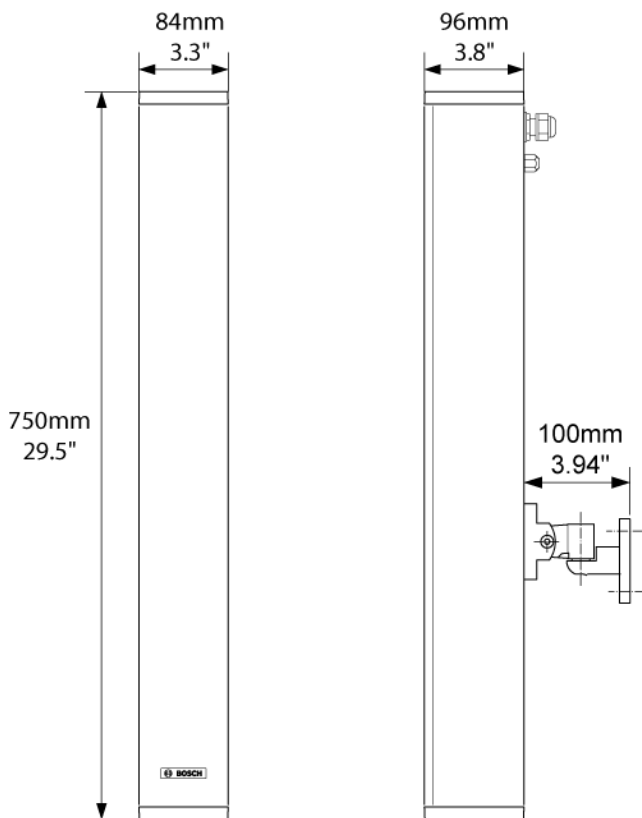
The connection cable is fed out through a cable gland (PG 20) in the top rear of the enclosure. For loop through connection, a second hole (covered as standard supplied) is provided.



LA1-UM20E Dimensions mm (in)

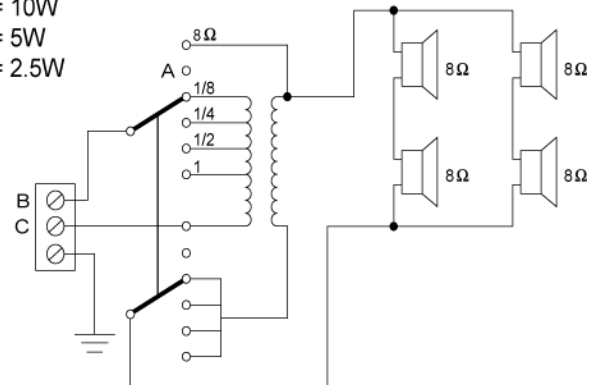


LA1-UM20E / LA1-UM40E Back view

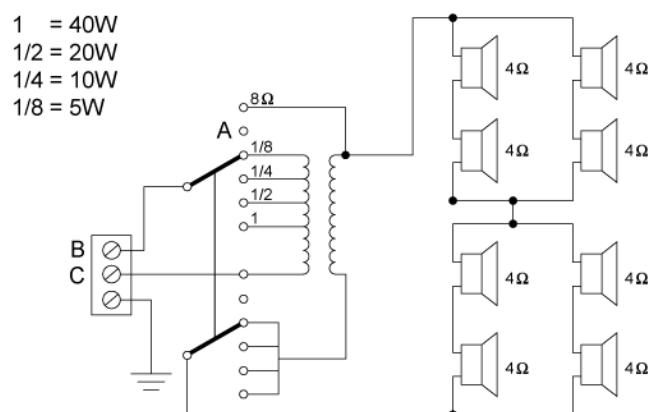


LA1-UM40E Dimensions mm (in)

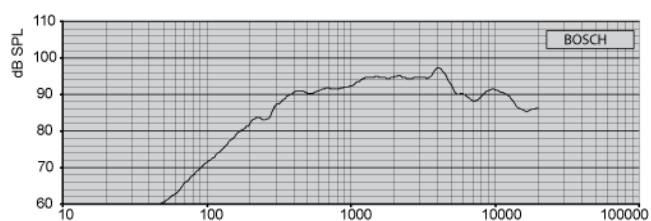
1 = 20W
 1/2 = 10W
 1/4 = 5W
 1/8 = 2.5W



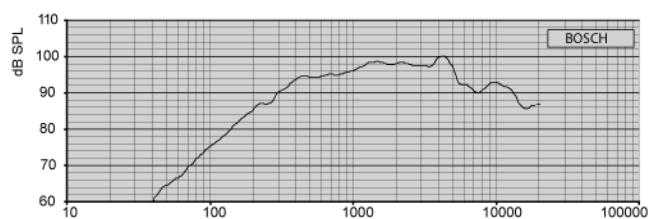
LA1-UM20E Circuit diagram (A: OFF, B: Phase, C: Common)



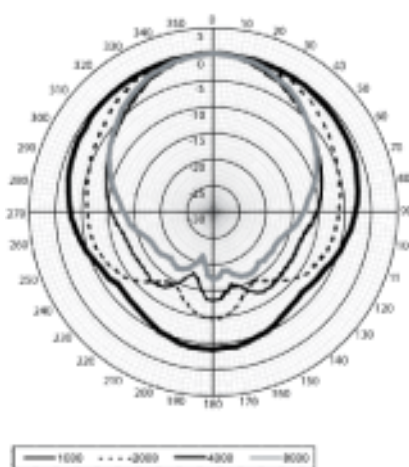
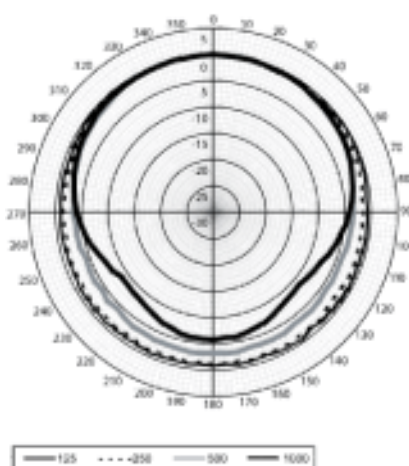
LA1-UM40E Circuit diagram (A: OFF, B: Phase, C: Common)



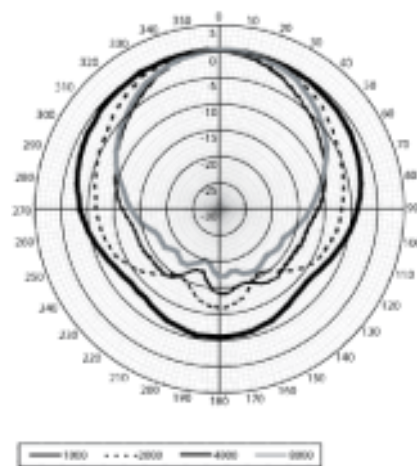
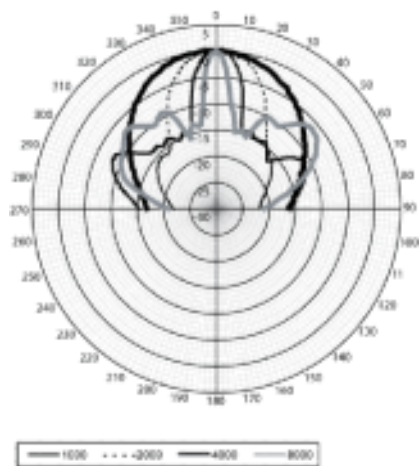
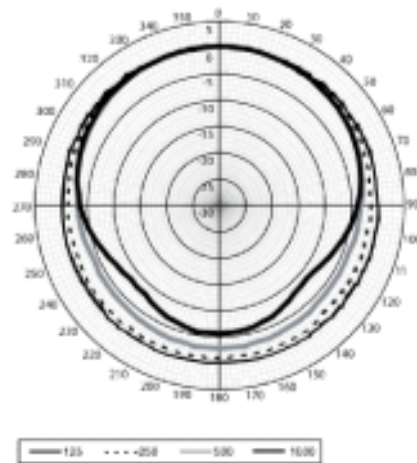
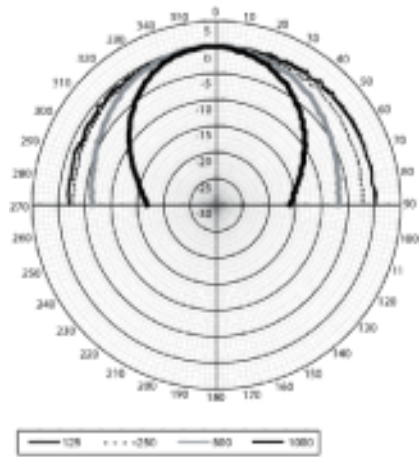
LA1-UM20E Frequency response



LA1-UM40E Frequency response

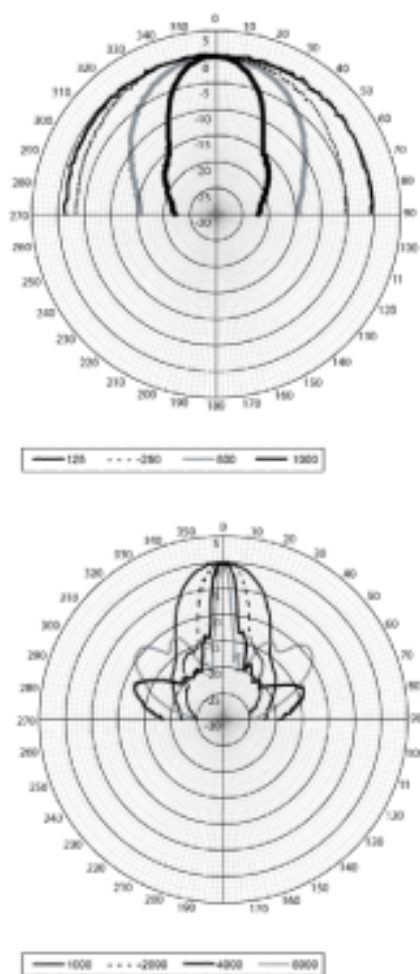


LA1-UM20E Polar-diagram (horizontal)



LA1-UM20E Polar diagram (vertical)

LA1-UM40E Polar diagram (horizontal)



LA1-UM40E Polar diagram (vertical)

Octave band sensitivity LA1-UM20E

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	72.2	-	-
250 Hz	81.9	-	-
500 Hz	89.7	-	-
1000 Hz	91.9	-	-
2000 Hz	94.2	-	-
4000 Hz	94.8	-	-
8000 Hz	90.0	-	-
A-weighted	-	90.2	102.3
Lin-weighted	-	90.1	101.6

Octave band opening angles LA1-UM20E

	Horizontal	Vertical
125 Hz	360	>180
250 Hz	360	>180
500 Hz	360	150
1000 Hz	210	82
2000 Hz	150	43
4000 Hz	96	23
8000 Hz	98	11

Octave band sensitivity LA1-UM40E

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	76.2	-	-
250 Hz	86.0	-	-
500 Hz	93.4	-	-
1000 Hz	95.8	-	-
2000 Hz	97.8	-	-
4000 Hz	98.1	-	-
8000 Hz	92.0	-	-
A-weighted	-	93.7	109.0
Lin-weighted	-	93.4	107.9

Octave band opening angles LA1-UM40E

	Horizontal	Vertical
125 Hz	360	>180
250 Hz	360	>180
500 Hz	360	80
1000 Hz	211	40
2000 Hz	150	22
4000 Hz	94	12
8000 Hz	106	6

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dB SPL).

Parts Included

Quantity	Components
1	LA1-UMx0E Metal Column loudspeaker
1	Wall mounting bracket
1	Installation instruction

Technical Specifications

Electrical*

Description	LA1-UM20E	LA1-UM40E
Maximum power	30 W	60 W
Rated power (PHC)	20 W	40 W
Power tapping	20 / 10 / 5 / 2.5 W	40 / 20 / 10 / 5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	105 / 92 dB (SPL)	112 / 96 dB (SPL)
Effective frequency range (-10 dB)	240 Hz to 16 kHz	250 Hz to 16 kHz
Horizontal opening angle at 1 kHz / 4 kHz (-6 dB)	210°/ 82°	212°/ 94°
Vertical opening angle at 1 kHz / 4 kHz (-6 dB)	82°/ 24°	40°/ 12°

Rated input voltage	100 V	100 V
Rated impedance	500 ohm / 8 ohm	250 ohm / 8 ohm

* Technical performance data acc. to IEC 60268-5

Mechanical

	LA1-UM20E	LA1-UM40E
Dimensions (W x D)	450 x 84 x 96 mm (17.7 x 3.3 x 3.8 in)	750 x 84 x 96 mm (29.5 x 3.3 x 3.8 in)
Weight	2.9 kg (6.4 lb)	4.4 kg (9.7 lb)
Color	White (RAL 9010)	White (RAL 9010)
Material (housing and grille)	Extruded aluminum / steel	Extruded aluminum / steel
Connection	2 m 3-wire cable	2 m 3-wire cable
Connector (phase, common, earth)	3-pole screw block	3-pole screw block

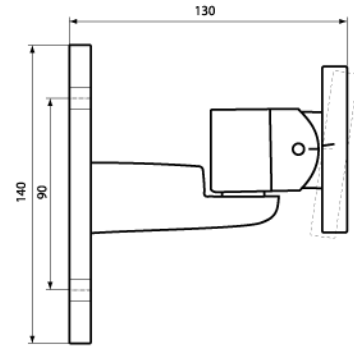
Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LA1-UM20E Metal Column Loudspeaker 20 W	LA1-UM20E
LA1-UM40E Metal Column Loudspeaker 40 W	LA1-UM40E

LBC 3200/00 Line Array Indoor Loudspeaker



Dimensions in mm of included mounting bracket (with marked angle)

Features

- ▶ **Extended listening area**
- ▶ **Excellent intelligibility of speech and music**
- ▶ **Uniform distribution of natural sound throughout the room**
- ▶ **Suitable for any small to medium enclosures, from canteens to meeting rooms**
- ▶ **Extremely slim**
- ▶ **Voice evacuation compliant as standard**
- ▶ **Ideal combination of advanced acoustics and easy application**
- ▶ **Unrivalled sound quality for its size**

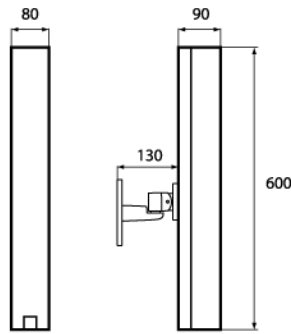
This loudspeaker, with its good directivity, can handle small and medium indoor environments such as congress venues, meeting rooms, showrooms and canteens. The full frequency range of the LBC 3200/00 makes it ideal for speech as well as music reproduction. Its exceptionally narrow housing (only 8 cm wide) makes it extremely unobtrusive.

System Overview

A wall bracket for mounting the line array onto walls and pillars is included with the loudspeaker. It is fully adjustable in two perpendicular planes for accurate positioning. For temporary installations, the LBC 3200/00 can be mounted on an LBC 1259/00 floor stand with an M10 threaded bolt without additional accessories.



Detail mounting bracket



Dimensions in mm



Mounted on optional loudspeaker stand (LBC 1259/00)

A three-way, ceramic terminal block with screw connections suitable for loop-through wiring is located in a compartment at the base of the loudspeaker. There is also a switch, which allows the selection of nominal full power (30 W), half power (15 W), or quarter power (7.5 W). The compartment has knockout slots for cables.

Functions

Range of Application

The LBC 3200/00 is part of the XLA 3200 (eXtended Listening Area) range of line array loudspeakers. The positioning of the loudspeaker drivers* has resulted in greatly improved audio directivity. The specially developed high quality drivers enable reproduction of remarkably clear, natural sound, giving excellent intelligibility of both speech and music. Greater coverage is achieved, so more people can be reached with perceptually perfect sound. All this makes this small line array loudspeaker very suitable for use in small to medium sized applications.

*patent pending

Easy Installation

The positioning of the drivers in the array generates larger vertical opening angles for high frequencies, reducing the narrow 'beaming' of higher tones. As an example, the vertical opening angle is still 18° at 4 kHz. Having larger vertical opening angles makes installation easier, as the positioning of the loudspeakers is easier because they cover a wider area. An extremely wide horizontal opening angle of 130° at 4 kHz means that a single loudspeaker can provide natural sound reproduction over an extensive listening area.

Suppressed Side Lobes

All conventional column loudspeakers produce a main lobe of sound, which is directed at listeners, and a number of unwanted side lobes. The LBC 3200/00 has highly suppressed side lobes in the vertical plane, typically at least 8 dB of suppression from the 500 Hz octave band at 90°. This provides a much clearer, less colored sound, and greatly reduces the possibilities for acoustic feedback.

Sound Reproduction

The positioning and very high quality of the 2 inch drivers contribute significantly in making the LBC 3200/00 a very efficient line array. With a sound pressure level of 106 dB at 1 m, at 30 W, loud and clear sound reproduction is possible even at a significant distance from the loudspeaker.

The high-quality loudspeaker drivers used in the LBC 3200/00 give excellent, natural sound reproduction of frequencies ranging from 190 Hz to 18 kHz. This ensures that all important frequencies for superb speech intelligibility are heard in the listening area.

EVAC Compliant

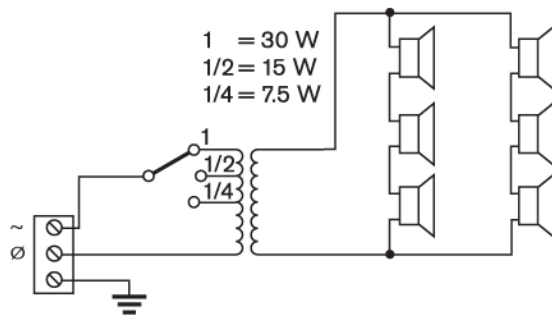
The loudspeakers ceramic terminal block, thermal fuse and heat-resistant, high-temperature wiring ensures that, in the event of a fire, damage to the loudspeaker does not result in failure of the circuit to which it is connected. This maintains system integrity, ensuring that loudspeakers within the same loudspeaker zone in other areas can still be used to inform people of the situation.

Certifications and Approvals

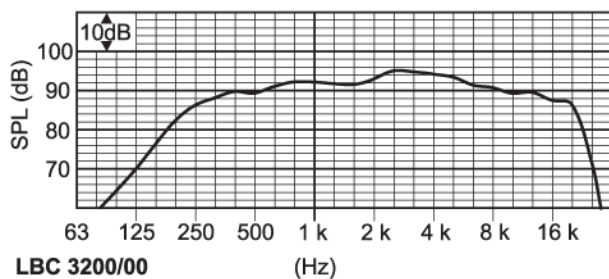
All Bosch loudspeakers are designed to withstand operation at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. These loudspeakers also comply with the Simulated Acoustical Feedback Exposure (SAFE) test, which demonstrates that they can withstand acoustical feedback at full 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.

Region	Certification	
Europe	CE	Declaration of Conformity Declaration of conformity EN50102 (IK07)
Safety		acc. to EN 60065 and CE
EVAC		acc. to BS 5839-8 and IEC 60849
Impact		acc. to EN 50102, IK 07

Installation/Configuration Notes



Circuit diagram

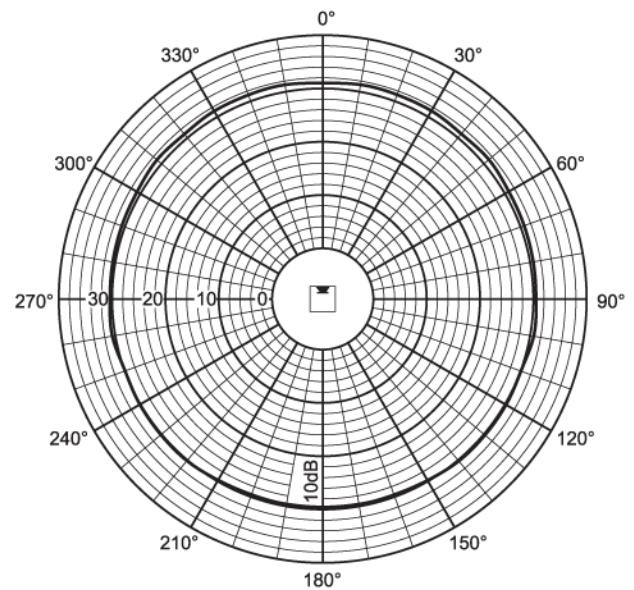


Frequency response

	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	87	89	91	93	93	89
SPL max.	102	104	106	108	108	104
Q-factor	1.3	2.2	4.5	11.6	25.7	58.9
H. angle (deg)	360	360	220	190	130	100
V. angle (deg)	360	120	70	32	18	10

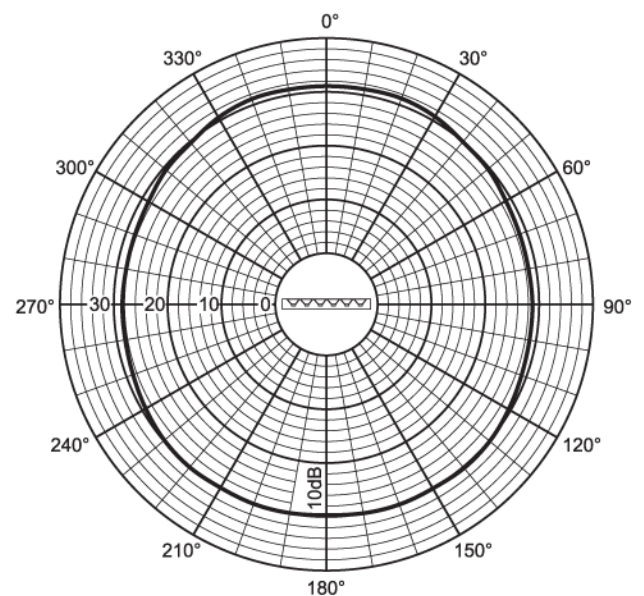
Acoustical performance specified per octave

LBC 3200/00
250Hz

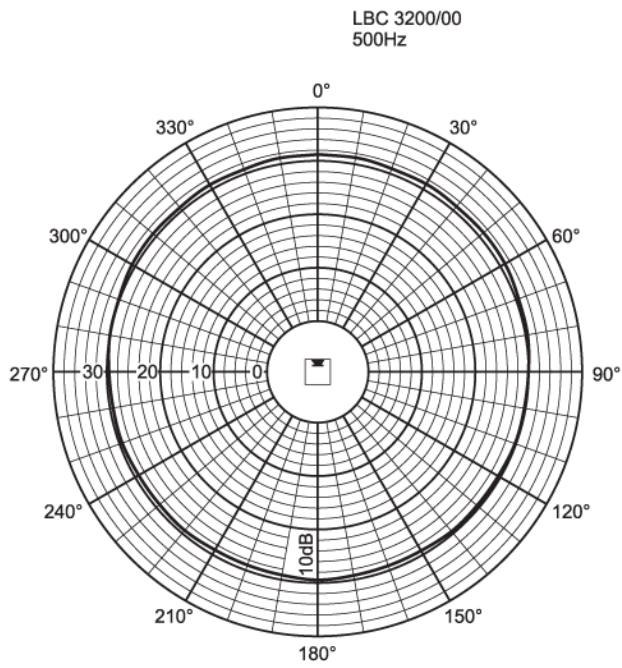


Polar diagram horizontal

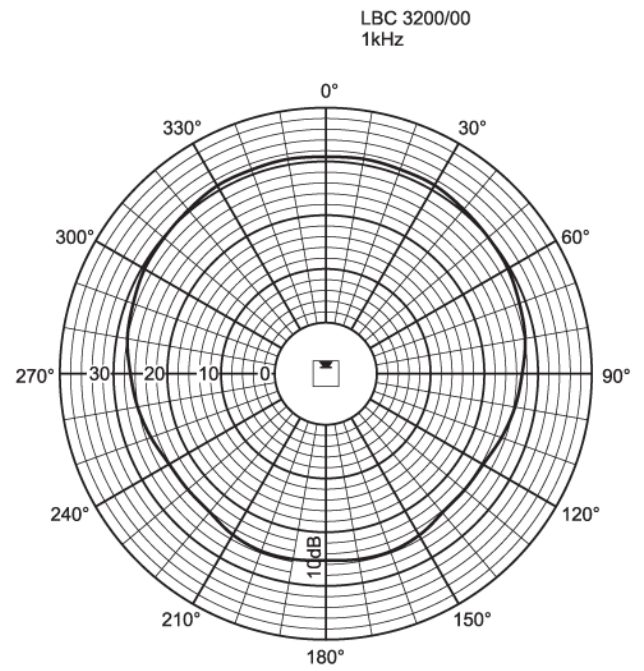
LBC 3200/00
250Hz



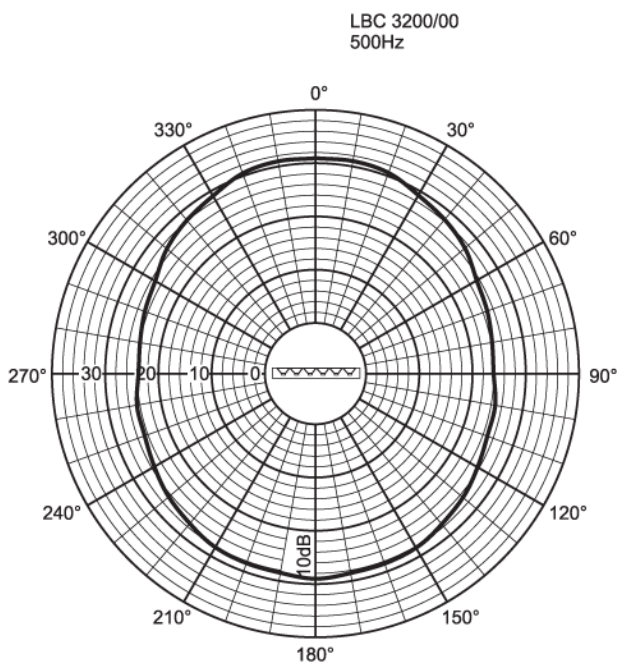
Polar diagram vertical



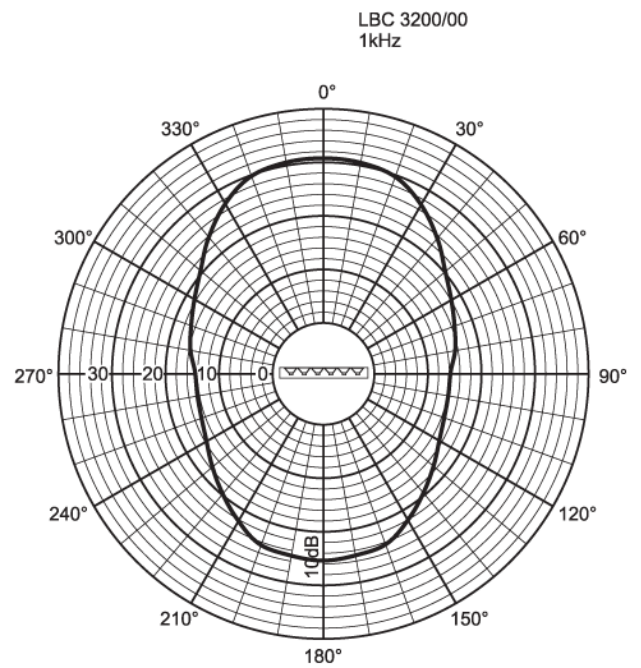
Polar diagram (horizontal)



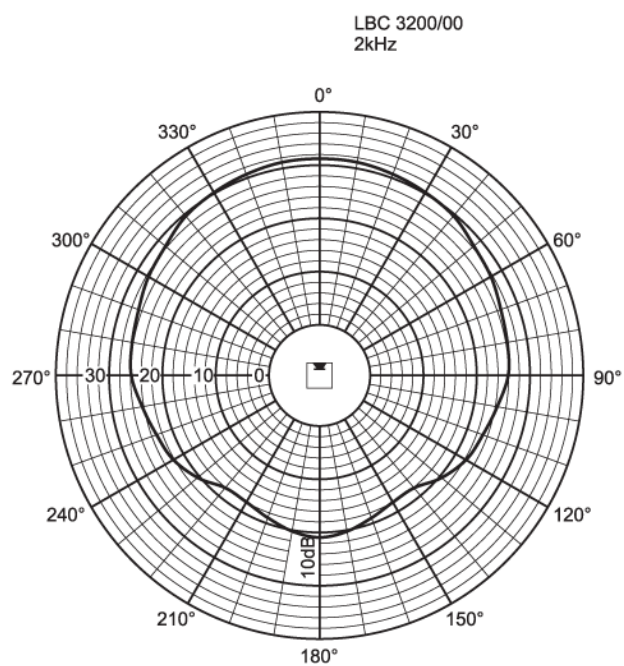
Polar diagram (horizontal)



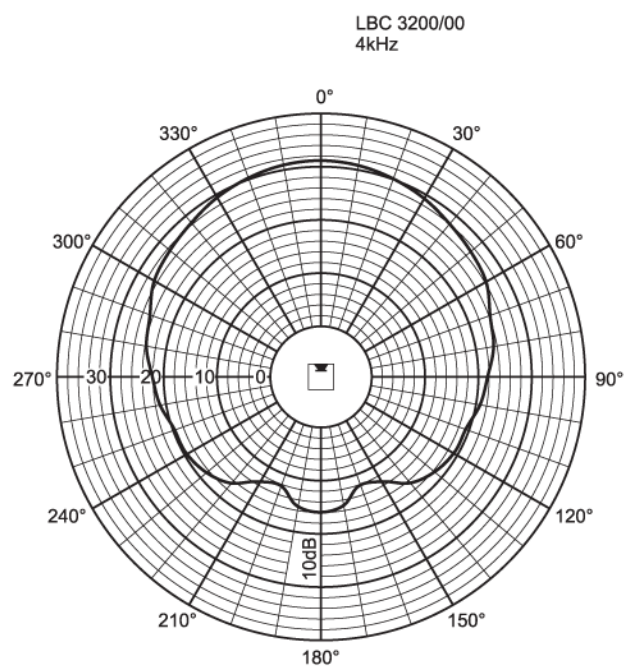
Polar diagram (vertical)



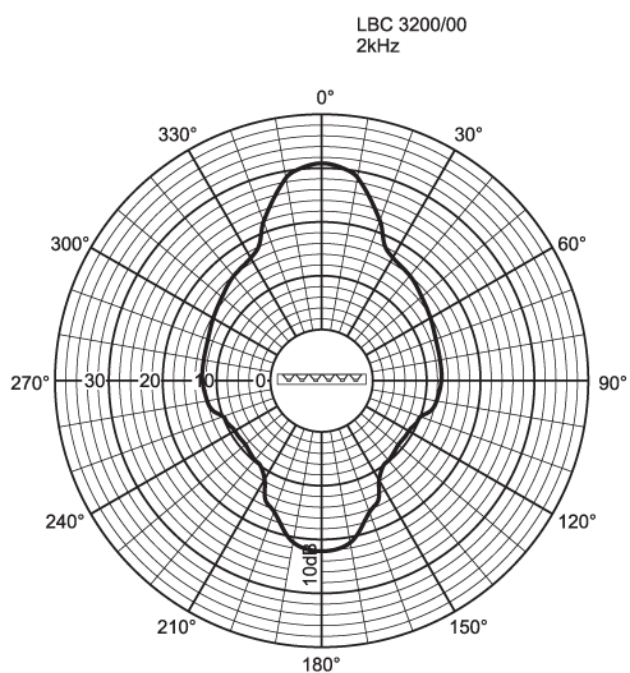
Polar diagram (vertical)



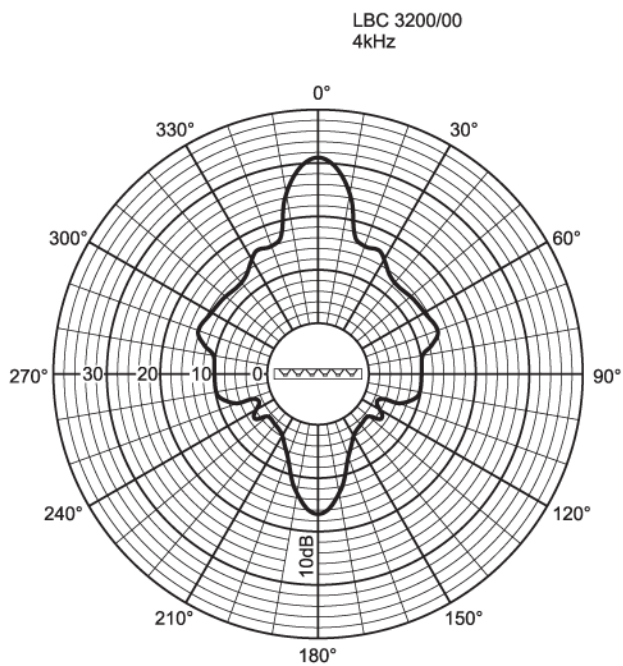
Polar diagram (horizontal)



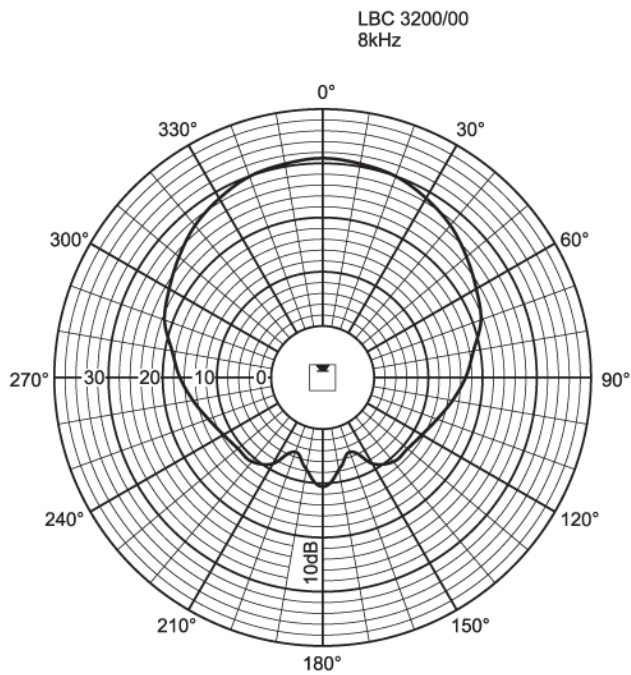
Polar diagram (horizontal)



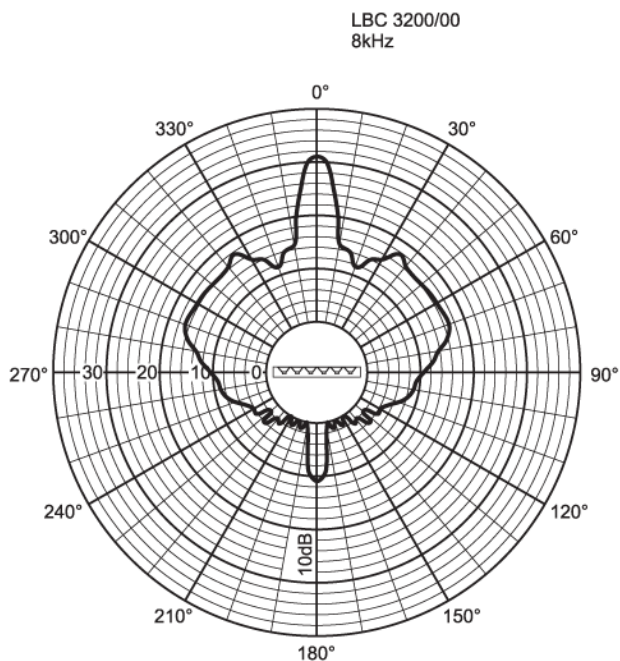
Polar diagram (vertical)



Polar diagram (vertical)



Polar diagram (horizontal)



Polar diagram (vertical)

Technical Specifications

Electrical*

Maximum power	45 W
Rated power	30 / 15 / 7.5 W
Sound pressure level at 30 W / 1 W (1 kHz, 1 m)	106 / 91 dB (SPL)
Effective frequency range (-10 dB)	190 Hz to 18 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	220° / 130°
vertical	70° / 18°
Rated input voltage	100 V
Rated impedance	333 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	600 x 80 x 90 mm (23.62 x 3.15 x 3.54 in)
Weight	3 kg (6.6 lb)
Color	Silver

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3200/00 Line Array Indoor Loudspeaker	LBC3200/00
for small and medium indoor environments, 30 W	

Accessories

LBC 1259/00 Universal Floorstand	LBC1259/00
Lightweight aluminum construction, foldable, M10 x 12 reducer flange.	

Parts Included

Quantity	Component
1	LBC 3200/00 Line Array Loudspeaker
1	Wall mounting bracket

LBC 3201/00 Line Array Indoor Loudspeaker



Features

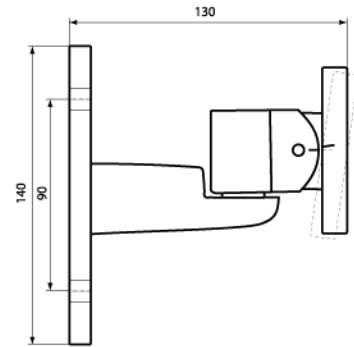
- ▶ **Extended listening area**
- ▶ **Excellent intelligibility of speech and music**
- ▶ **Uniform distribution of natural sound throughout the room**
- ▶ **Excellent directivity for use in acoustically difficult, reverberant applications**
- ▶ **Suitable for larger enclosures, such as meeting halls and places of worship**
- ▶ **Extremely slim**
- ▶ **Voice evacuation compliant as standard**

This loudspeaker, with its excellent directivity and high power output, can handle medium and large (reverberant) indoor environments, especially the more acoustically challenging ones. It is typically used in congress venues, meeting halls and places of worship. The full frequency range of the LBC 3201/00 makes it ideal for speech as well as music reproduction. Its exceptionally narrow housing (only 8 cm wide) makes it extremely unobtrusive.

System Overview

A time and labor-saving mounting method has been developed for the LBC 3201/00. The loudspeaker comes with a chart, which shows the ideal installation height for the area that the loudspeaker has to cover. Once the appropriate height has been determined for a given area, the loudspeaker is mounted at an angle marked on the mounting bracket. This procedure is much simpler and more accurate than traditional trial and error installation

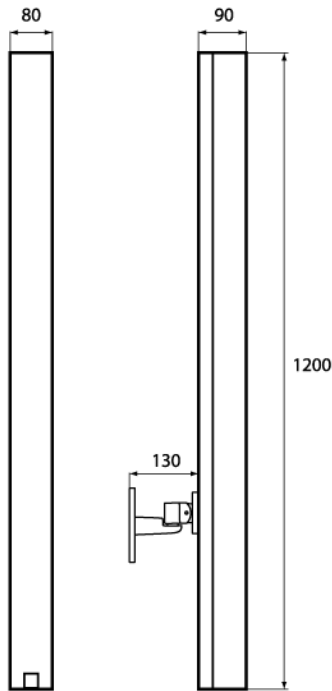
methods. The LBC 3201/00 can be mounted on a wall or directly onto a floor stand LBC 1259/00 with an M10 threaded bolt without additional accessories.



Dimensions in mm of included mounting bracket (with marked angle)



Detail mounting bracket



Dimensions in mm



Mounted on optional loudspeaker stand (LBC 1259/00)

Functions

Range of application

The LBC 3201/00 is part of the XLA 3200 (eXtended Listening Area) range of line array loudspeakers. Advanced filtering and positioning of the loudspeaker drivers* has resulted in greatly improved audio directivity. Each speaker driver produces a dedicated frequency range. The specially developed high quality drivers enable reproduction of remarkably clear, natural sound, which gives excellent intelligibility of both speech and music.

The difference between a conventional column loudspeaker and this line array is noticeable in several ways. There is uniform sound distribution throughout the whole listening area: not too loud at the front, not too quiet at the back. All relevant frequencies are present everywhere in the listening area. Greater coverage is achieved, so more people can be reached with speech and music with a higher intelligibility level. All these important features give the experience of a very natural sound quality in the whole listening area.

*patent pending

Easy installation

The advanced filtering generates larger vertical opening angles for high frequencies, so there is less narrow 'beaming' of higher tones in the vertical plane. As an example, at 4 kHz the vertical opening angle is still 22°. Having more constant vertical opening angles makes installation easier, as the positioning of the loudspeakers is less critical because they cover a wider area. An extremely wide horizontal opening angle of 132° at 4 kHz means that a single loudspeaker can provide natural sound reproduction over an extensive listening area.

Suppressed Side Lobes

All conventional column loudspeakers produce a main lobe of sound, which is directed at listeners, as well as a number of unwanted side lobes. The LBC 3201/00 has highly suppressed side lobes in the vertical plane, typically at least 10 dB suppression of the 250 Hz octave band at 90°, resulting in a much clearer, less 'colored' sound, even when close to the loudspeakers. This gives the line array superb speech intelligibility.

Sound Reproduction

The positioning and very high quality of the 2-inch drivers contribute significantly towards making the LBC 3201/00 a very efficient line array. With a sound pressure level of 110 dB at 1 m, and at 60 W, loud and clear sound reproduction is possible even at considerable distances from the loudspeaker.

The high-quality loudspeaker drivers used in the LBC 3201/00 give excellent, natural sound reproduction of frequencies ranging from 190 Hz to 18 kHz. Together with the constant directivity, this ensures that all important frequencies are heard in the listening area.

EVAC Compliant

The loudspeaker has a ceramic terminal block, a thermal fuse, and heat-resistant, high-temperature wiring. These 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. Thus, system integrity is maintained, and loudspeakers within the same loudspeaker zone in other areas can still be used to inform people of the situation.

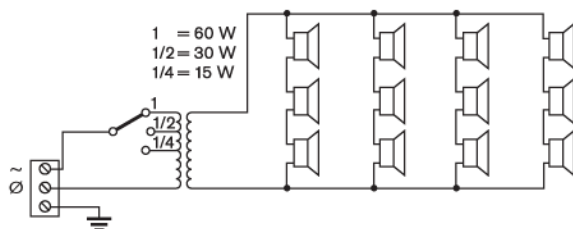
The three-way ceramic terminal block with screw connections is suitable for loop-through wiring, and is located in a compartment at the base of the loudspeaker column. There is also a switch, which allows the selection of nominal full power (60 W), half power (30 W) or quarter power (15 W). The compartment has knockout slots for accommodating cables.

Certifications and Approvals

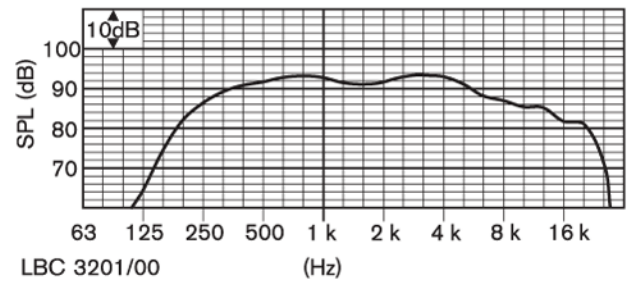
All Bosch loudspeakers are designed to withstand operation at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. These loudspeakers also comply with the Simulated Acoustical Feedback Exposure (SAFE) test, which demonstrates that they can withstand acoustical feedback at full 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.

Region	Certification	
Europe	CE	Declaration of Conformity Declaration of conformity EN50102 (IK07)
Safety		acc. to EN 60065 and CE
EVAC compliant		acc. to BS 5839-8 and IEC 60849
Impact		acc. to EN 50102, IK 07

Installation/Configuration Notes



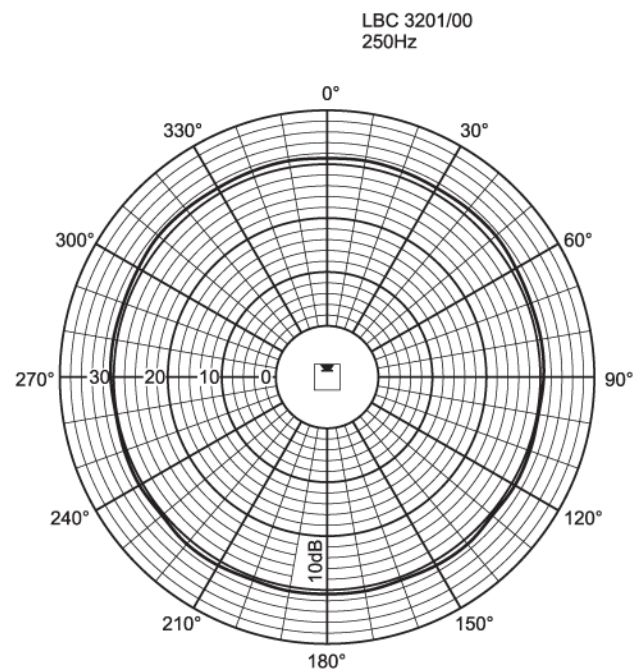
Circuit diagram



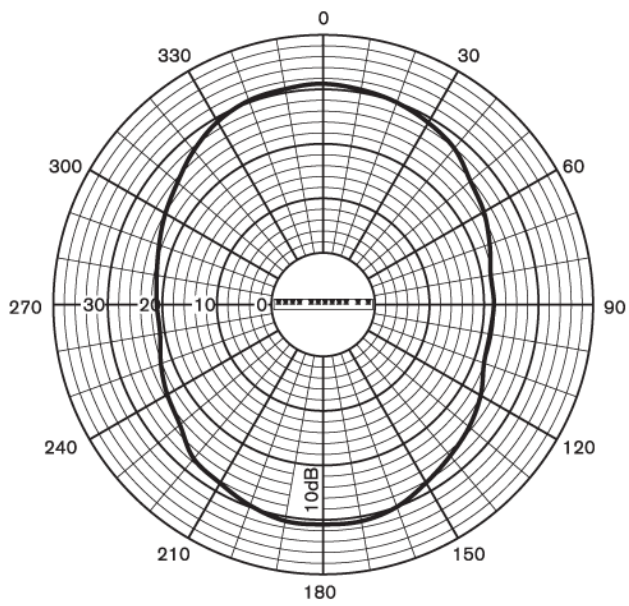
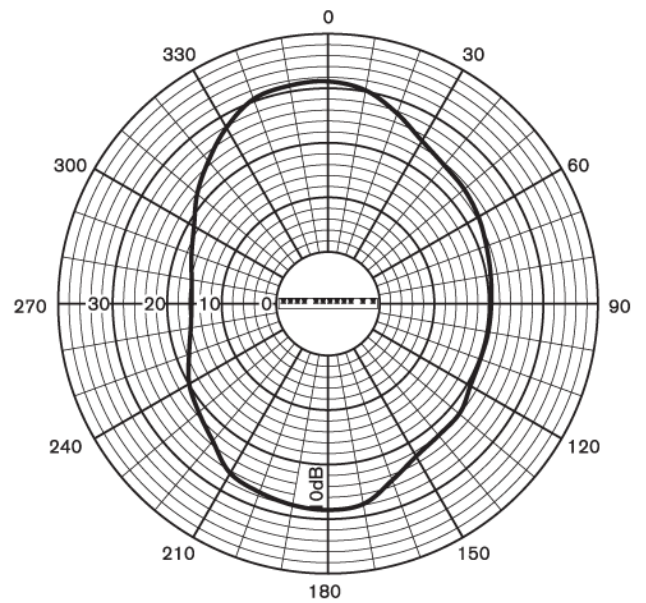
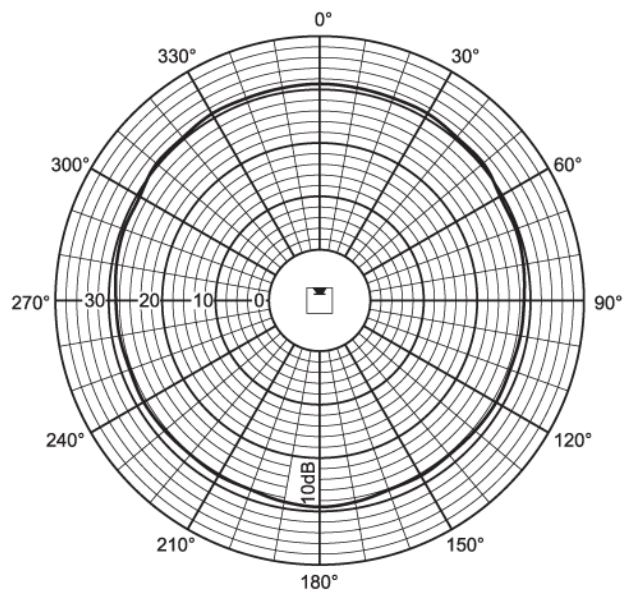
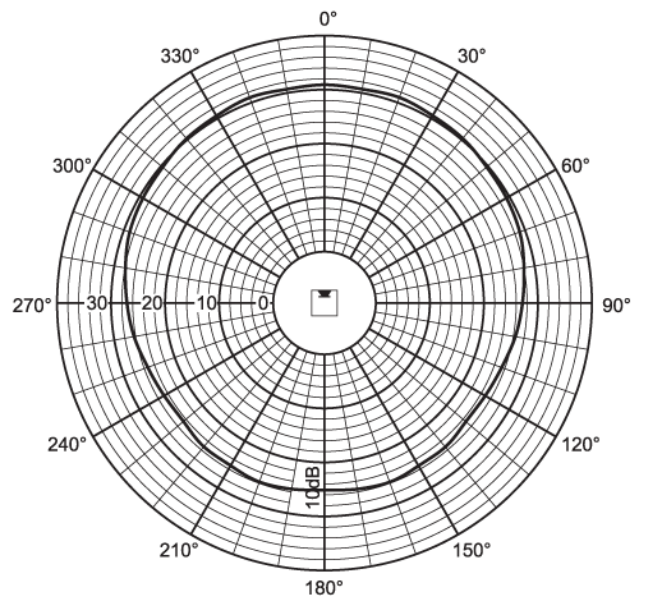
Frequency response

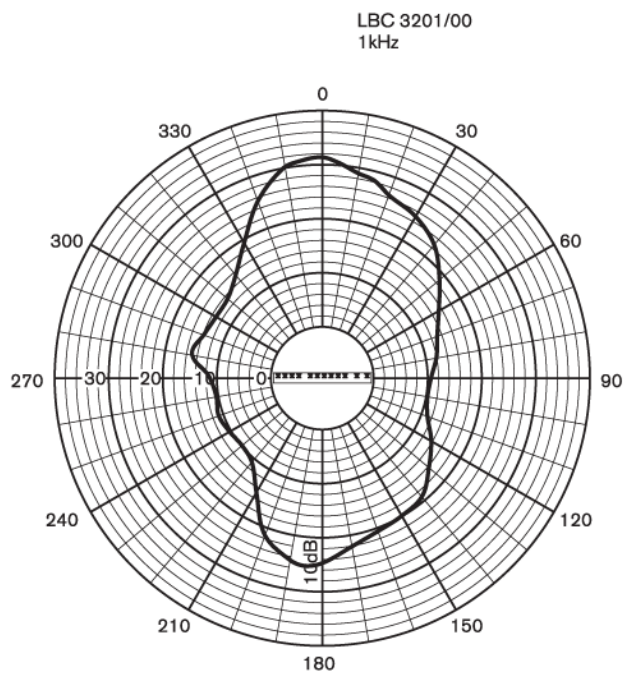
	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	88	92	92	91	91	86
SPL max.	106	110	110	109	109	104
Q-factor	2.2	3.2	6.5	12.6	23.4	53.3
H. angle (deg)	360	360	210	192	132	100
V. angle (deg)	107	67	50	33	22	12

Acoustical performance specified per octave

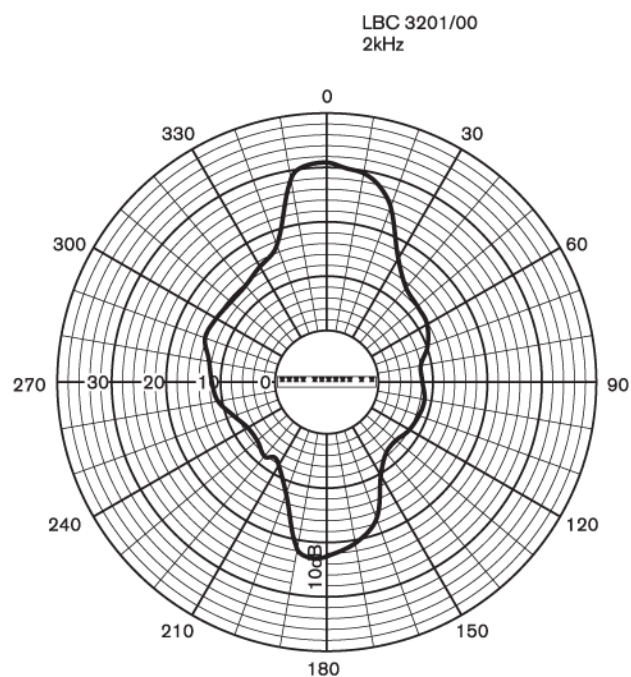


Polar diagram (horizontal)

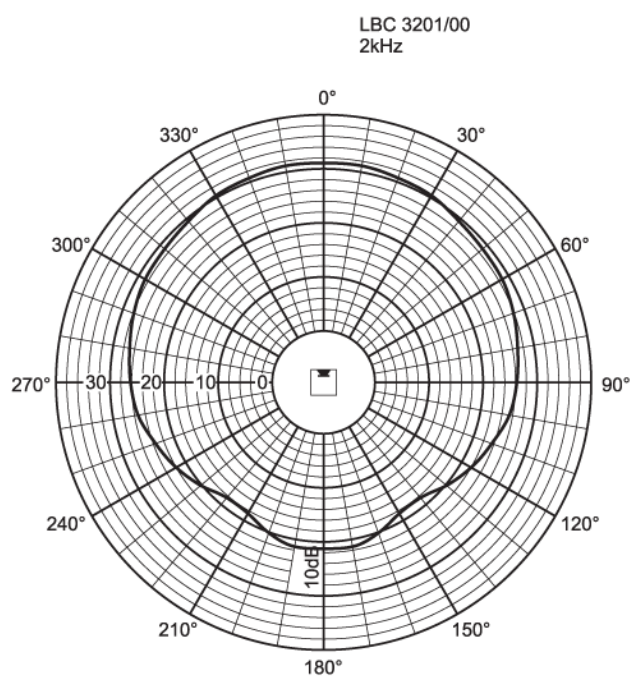
LBC 3201/00
250Hz*Polar diagram (vertical)*LBC 3201/00
500Hz*Polar diagram (vertical)*LBC 3201/00
500Hz*Polar diagram (horizontal)*LBC 3201/00
1kHz*Polar diagram (horizontal)*



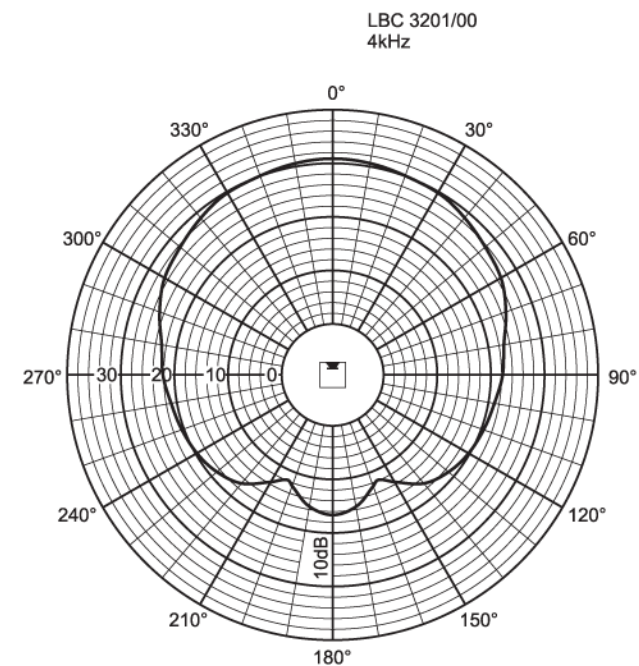
Polar diagram (vertical)



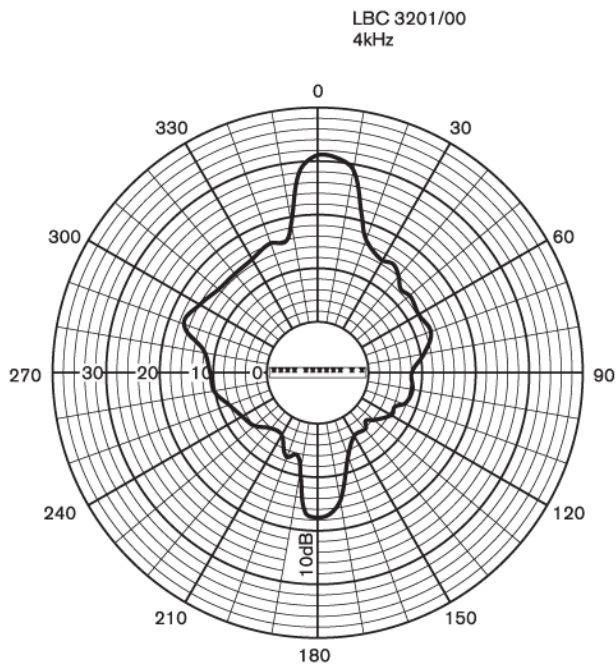
Polar diagram (vertical)



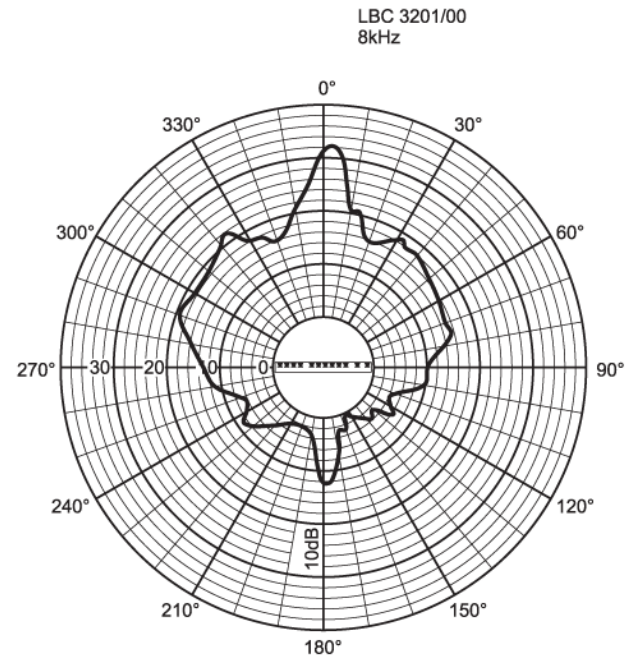
Polar diagram (horizontal)



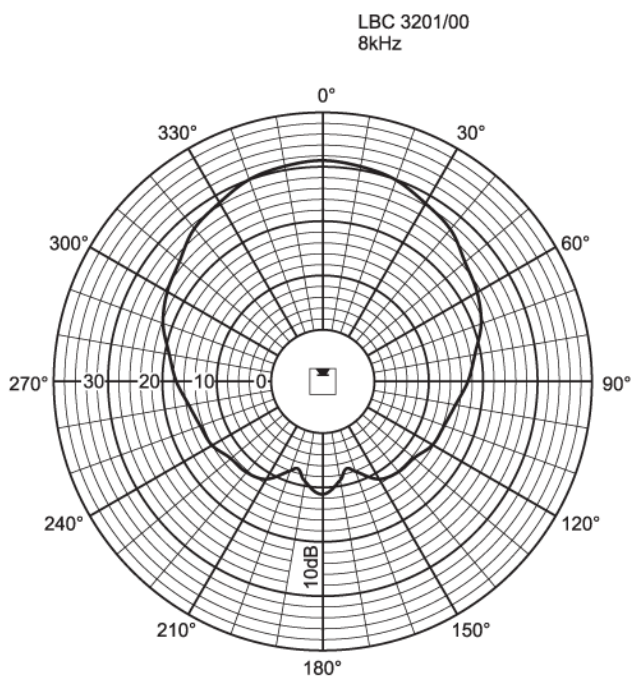
Polar diagram (horizontal)



Polar diagram (vertical)



Polar diagram (vertical)



Polar diagram (horizontal)

Parts Included

Quantity Components

1	LBC 3201/00 Line Array Loudspeaker
1	Wall mounting bracket
1	Attachment piece
1	Installation chart

Technical Specifications

Electrical*

Maximum power	90 W
Rated power	60 / 30 / 15 W
Sound pressure level at 60 W / 1 W (1 kHz, 1 m)	110 dB / 92 dB (SPL)
Effective frequency range (-10 dB)	190 Hz to 18 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	210° / 132°
vertical	50° / 22°
Rated input voltage	100 V
Rated impedance	167 ohm
Connector	Screw terminal block

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

Mechanical

Dimensions (H x W x D)	1200 x 80 x 90 mm (47.24 x 3.15 x 3.54 in)
Weight	6,4 kg (14,1 lb)
Color	Silver

Environmental

Operating temperature	-25 °C to +55°C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3201/00 Line Array Indoor Loudspeaker	LBC3201/00
for medium and large (reverberant) indoor environments, 60 W	

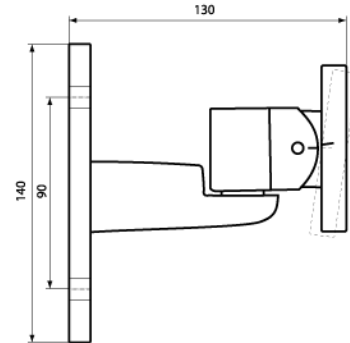
Accessories

LBC 1259/00 Universal Floorstand	LBC1259/00
Lightweight aluminum construction, foldable, M10 x 12 reducer flange.	

LBC 3210/00 Line Array Indoor/Outdoor Loud- speaker



mounting bracket. This simple procedure is very much simpler and more accurate than traditional trial and error installation methods. The LBC 3210/00 can be mounted on a wall or directly onto a floor stand LBC 1259/00 with an M10 threaded bolt without additional accessories.



*Mounting bracket (included) with marked angle.
Dimensions in mm*

Features

- ▶ **Extended listening area**
- ▶ **Excellent intelligibility of speech and music**
- ▶ **Uniform distribution of natural sound throughout the room**
- ▶ **Suitable for both indoor and outdoor use, ranging from sport stadiums to passenger terminals**
- ▶ **Ideal combination of advanced acoustics and easy application**
- ▶ **Powerful with high efficiency**
- ▶ **Voice evacuation compliant as standard**
- ▶ **Provision for inside mounting the optional line/loudspeaker supervision board**

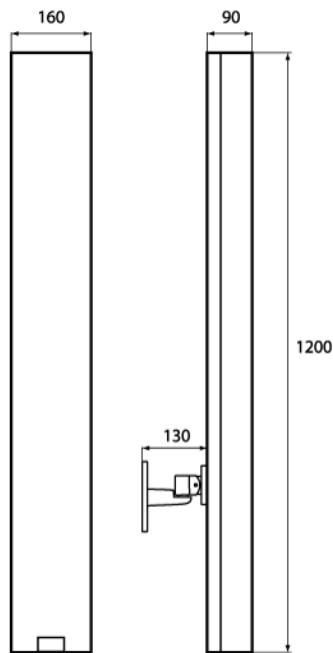
This loudspeaker, with its excellent directivity and high power output, can handle large (reverberant) indoor environments like airport departure lounges, train stations and congress venues. It is also suitable for outdoor use, for instance in railway stations or sports stadiums. Its full frequency range makes it ideal for speech as well as music reproduction.

System Overview

A time- and labor-saving mounting method has been developed for the LBC 3210/00. A chart is supplied with the loudspeaker, which shows the ideal installation height for the area the loudspeaker has to cover. Once the appropriate height has been determined for a given area, the loudspeaker is mounted at an angle marked on the



Detail mounting bracket



Dimensions in mm



Mounted on optional loudspeaker stand (LBC 1259/00)

Functions

Range of Application

The LBC 3210/00 is part of the XLA 3200 (eXtended Listening Area) range of line array loudspeakers. Advanced filtering and positioning of the loudspeaker drivers* has resulted in greatly improved audio directivity. Each speaker driver produces a dedicated frequency range. The difference between a conventional column loudspeaker and this line array is noticeable in several ways. There is uniform sound distribution throughout the whole listening area: not too loud at the front, not too quiet at the back. All relevant frequencies are present everywhere in the listening area. Greater coverage is achieved, so more people can be reached with speech and music with a higher intelligibility level. All these important features will give the experience of a very natural sound quality in the whole listening area.

*patent pending

Easy Installation

The advanced filtering generates larger vertical opening angles for high frequencies, so there is less narrow 'beaming' of higher tones. Compared to conventional column loudspeakers, this line array has a more constant opening angle for all relevant frequencies. As an example, at 4 kHz the vertical opening angle is still 18°. Having more constant vertical opening angles makes installation easier, as the positioning of the loudspeakers is less critical because they cover a wider area. An excellent horizontal opening angle of 90° at 4 kHz means that a single loudspeaker can provide natural sound reproduction over an extensive listening area.

Suppressed Side Lobes

All conventional column loudspeakers produce a main lobe of sound, which is directed at listeners, and a number of unwanted side lobes. The LBC 3210/00 has highly suppressed side lobes in the vertical plane, typically at least 10 dB from the 250 Hz octave band at 90°, resulting in a much clearer, less 'colored' sound, even when close to the loudspeakers. This gives the line array loudspeaker superb intelligibility of both speech and music.

Sound Reproduction

The positioning and very high quality of the 4-inch drivers contribute significantly in making the LBC 3210/00 a very efficient line array. With a sound pressure level of 115 dB at 1 m at 60 W, loud and clear sound reproduction is possible even at considerable distances from the loudspeaker.

The high-quality loudspeaker drivers used in the LBC 3210/00 give excellent, natural sound reproduction of frequencies ranging from 190 Hz to 20 kHz. Together with the constant directivity this ensures that all important frequencies are heard in the listening area.

EVAC Compliant

The loudspeakers ceramic terminal block, thermal fuse and heat-resistant, high-temperature wiring, 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 within the same loudspeaker zone can still be used to inform people of the situation.

The line arrays have provision for mounting the optional line/loudspeaker supervision board.

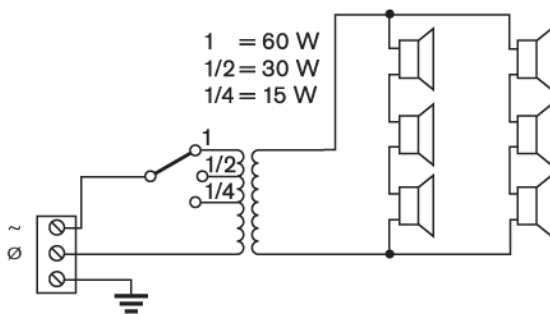
A three-way ceramic terminal block with screw connections suitable for loop-through wiring is located in a compartment at the base of the loudspeaker column. There is also a switch which allows the selection of nominal full power (60 W), half power (30 W) or quarter power (15 W). The compartment has knock-out slots for accommodating cables.

Certifications and Approvals

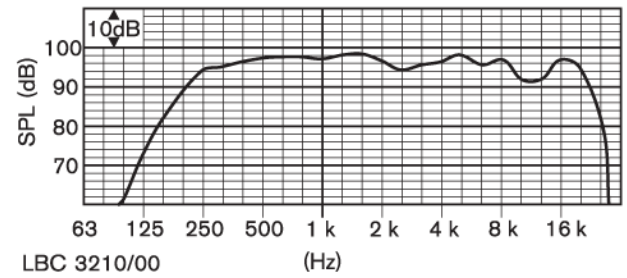
All Bosch loudspeakers are designed to withstand operation at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. These loudspeakers also comply with the Simulated Acoustical Feedback Exposure (SAFE) test, which demonstrates that they can withstand acoustical feedback at full 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.

Region	Certification	
Europe	CE	Declaration of Conformity Declaration of conformity EN50102 (IK07)
Safety		acc. to EN 60065 and CE
EVAC		acc. to IEC 60849 and BS 5839-8
Dust and water protection		acc. to IEC 60529, IP 66
Impact		acc. to EN 50102, IK 07

Installation/Configuration Notes



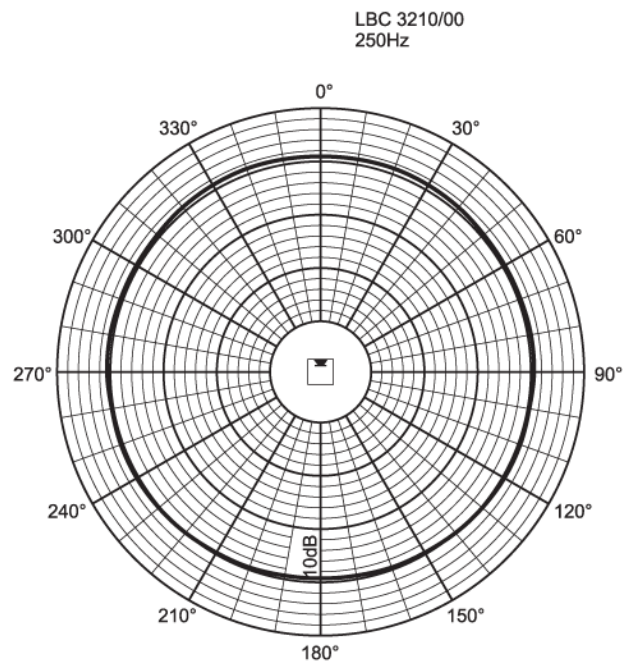
Circuit diagram



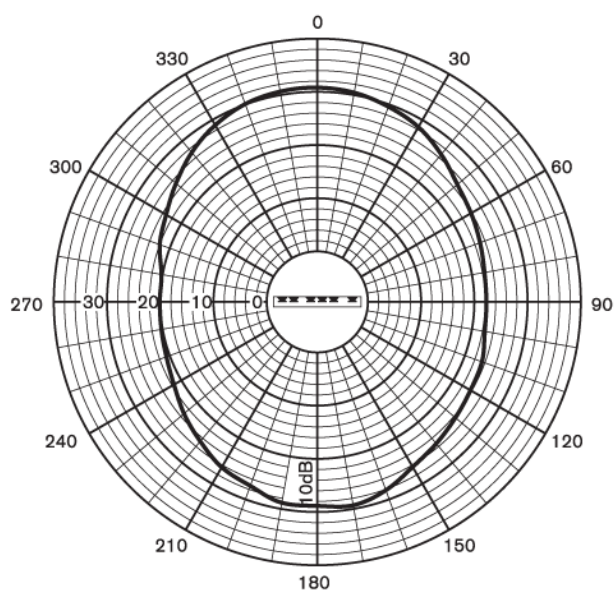
Frequency response

	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	94	97	97	95	96	93
SPL max.	112	115	115	113	114	111
Q-factor	2.2	2.7	6.3	10.8	22.6	32.3
H. angle (deg)	360	180	170	160	90	60
V. angle (deg)	100	60	55	34	18	10

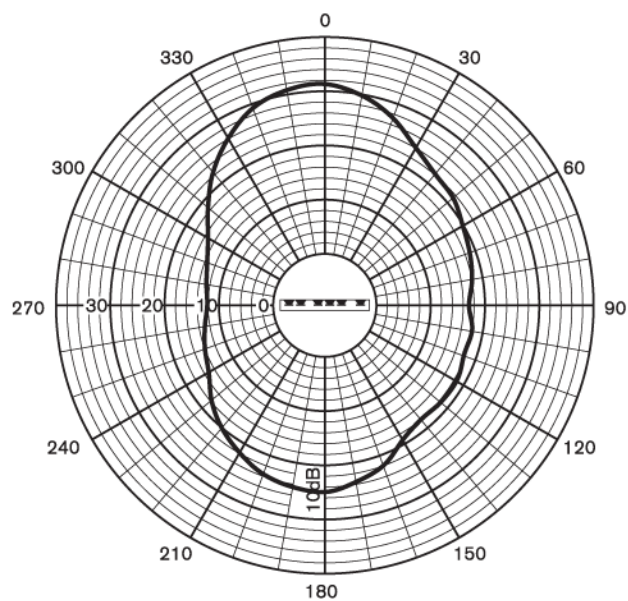
Acoustical performance specified per octave



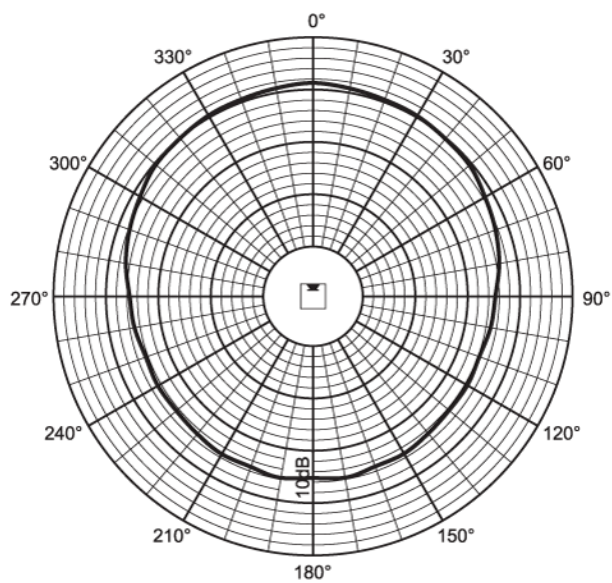
Polar diagram (horizontal)

LBC 3210/00
250Hz

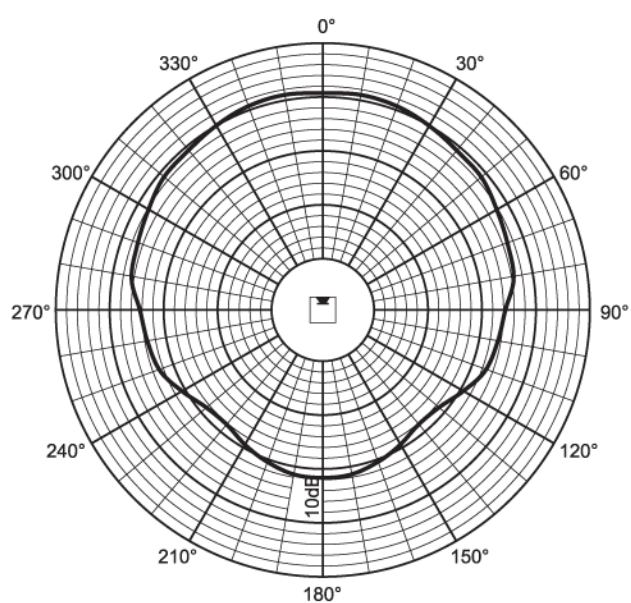
Polar diagram (vertical)

LBC 3210/00
500Hz

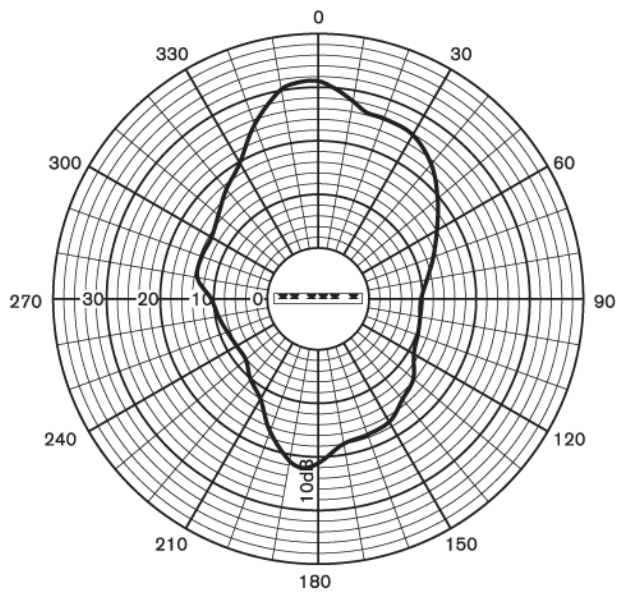
Polar diagram (vertical)

LBC 3210/00
500Hz

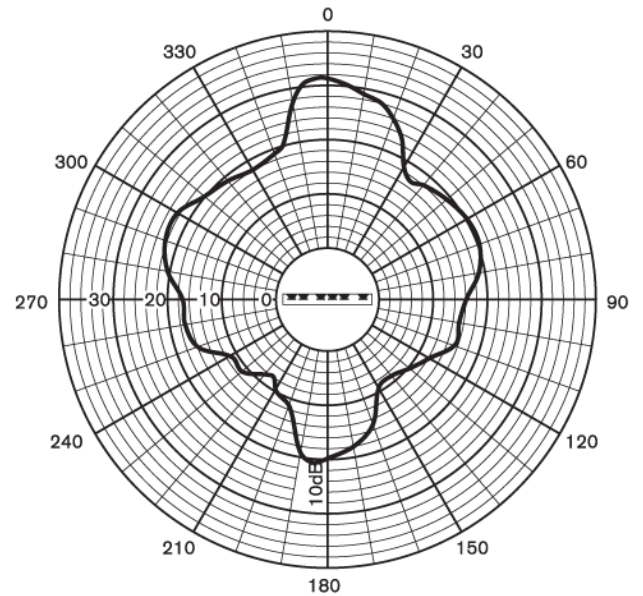
Polar diagram (horizontal)

LBC 3210/00
1kHz

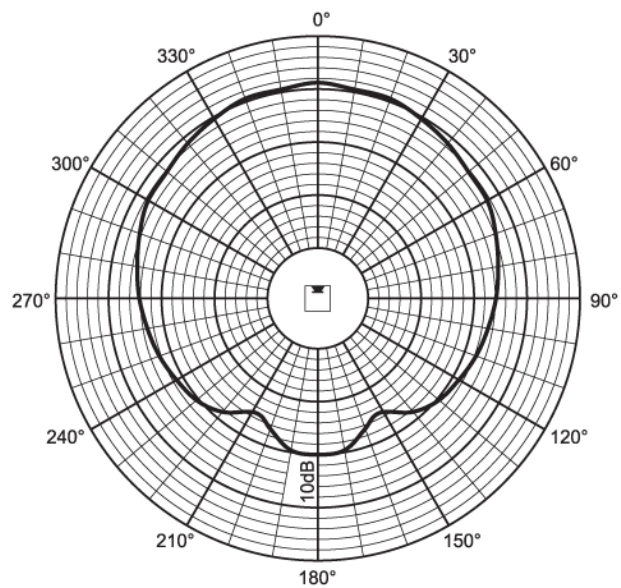
Polar diagram (horizontal)

LBC 3210/00
1kHz

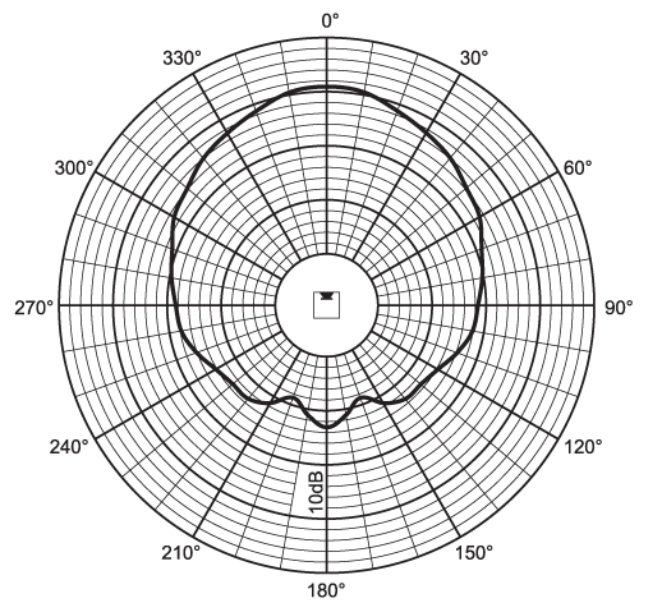
Polar diagram (vertical)

LBC 3210/00
2kHz

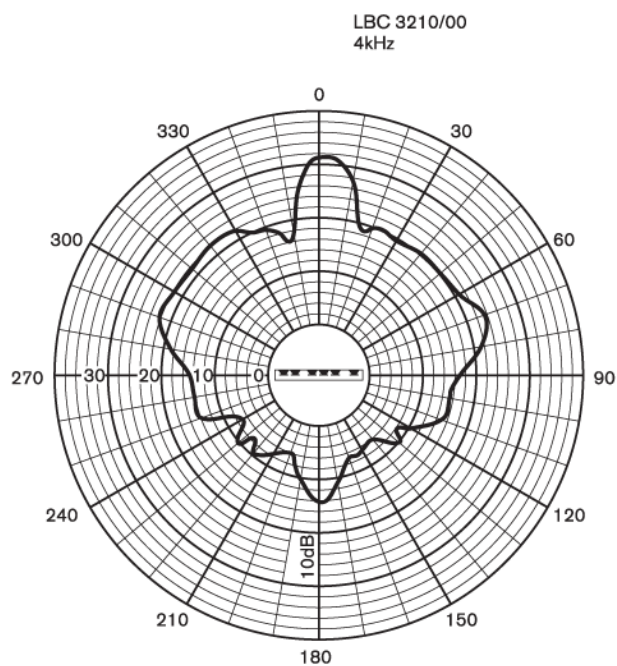
Polar diagram (vertical)

LBC 3210/00
2kHz

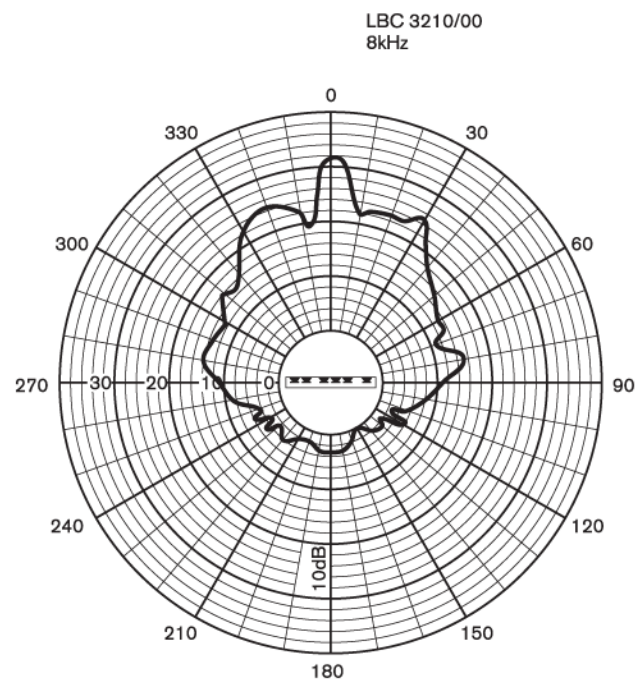
Polar diagram (horizontal)

LBC 3210/00
4kHz

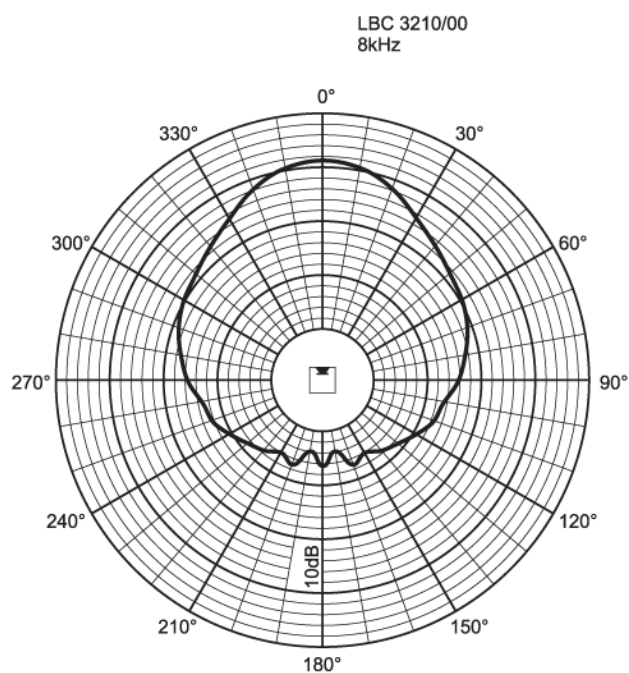
Polar diagram (horizontal)



Polar diagram (vertical)



Polar diagram (vertical)



Polar diagram (horizontal)

Parts Included

Quantity	Components
1	LBC 3210/00 Line Array Loudspeaker
1	Wall mounting bracket
1	Attachment piece
1	Installation chart

Technical Specifications

Electrical*

Maximum Power	90 W
Rated Power	60 / 30 / 15 W
Sound pressure level at 60 W / 1 W (1 kHz, 1 m)	115 dB / 97 dB (SPL)
Effective frequency range (-10 dB)	190 Hz to 20 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	170° / 90°
vertical	55° / 18°
Rated input voltage	100 V
Rated impedance	167 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	1200 x 160 x 90 mm (47.24 x 6.3 x 3.54 in)
Weight	9 kg (19,8 lb)
Color	Silver

Environmental

Operating temperature	-25 °C to +55°C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3210/00 Line Array Indoor/Outdoor Loudspeaker	LBC3210/00
for large (reverberant) indoor/outdoor environments, 60 W	

Accessories

LBC 1259/00 Universal Floorstand	LBC1259/00
Lightweight aluminum construction, foldable, M10 x 12 reducer flange.	

LBC 3251/00 Intellivox 1b Active Line Array Loudspeaker



Features

- ▶ **Active Loudspeakers**
- ▶ **Variable Elevation Angle**
- ▶ **Variable Vertical Opening Angle**
- ▶ **Focus Distance**
- ▶ **Even Sound Pressure and Constant Directivity**
- ▶ **Suppressed Acoustic Side Lobes**
- ▶ **WinControl**
- ▶ **Integrated Remote Monitoring**
- ▶ **AVC (Automatic Volume Control)**
- ▶ **Wall Mounting**

The Intellivox DDC (Digital Directivity Control) from Bosch Security Systems form a range of five active line array loudspeakers with unrivalled acoustical properties. Each loudspeaker produces clear, natural sound for excellent intelligibility of both speech and music. In addition, the audio characteristics of each line array can be adjusted by means of software to meet the acoustical requirements of the venue. This, along with the long acoustical reach ('throw'), means only a few loudspeakers are required for complete coverage. One loudspeaker can cover a distance of up to 70 meters. The extensive integrated remote monitoring possibilities of Intellivox loudspeakers also make them extremely reliable and a key element in voice evacuation systems.

Functions

Active Loudspeakers

All Intellivox loudspeakers have state-of-the-art class-D amplifiers as standard. This guarantees efficient and reliable operation without the need for external amplification. They also have an on-board DSP (Digital Signal Processor), which controls the frequency and delay time of each individual driver in the array, thus allowing software adjustment of loudspeaker characteristics like direction, opening angle and focus distance. As an added benefit, the presence of a DSP means there is no need for extra equalizers.

Variable Elevation Angle

Intellivox loudspeakers incorporate a feature known as Digital Directivity Control, which enables the direction of the main lobe to be tilted while the loudspeaker remains vertical. This is achieved by programming a different delay time for each individual driver in the array. As an example, by specifying a longer delay for the drivers at the bottom of the array, the lobe is effectively tilted downwards. These delay times, and therefore the elevation angle, are programmed into the on-board DSP using a PC. This feature gives much more mounting flexibility than conventional mechanical aiming. It also makes better use of the backward main lobe, because having the loudspeaker flat against a wall helps direct the sound from this lobe towards the listening area.

Variable Vertical Opening Angle

Being able to adjust the delay times and equalization settings for each driver in the array also makes it possible to specify the opening angle for all relevant frequencies. When the specified angle is narrow, sound can be pinpointed very accurately to a distant listening area. When the angle is wide, one loudspeaker can cover a very broad area.

Focus Distance

Intellivox loudspeakers are unique in allowing the loudspeaker focus distance to be set. The focus distance is the point at which the output of each driver in the array converges. Specifying the focus distance sets how far the main lobe reaches before the drivers' contributions are out of phase and their sound energy becomes part of the diffuse sound field.

Even Sound Pressure and Constant Directivity

By accurately adjusting the direction of the sound and vertical opening angle, a main lobe can be created that has all relevant frequencies present at nearly the same sound pressure level. With Intellivox loudspeakers, the variation throughout the entire listening area is no more than 3 dB. This means that the sound for listeners is not too loud at the front and not too quiet at the back. The constant directivity of Intellivox loudspeakers also helps ensure the presence of all relevant frequencies for more clear and natural sound.

Suppressed Acoustic Side Lobes

Intellivox loudspeakers produce extremely small side lobes, which gives a much clearer, less 'colored' sound, even when close to the loudspeakers.

WinControl

WinControl is a 32-bit Windows®-compatible program that enables programming, testing and configuring of Intellivox units through the serial port of the PC. The software allows:

- Adaptation of signal processing-related parameters such as beam settings, gain, EQ, pre-delay and auto gain.
- Updating or restoring of the DSP software.
- Adaptation of surveillance-related parameters such as amplifier/DSP status, temperature overload and pilot tone detection settings.
- Requesting of the loudspeaker status for error checking purposes.
- Factory unit initialization.

Integrated Remote Monitoring

An Intellivox loudspeaker can be configured to notify a building management, control or evacuation system through in- and output relays if an error occurs. The loudspeaker cabling can be automatically checked using a 20 kHz pilot tone. The status of each loudspeaker can also be continuously monitored via an RS-485 network. Over 10 different system parameters are checked - including temperature, pilot tone and amplifier condition - to guarantee system integrity.

AVC (Automatic Volume Control)

In certain environments, such as sport stadiums and passenger terminals, the background noise level fluctuates constantly. Intellivox loudspeakers are equipped with an external terminal for connecting a sensor (LBC 3262/00) for measuring the ambient SPL. This information is used by the auto gain of the loudspeaker amplifiers to constantly adjust the loudspeaker output so it is always the same level above the ambient noise.

Wall Mounting

There are several options for mounting the Intellivox against a wall. It can be supported by means of the wall brackets supplied as standard, or by the LBC 3270/00 swivel bracket (adjustable through 90 degrees) or the LBC 3271/00 swivel bracket (adjustable through 45 degrees). Both swivel brackets have to be ordered separately.

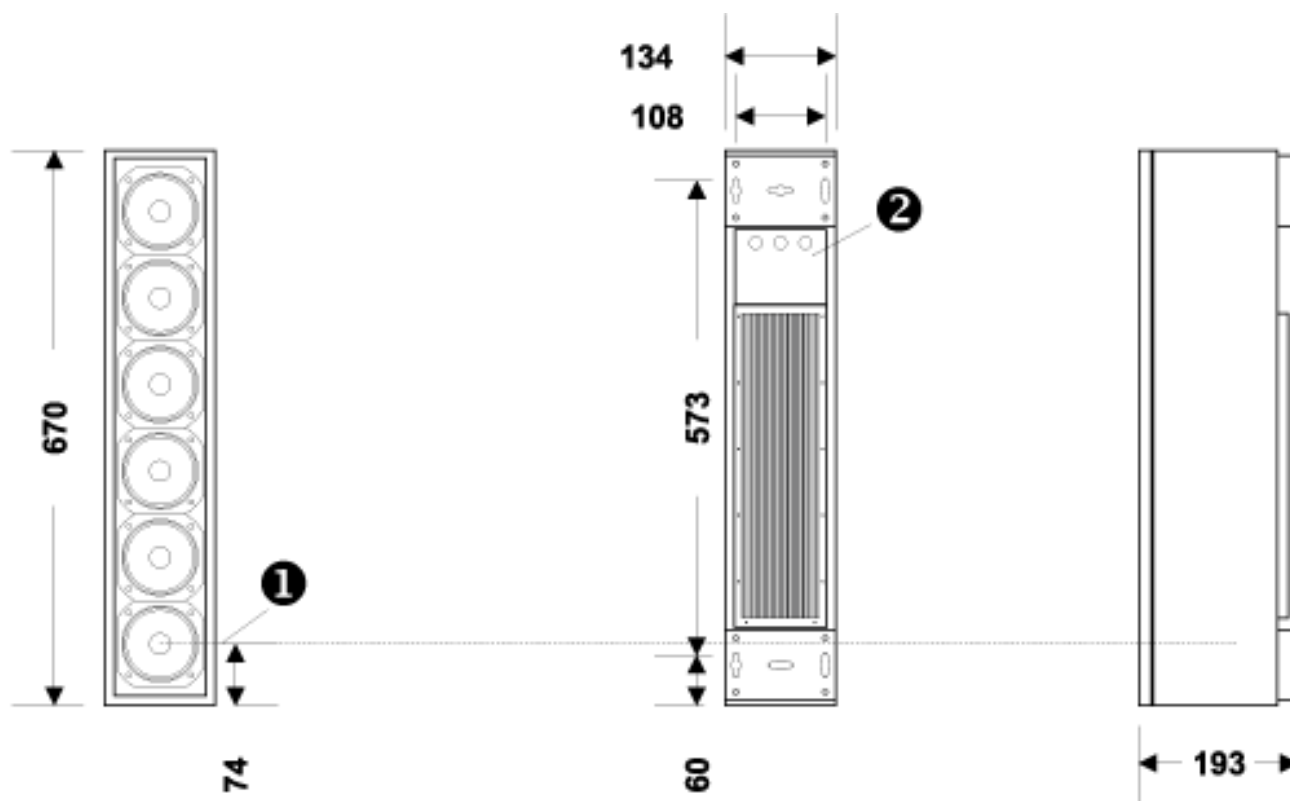
Safety and Evacuation Compliant

The unrivalled speech intelligibility, reliability and extensive monitoring features of Intellivox loudspeakers makes them a key element in voice evacuation systems. With Intellivox, systems can be built that comply with both the technical requirements and acoustical demands of IEC 60849 and BS 5839.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity

Installation/Configuration Notes



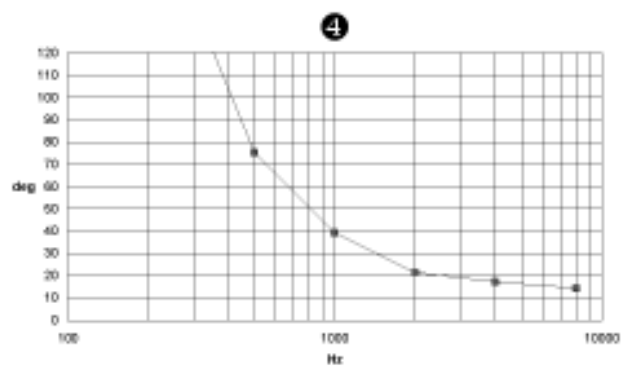
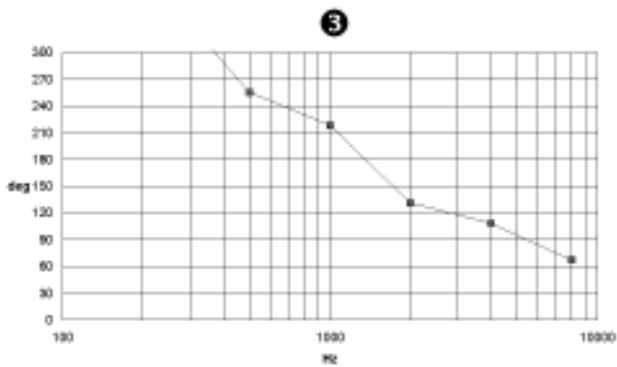
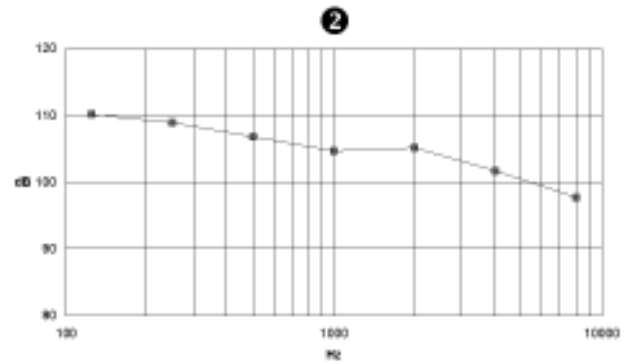
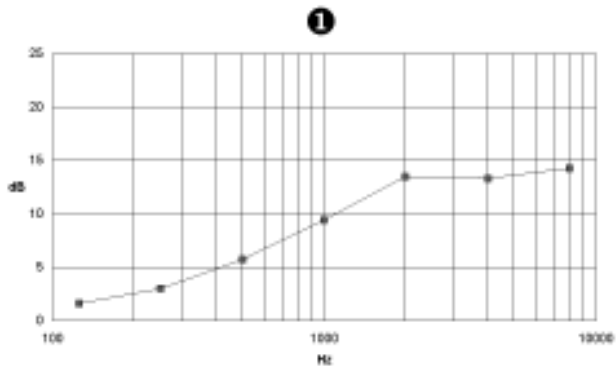
LBC 3251/00

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry

Acoustical Data

Frequency ¹ (Hz)	DI ² (dB)	Pac ³ (dB _{PWL})	Horizontal coverage -6 dB (deg) ²	Vertical coverage -6 dB (deg) ²
125	1.6	110	360	360
250	3.0	109	360	164
500	5.7	107	256	76
1k	9.4	105	218	39

2k	13.5	105	132	22
4k	13.3	102	108	17
8k	14.3	98	67	15

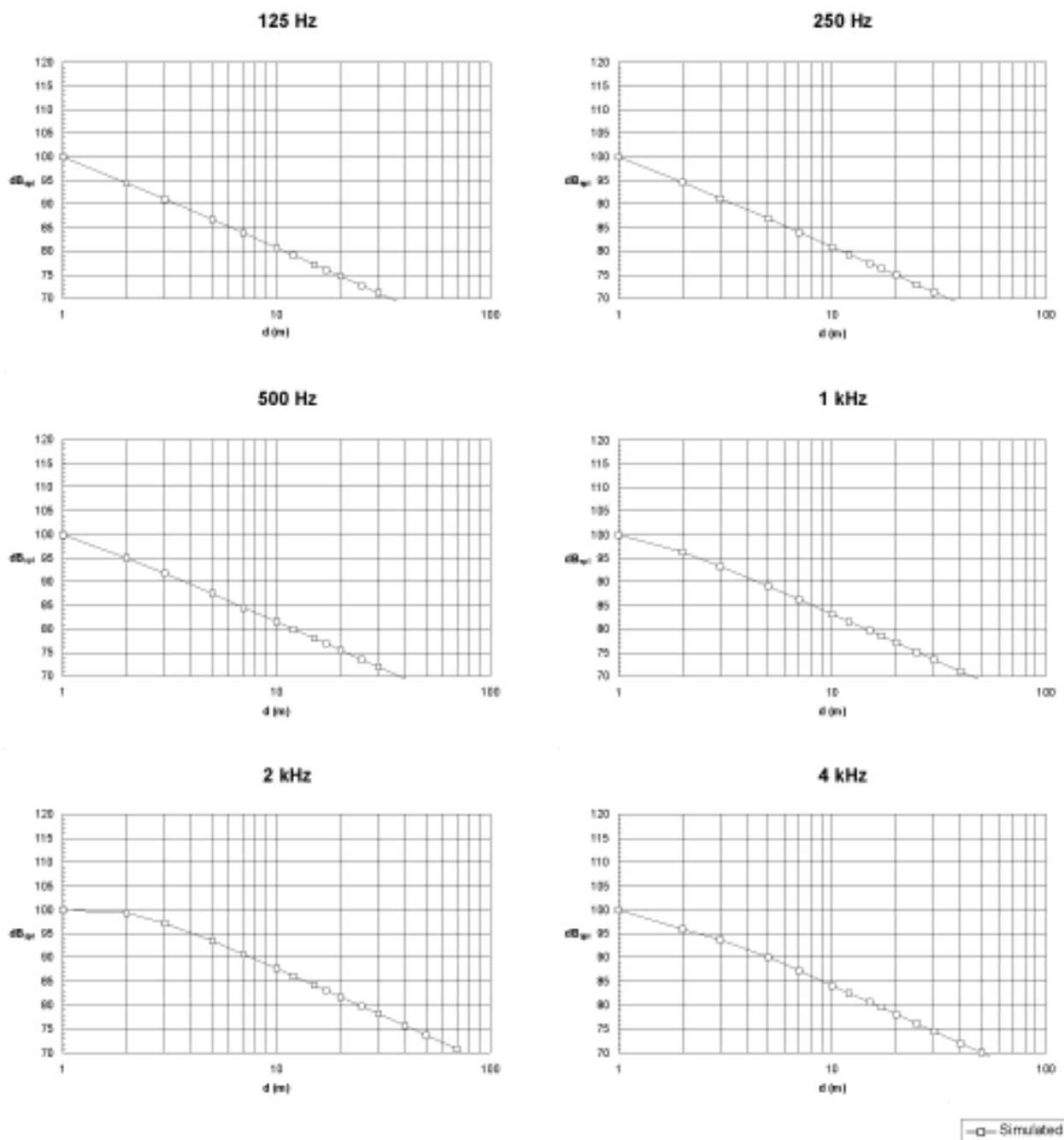


- | | |
|---------------------|------------------------------------|
| 1 Directivity index | 3 Horizontal opening angle (-6 dB) |
| 2 Acoustical power | 4 Vertical opening angle (-6 dB) |

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 25 deg, Focus distance = 10 m. All values from octave band averaged data. Only valid in the far-field ($d > \text{approx. } 5 \text{ m}$), results from

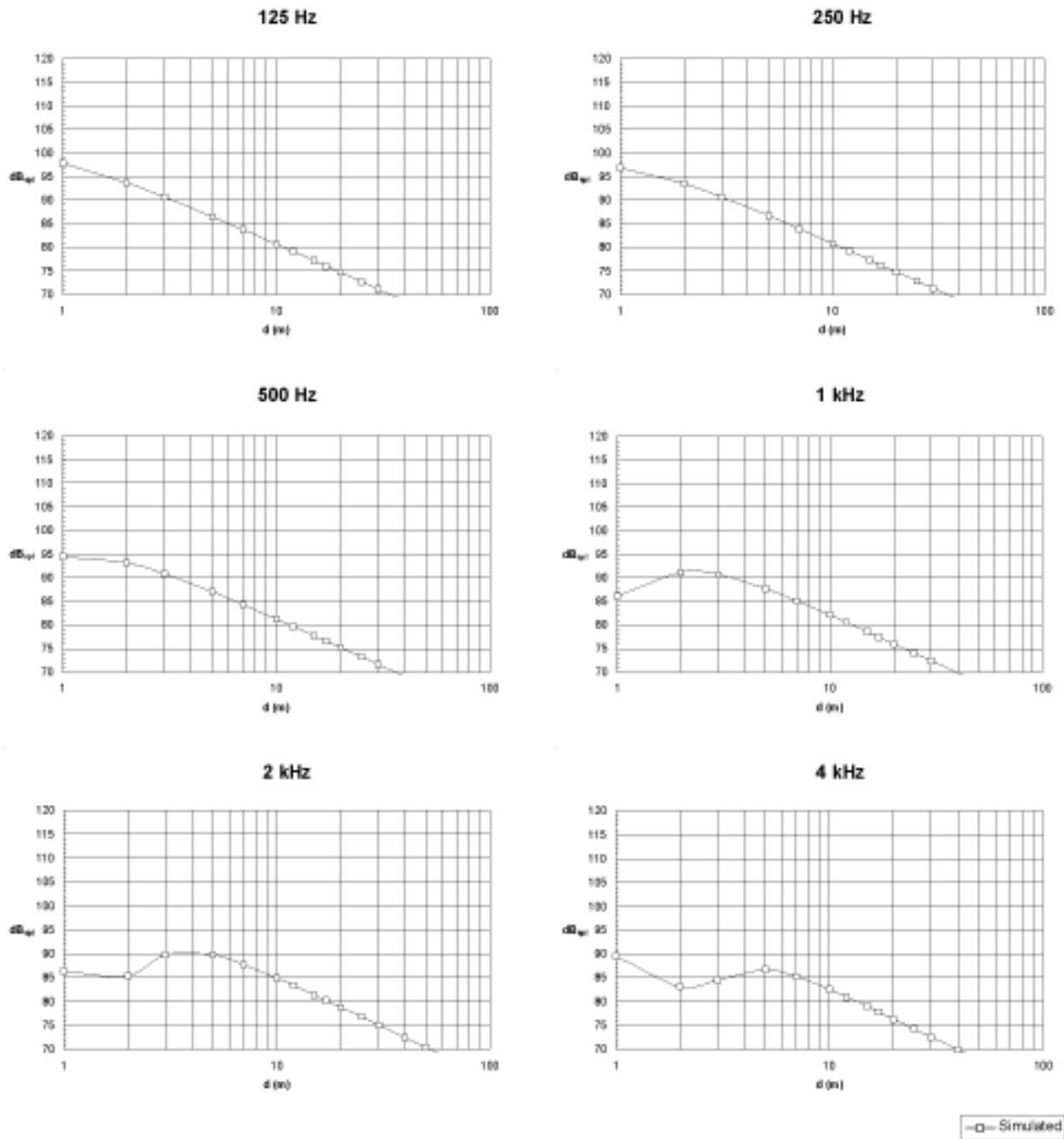
simulations, refer to general notes [2]. Acoustical power (P_{ac}) expressed in $\text{dB } P_{WL}$ relative to 10^{-12} W , simulated with 100 dB, SPL source level @ 1m 'on axis' for each octave band, see general notes [2].



SPL versus Distance (on axis)

Notes:

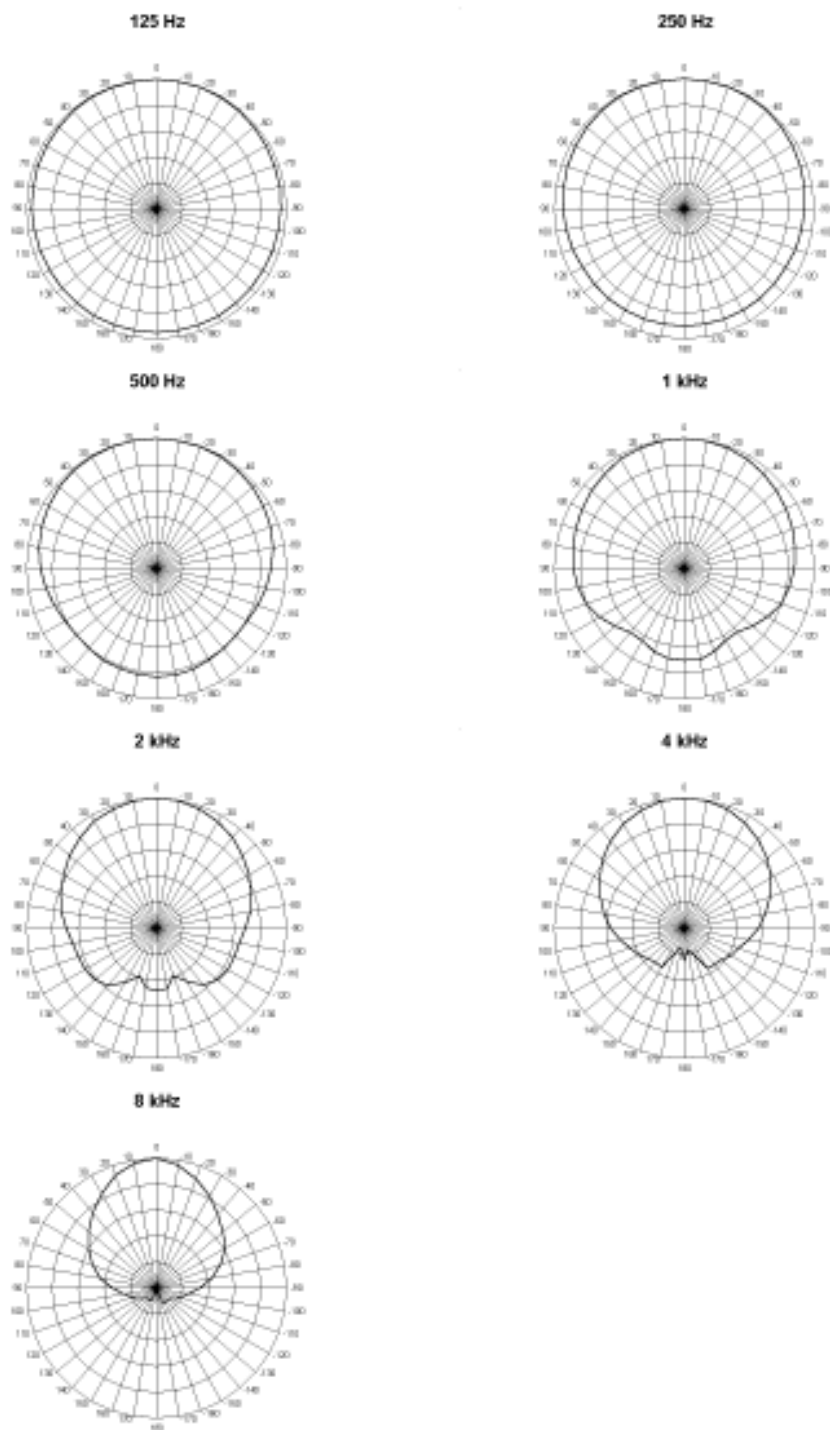
Settings: Elevation angle = 0 deg, Opening angle = 25 deg, Focus distance = 10 m. Simulations 100 dB SPL source level @ 1m 'on axis' for each octave band. Measurements scaled to simulation results at $d = 10$ m, $z_c = z_{li} = 1.7$ m, see general notes [1] for measurement details.



SPL versus Distance ($\Delta z = 0,5 \text{ m}$)

Notes:

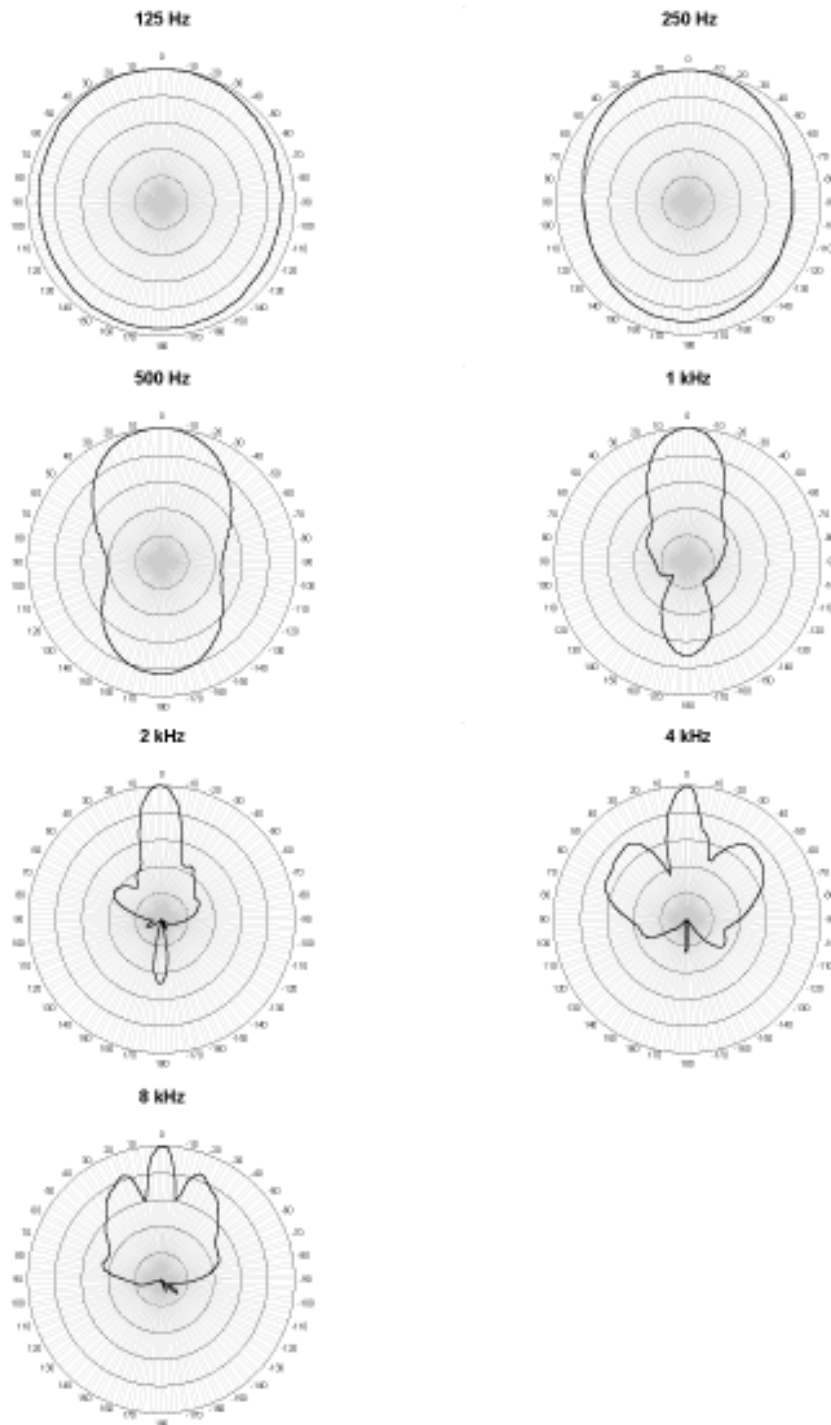
Settings: Elevation angle = -3 deg, Opening angle = 25 deg, Focus distance = 10 m. Simulations 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [2]. Measurements scaled to simulation results at $d = 10 \text{ m}$, $z_c = 2.2 \text{ m}$, $z_{li} = 1.7 \text{ m}$ see general notes [1] for measurement details



Horizontal Polar Data

Notes:

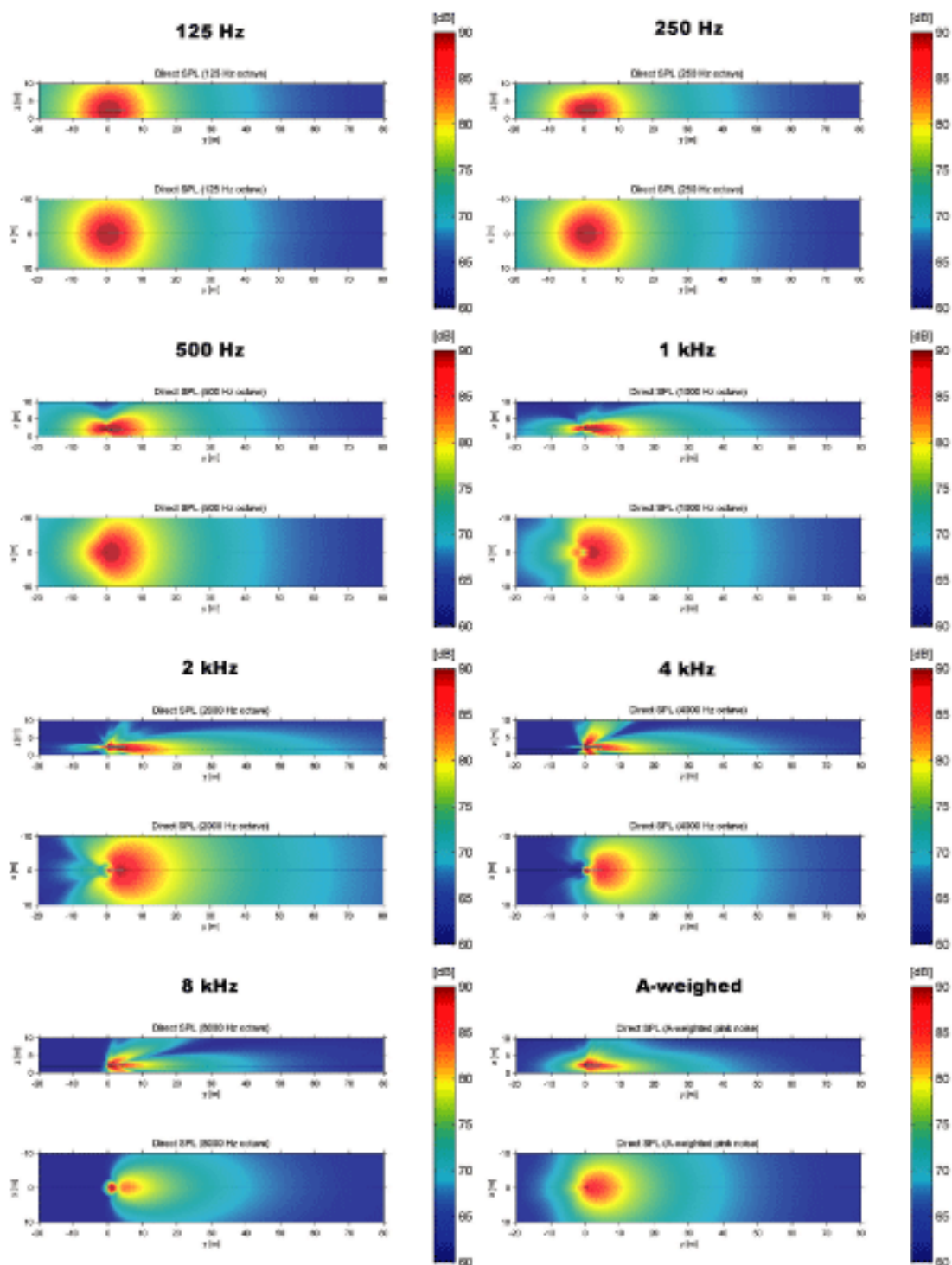
1/1 octave averaged far-field data ($r = 1000$ m), Angular resolution 10 deg, Scale 6 dB/div, Positive angles = left side (unit top view), Settings: Elevation angle = 0 deg, Opening angle = 25 deg, Focus distance = 10 m, Simulations only



Vertical Polar Data

Notes:

1/1 octave averaged far-field data ($r = 10$ m), Angular resolution 2.5 deg, Scale 6 dB/div, Positive angles = top side, Settings: Elevation angle = 0 deg, Opening angle = 25 deg, Focus distance = 10 m, Simulations only



Vertical and Horizontal Beam Cross-Sections

Notes:

Settings: Elevation angle = -3 deg, Opening angle = 25 deg, Focus distance = 10 m, Reference mounting height $z_c = 2.2$ m. Simulations 100 dB S_{PL} source level @ 1m 'on axis' for each octave band. Dimensions of all vertical cross sections (top) 100 m x 10 m. Dimensions of all horizontal cross sections (bottom) 100 m x 20 m.

Technical Specifications

Acoustical ⁽¹⁾

Frequency range²

4" loudspeaker	230 to 10 kHz (± 3 dB)
10 mm tweeter	6k to 20 kHz (± 3 dB)
LF complete array	130 Hz (-3 dB)

Max SPL³

Continuous	92 dB SPL A-weighted with pink noise at 10 m
Peak	96 dB SPL at 10 m

Coverage

Horizontal (fixed) ⁴	150 deg
Vertical (adjustable) ⁵	Opening angle: 15° to 40° elevation (aiming) angle: -16° to 16° focus distance: 2 to 40 m

Dynamic range⁶

Electrical

Input⁷

Nominal level	0 dBu (line input) and +50 dBu (100 V input)
DLC threshold (1 kHz)	+3 dBu, 6 dB headroom before clip (gain / volume 0 dB)
Type	Transformer balanced
Impedance (balanced)	6.8 kohm (line input) and 2 Mohm (100 V input)

DSP module⁸

Type	32-bit floating point
Memory	32 k words SRAM, 2 x 8 kB EEPROM
ADCs	Two channel, 18 bit sigma-delta converters
DACs	Eight channel, 18 bit sigma-delta converters
Sample frequency	48.8 kHz

Signal processing ⁹	- pre-delay (< 335 ms @ 32 bit float) - equalizer and compensation filtering - compressor and noise gate - volume and analog pre-gain - ambient noise level dependent gain adaptation ('fail-safe') - eight output filters - high resolution output channel delays ($\Delta T = 10.2 \mu s$)
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Control unit

Network interface type	Serial full-duplex RS-485, 19.2 kbaud, optically isolated
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Maximum number of units¹⁰ 126

Remote surveillance	- general status (DSP running, signal present etc.) - amplifier monitoring and load monitoring schemes - external pilot tone detection (20..30 kHz, level > -22 dBV) - ambient noise microphone monitoring - frost protection - fan control for optional external fan - thermal overload protection
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Input⁷

Failure	- internal hardware bypass circuit - failure relay (external connector, maskable conditions)
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Power amplifiers

Type	PWM (class D)
Power	8 x 40 W _{rms} (4 ohm)
Protection	Thermal shutdown if $T_{junction} > 150^\circ C$ Current limiting output stage

Connectors

General type	5 mm pitch cage clamp (as WAGO series 231)
Audio inputs	6-pin male p1 = Line +, p2 = Line -, p3 = GND p4 = 100V +, p5 = 100V -, p6 = GND
RS-485 Interface	5-pin male p1 = A, p2 = B, p3 = Z, p4 = Y, p5 = DGND
Ambient noise and temperature sensor	5-pin female p1 = MIC, p2 = AGND, p3 = NTC, p4 = AGND, p5 = GND
Failure detect and fan control	5-pin female failure relay: p1 = COM, p2 = NO, p3 = NC optional fan: p4 = -, p5 = +24 V
Mains	3-pin IEC

PSU

Mains voltage (+5/-10%) ¹¹	230 or 115 V
Mains fuse(s)	2 x 1.6 A (slow type)
Power consumption ¹²	28 VA (idle) / 150 VA (full load)
Power Factor	0.70
Max mains inrush current	12 A short-time peak (@ 230 V)

Mechanical

Dimensions (H x W x D) ¹⁴	670 x 134 x 186 mm
Weight	16 kg
Default color	Silver
Transducers	6 x 4" loudspeaker 2 x 10 mm ferrofluid cooled tweeter, coaxially mounted

Environmental

Operating temperature ¹³	-15 °C to +40 °C (5 °F to +104 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Notes:

1. Measured outside under semi-anechoic 'full-space' conditions with typical filter and delay settings unless stated otherwise.
2. Single transducer only, from 1/3 octave averaged data at 1 m. Actual measured frequency response of complete array is depending on the actual signal processing parameters and air absorption (at larger distances). Only low frequency -3 dB point is specified for complete array ('full-space').

3. Continuous level: rms level measured with SLM (slow, A-weighted) with pink noise source level just below DLC input limiter threshold. Peak level: the maximum short-term A-weighted rms sound pressure level measured with a SLM and a pulsating pink noise source.
4. Settings: Elevation angle = 0 deg, Opening angle = 15 deg, Focus distance = 10 m.
5. Opening angle -6 dB, average value 1k - 4kHz octave band.
6. Opening angle -6 dB, typical values, only valid in the far-field (d > approx. 5 m).
7. For this measurement the signals at all power amplifier outputs are summed together. Measured as the A-weighted difference (in dB) between the maximum rms level (with pink noise input signal) and the noise output (with no input signal present).
8. Specs valid for default type 3 input board, 0 dBu = 0.775 V rms. Dual-line input available as an option.
9. "Dual lobe" and "Extended pre-delay" (up to 2684 ms) available as a DSP software / hardware option.
10. Maximum number that can be connected to one RS-485 subnet, multiple subnets can be controlled by one host PC.
11. Mains voltage can be selected on the IEC inlet, accessible from the outside of the unit.
12. Defined as the rms mains current multiplied by the rms mains voltage under normal operating conditions. 'Full load' figures are maximum values measured with a pulsating pink noise input signal.
13. With frost protection and installed ambient temperature sensor. Outdoor versions available upon request. Without frost protection, lower limit: 0 °C.
14. Depth of enclosure only (including heatsink), without mounting brackets.

Ordering Information

LBC 3251/00 Intellivox 1b Active Line Array Loudspeaker	LBC3251/00
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Accessories

LBC 3260/00 WinControl Software	LBC3260/00
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LBC 3261/00 Intellivox Dual Lobe Software	LBC3261/00
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LBC 3262/00 Ambient Microphone and Temperature Sensor	LBC3262/00
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LBC 3270/00 Wall Mounting Bracket 90°	LBC3270/00
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LBC 3271/00 Wall Mounting Bracket 45°	LBC3271/00
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LBC 3252/xx Intellivox 2b Active Line Array Loudspeakers



Features

- ▶ **Active Loudspeakers**
- ▶ **Variable Elevation Angle**
- ▶ **Variable Vertical Opening Angle**
- ▶ **Focus Distance**
- ▶ **Even Sound Pressure and Constant Directivity**
- ▶ **Suppressed Acoustic Side Lobes**
- ▶ **WinControl**
- ▶ **Integrated Remote Monitoring**
- ▶ **AVC (Automatic Volume Control)**
- ▶ **Wall Mounting**

The Intellivox DDC (Digital Directivity Control) from Bosch Security Systems form a range of five active line array loudspeakers with unrivalled acoustical properties. Each loudspeaker produces clear, natural sound for excellent intelligibility of both speech and music. In addition, the audio characteristics of each line array can be adjusted by means of software to meet the acoustical requirements of the venue. This, along with the long acoustical reach ('throw'), means only a few loudspeakers are required for complete coverage. One loudspeaker can cover a distance of up to 70 meters. The extensive integrated remote monitoring possibilities of Intellivox loudspeakers also make them extremely reliable and a key element in voice evacuation systems.

Functions

Active Loudspeakers

All Intellivox loudspeakers have state-of-the-art class-D amplifiers as standard. This guarantees efficient and reliable operation without the need for external amplification. They also have an on-board DSP (Digital Signal Processor), which controls the frequency and delay time of each individual driver in the array, thus allowing software adjustment of loudspeaker characteristics like direction, opening angle and focus distance. As an added benefit, the presence of a DSP means there is no need for extra equalizers.

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Being able to adjust the delay times and equalization settings for each driver in the array also makes it possible to specify the opening angle for all relevant frequencies. When the specified angle is narrow, sound can be pinpointed very accurately to a distant listening area. When the angle is wide, one loudspeaker can cover a very broad area.

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WinControl is a 32-bit Windows®-compatible program that enables programming, testing and configuring of Intellivox units through the serial port of the PC. The software allows:

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There are several options for mounting the Intellivox against a wall. It can be supported by means of the wall brackets supplied as standard, or by the LBC 3270/00 swivel bracket (adjustable through 90 degrees) or the LBC 3271/00 swivel bracket (adjustable through 45 degrees). Both swivel brackets have to be ordered separately.

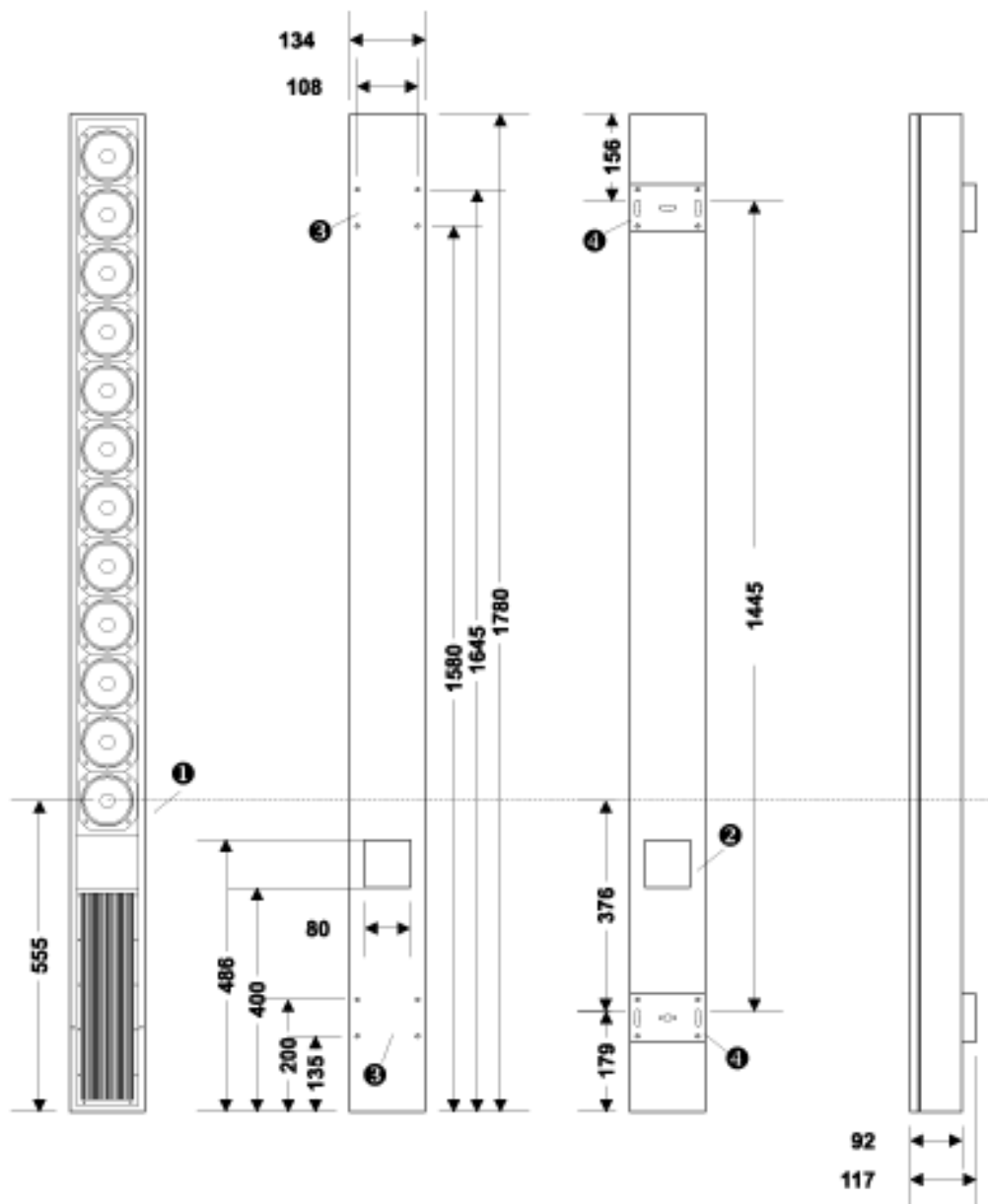
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Certifications and Approvals

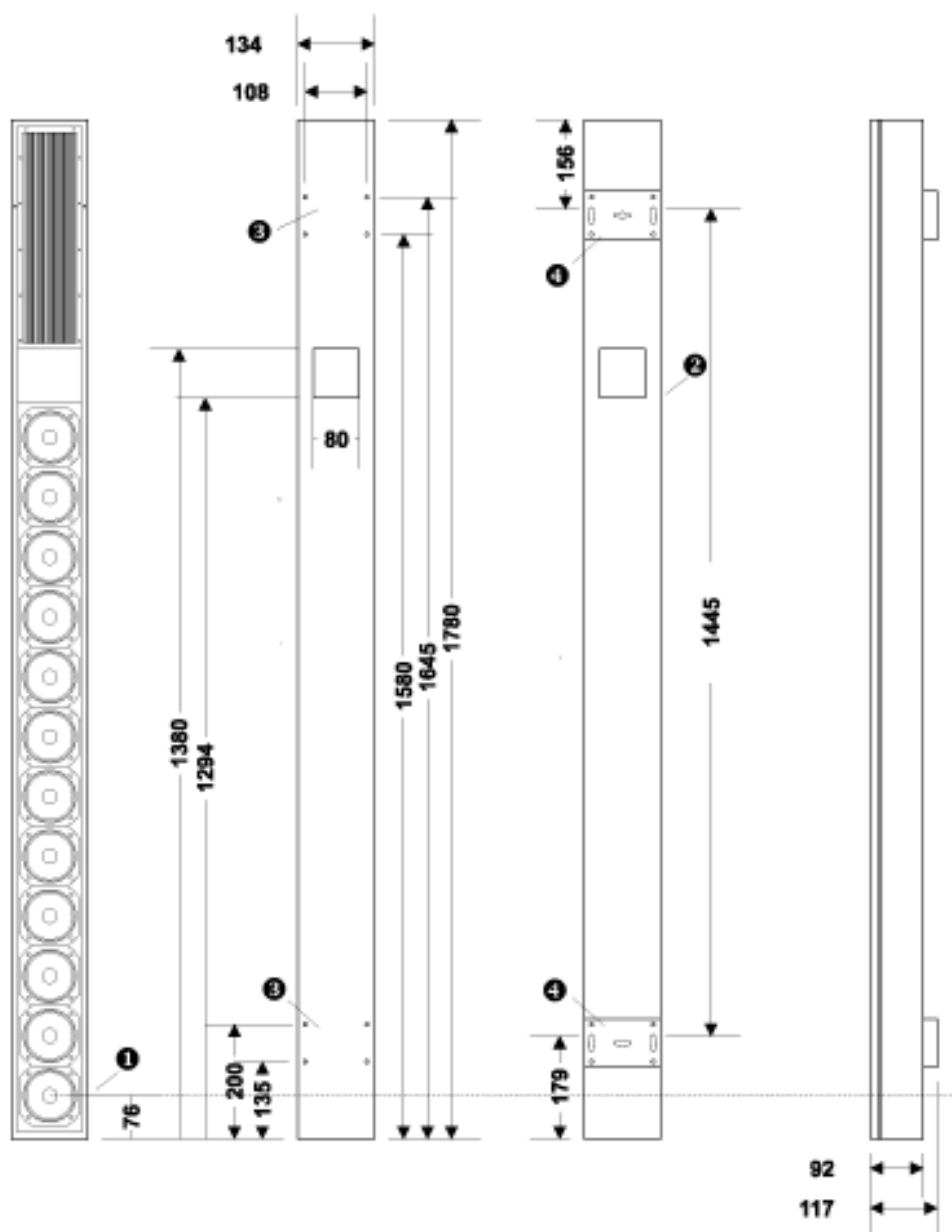
Region	Certification	
Europe	CE	Declaration of Conformity

Installation/Configuration Notes



LBC 3252/00

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable Entry
- 3 4xM5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used.



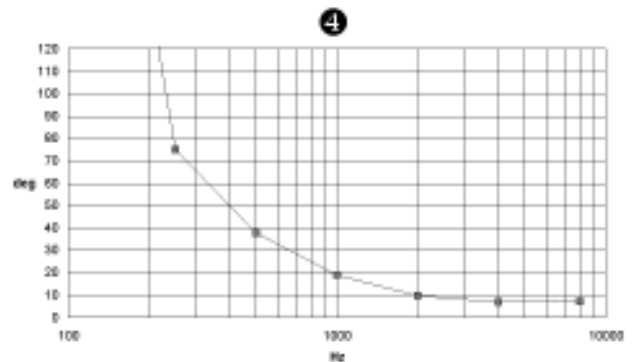
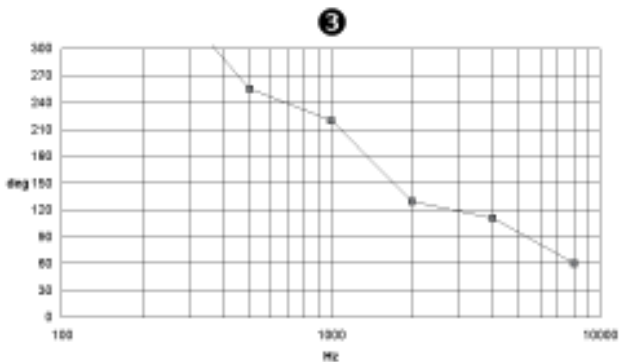
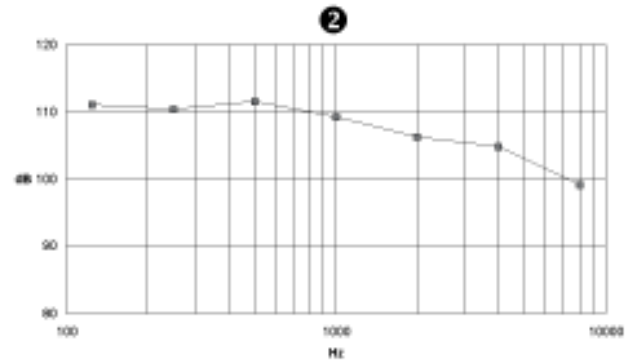
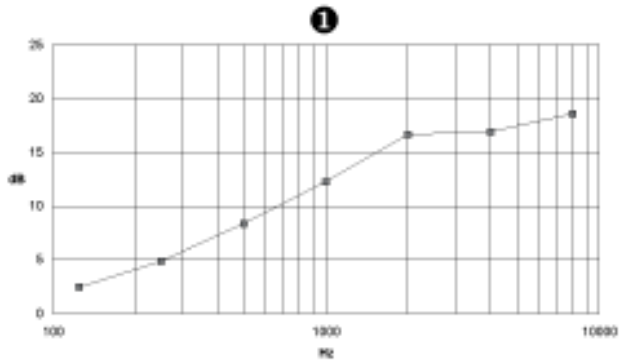
LBC 3252/10

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable Entry
- 3 4xM5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used.

Acoustical Data

Frequency ¹ (Hz)	DI ² (dB)	Pac ³ (dB _{PWL})	Horizontal coverage -6 dB (deg) ²	Vertical coverage -6 dB (deg) ²
125	2.5	111	360	332
250	4.9	111	360	75
500	8.4	112	255	38
1k	12.3	109	220	19

2k	16.7	106	129	10
4k	16.9	105	111	7
8k	18.6	99	60	7



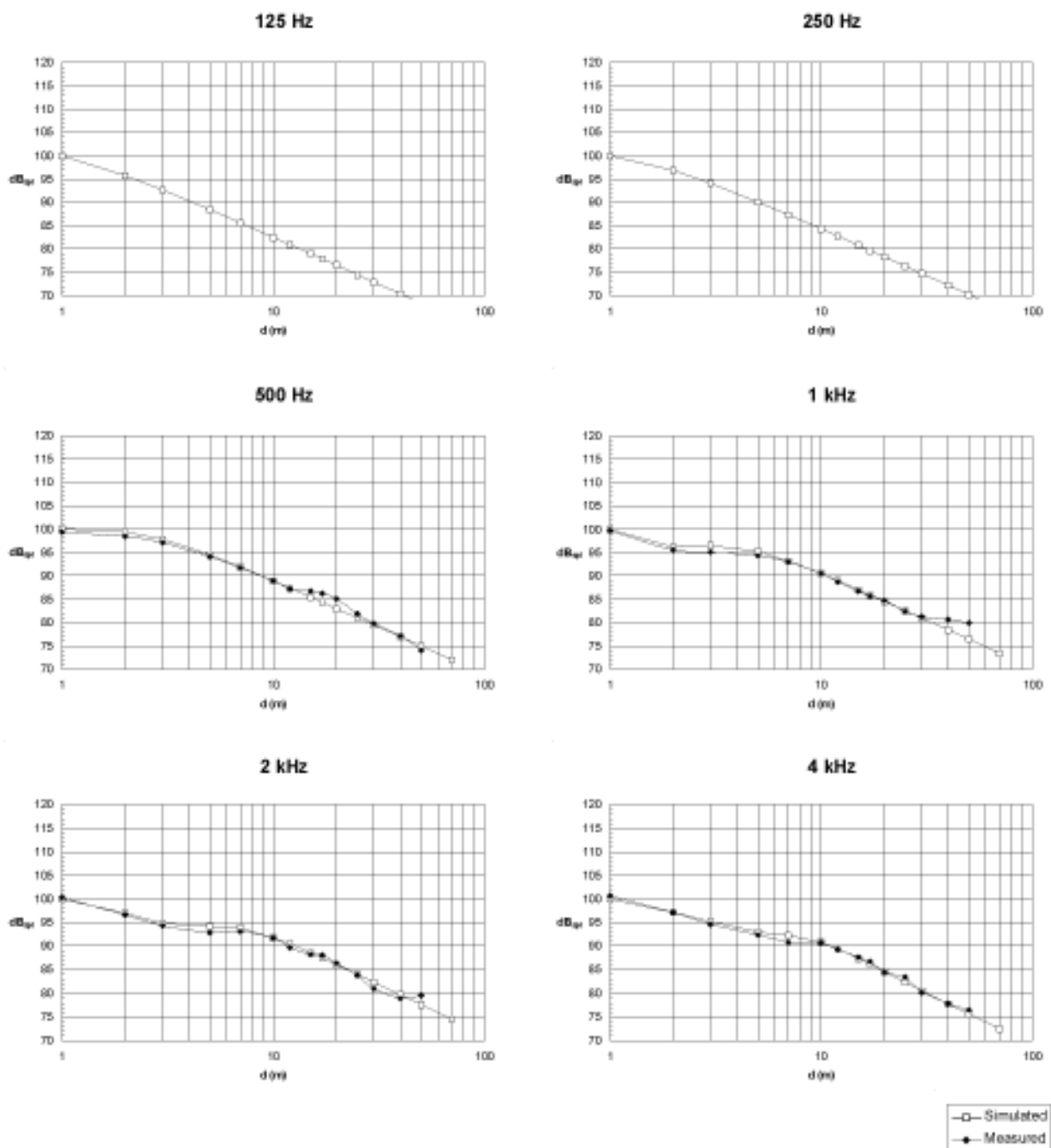
- | | |
|---------------------|------------------------------------|
| 1 Directivity index | 3 Horizontal opening angle (-6 dB) |
| 2 Acoustical power | 4 Vertical opening angle (-6 dB) |

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 10 deg,
Focus distance = 20 m.

1. All values from octave band averaged data.

2. Only valid in the far-field ($d > \text{approx. } 15 \text{ m}$), results from simulations, refer to general notes [2].
3. Acoustical power (P_{ac}) expressed in dB_{PWL} relative to 10^{-12} W , simulated with 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [2].



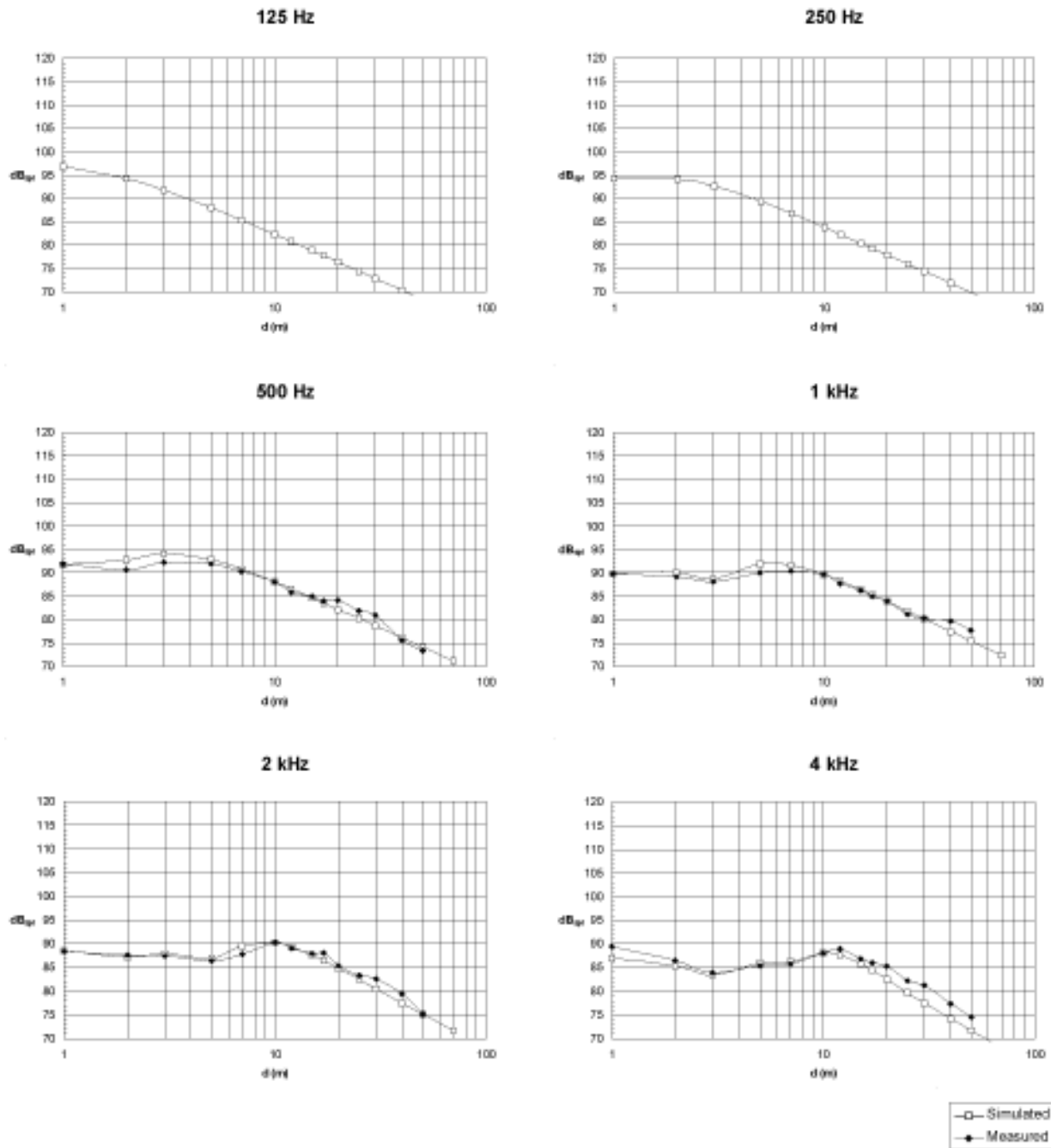
SPL Versus distance (on axis)

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 10 deg,
Focus distance = 15 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2]

Measurements scaled to simulation results at $d = 10$ m, $z_c = z_{li} = 1.7$ m, see general notes [1] for measurement details.



SPL Versus Distance (Delta-z = 0,5)

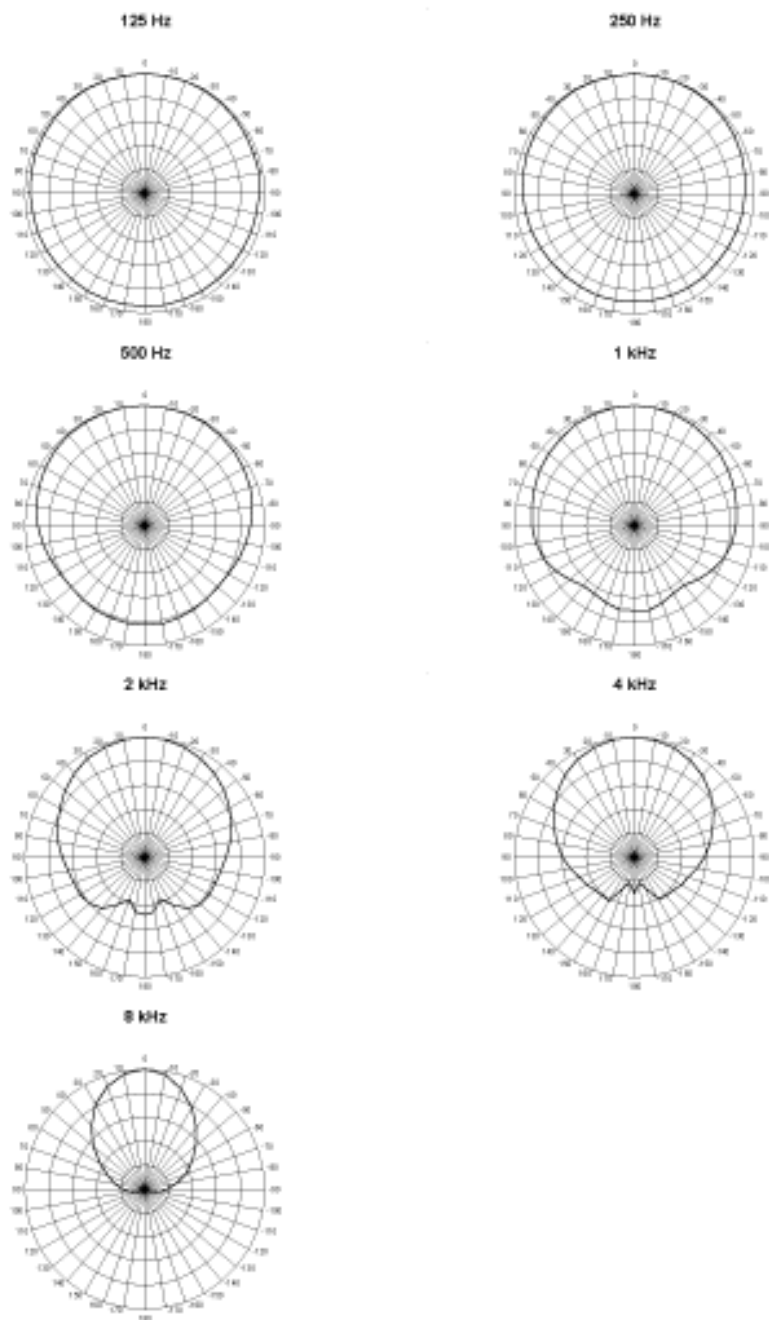
Notes:

Settings: Elevation angle = -2 deg, Opening angle = 10 deg,

Focus distance = 15 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2].

Measurements scaled to simulation results at $d = 10$ m, $z_c = 2.2$ m, $z_{li} = 1.7$ m see general notes [1] for measurement details.



Horizontal Polar Data

Notes:

1/1 octave averaged far-field data ($r = 1000$ m)

Angular resolution 10 deg

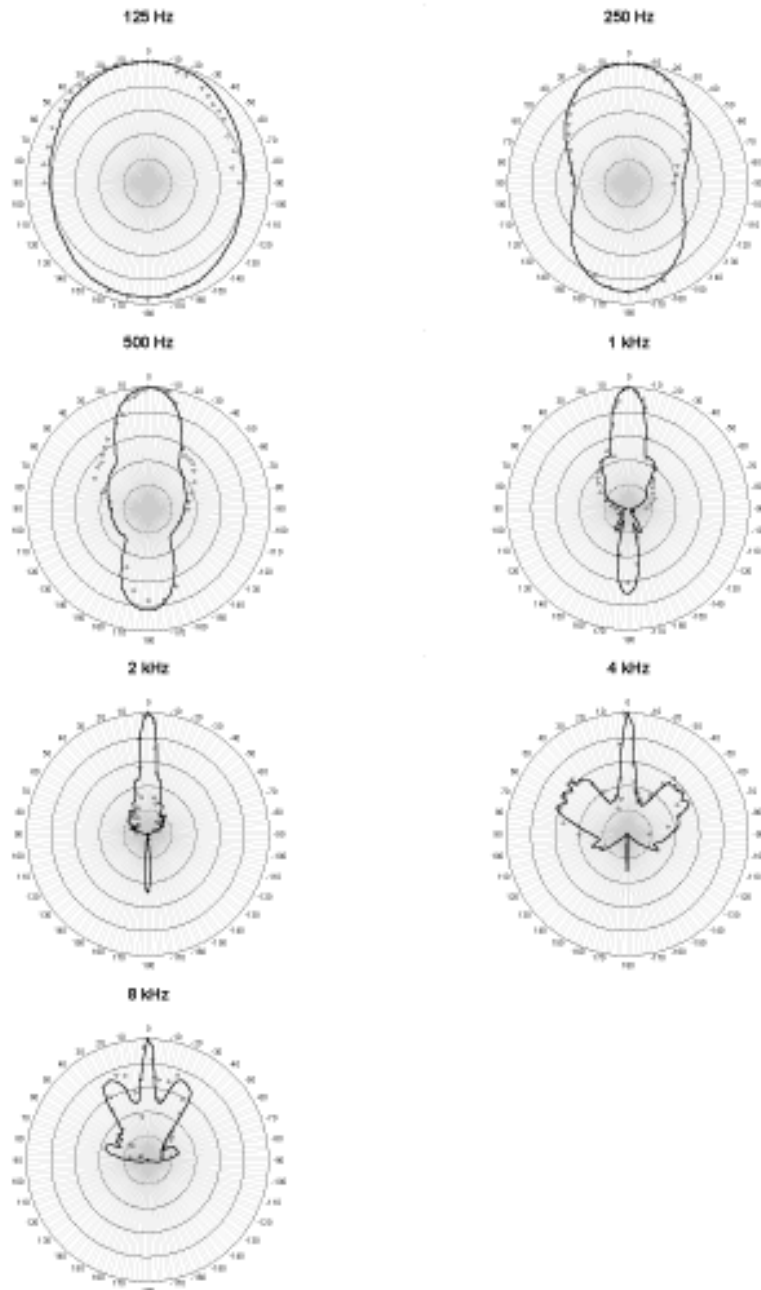
Scale 6 dB/div

Positive angles = left side (unit top view)

Settings:

- Elevation angle = 0 deg
- Opening angle = 10 deg
- Focus distance = 20 m

Simulations only



Vertical Polar Data

Notes:

1/1 octave averaged far-field data ($r = 20$ m)

Angular resolution 2.5 deg

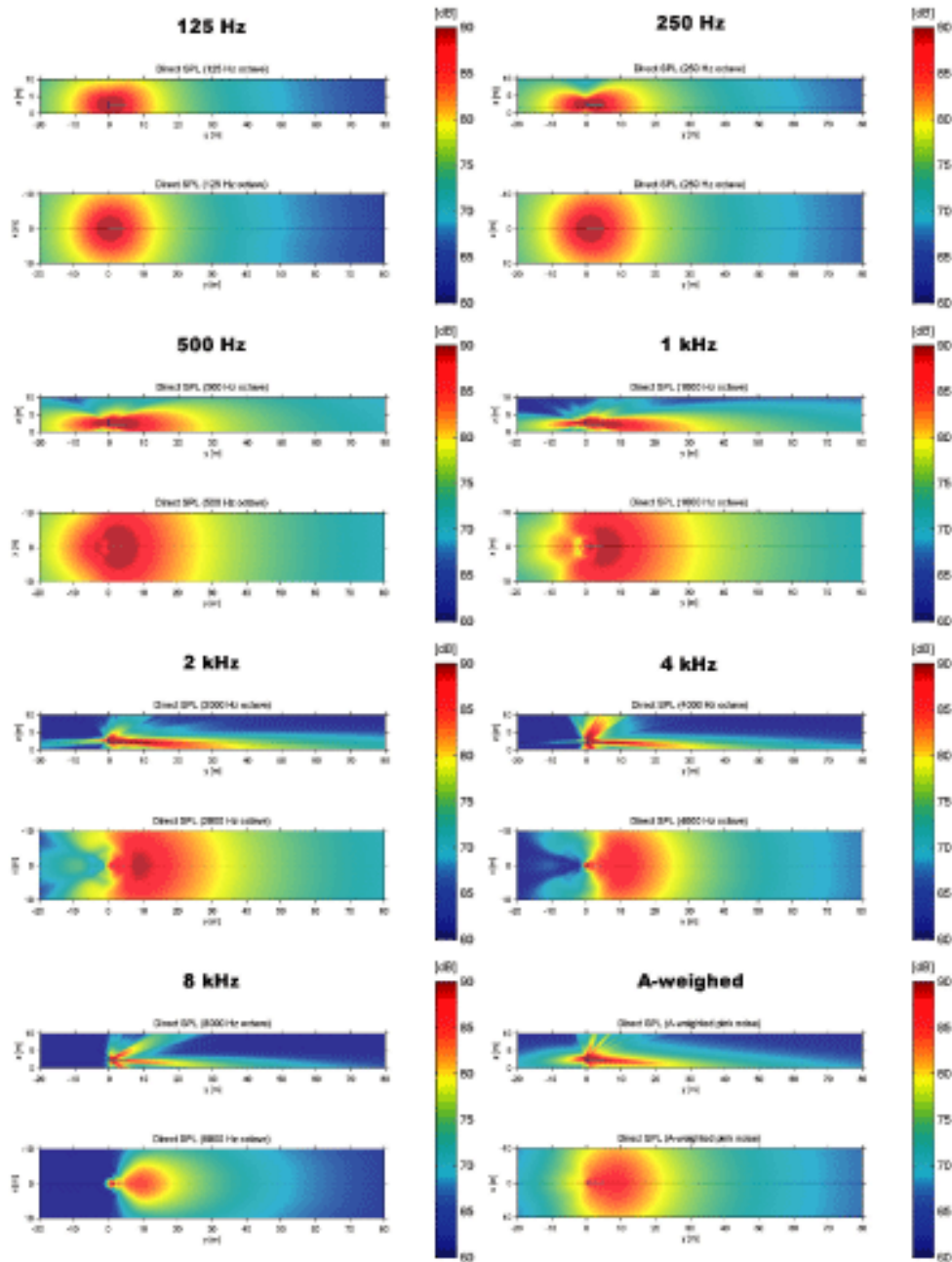
Scale 6 dB/div

Positive angles = top side

Settings:

- Elevation angle = 0 deg
- Opening angle = 10 deg
- Focus distance = 20 m

Simulations (line) and measurements (dots) refer to general notes [3]



Vertical and Horizontal Beam Cross Sections

Notes:

Settings: Elevation angle = -2 deg, Opening angle = 10 deg, Focus distance = 15 m, Reference mounting height $z_c = 2.2$ m. Simulations 100 dB S_{PL} source level @ 1m 'on axis' for each octave band, see general notes [4].

Dimensions of all vertical cross sections (top) 100 m x 10 m.

Dimensions of all horizontal cross sections (bottom) 100 m x 20 m.

Technical Specifications

Acoustical ⁽¹⁾

Frequency range²

Single element 230 to 10k Hz (± 3 dB)

LF complete array 130 Hz (-3 dB)

Max SPL³

Continuous 90 dB $_{SPL}$ A-weighted with pink noise at 25 m

Frequency range²

Peak 94 dB $_{SPL}$ at 25 m

Coverage

Horizontal (fixed)⁴ 150 deg

Vertical (adjustable)⁵ Opening angle: 8° to 20°
elevation (aiming) angle: -16° to 16°
focus distance: 5 to 100 m

Dynamic range⁶

88 dB

Electrical**Input⁷**

Nominal level	0 dBu (line input) and +50 dBu (100 V input)
DLC threshold (1 kHz)	+3 dBu, 6 dB headroom before clip (gain / volume 0 dB)
Type	Transformer balanced
Impedance (balanced)	6.8 kohm (line input) and 2 Mohm (100 V input)

DSP module⁸

Type	32-bit floating point
Memory	32 k words SRAM, 2 x 8 kB EEPROM
ADCs	Two channel, 18 bit sigma-delta converters
DACs	Eight channel, 18 bit sigma-delta converters
Sample frequency	48.8 kHz
Signal processing ⁹	• pre-delay (< 335 ms @ 32 bit float) • equalizer and compensation filtering • compressor and noise gate • volume and analog pre-gain • ambient noise level dependent gain adaptation ('fail-safe') • eight output filters • high resolution output channel delays ($\Delta T = 10.2 \mu s$)

Control unit

Network interface type	Serial full-duplex RS-485, 19.2 kbaud, optically isolated
Maximum number of units ¹⁰	126
Remote surveillance	• general status (DSP running, signal present etc.) • amplifier monitoring and load monitoring schemes • external pilot tone detection (20..30 kHz, level > -22 dBV) • ambient noise microphone monitoring • frost protection • fan control for optional external fan • thermal overload protection
Failure	- internal hardware bypass circuit - failure relay (external connector, maskable conditions)

Power amplifiers

Type	PWM (class D)
Power	8 x 40 W _{rms} (4 ohm)
Protection	Thermal shutdown if $T_{\text{junction}} > 150^\circ\text{C}$ Current limiting output stage

Connectors

General type	5 mm pitch cage clamp (as WAGO series 231)
Audio inputs	6-pin male p1 = Line +, p2 = Line -, p3 = GND p4 = 100V +, p5 = 100V -, p6 = GND
RS-485 interface	5-pin male p1 = A, p2 = B, p3 = Z, p4 = Y, p5 = DGND
Ambient noise and temperature sensor	5-pin female p1 = MIC, p2 = AGND, p3 = NTC, p4 = AGND, p5 = GND

Input⁷

Failure detect and fan control	5-pin female failure relay: p1 = COM, p2 = NO, p3 = NC optional fan: p4 = -, p5 = +24 V
Mains	3-pin IEC

PSU

Mains voltage (+5/-10%) ¹¹	230 or 115 V
Mains fuse(s)	2 x 1.6 A (slow type)
Power consumption ¹²	28 VA (idle) / 150 VA (full load)
Power factor	0.70
Max mains inrush current	12 A short-time peak (@ 230 V)

Mechanical

Dimensions (H x W x D) ¹⁴	1780 x 134 x 92 mm
Weight	25 kg
Default color	Silver
Transducers	12 x 4" full range

Environmental

Operating temperature ¹³	-15 °C to +40 °C (5 °F to +104 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Notes:

1. Measured outside under semi-anechoic 'full-space' conditions with typical filter and delay settings unless stated otherwise.
2. Single transducer only, from 1/3 octave averaged data at 1 m. Actual measured frequency response of complete array is depending on the actual signal processing parameters and air absorption (at larger distances). Only low frequency -3 dB point is specified for complete array ('full-space').
3. Continuous level: rms level measured with SLM (slow, A-weighted) with pink noise source level just below DLC input limiter threshold. Peak level: the maximum short-term A-weighted rms sound pressure level measured with a SLM and a pulsating pink noise source.
4. Settings: Elevation angle = 0 deg, Opening angle = 15 deg, Focus distance = 10 m.
5. Opening angle -6 dB, average value 1k - 4k Hz octave band.
6. Opening angle -6 dB, typical values, only valid in the far-field (d > approx. 5 m).
7. For this measurement the signals at all power amplifier outputs are summed together. Measured as the A-weighted difference (in dB) between the maximum rms level (with pink noise input signal) and the noise output (with no input signal present).
8. Specs valid for default type 3 input board, 0 dBu = 0.775 V rms. Dual-line input available as an option.
9. "Dual lobe" and "Extended pre-delay" (up to 2684 ms) available as a DSP software / hardware option.
10. Maximum number that can be connected to one RS-485 subnet, multiple subnets can be controlled by one host PC.
11. Mains voltage can be selected on the IEC inlet, accessible from the outside of the unit.

12. Defined as the rms mains current multiplied by the rms mains voltage under normal operating conditions. 'Full load' figures are maximum values measured with a pulsating pink noise input signal.
13. With frost protection and installed ambient temperature sensor. Outdoor versions available upon request. Without frost protection, lower limit: 0 °C.
14. Depth of enclosure only (including heatsink), without mounting brackets.

4

Ordering Information

LBC 3252/00 Intellivox 2b Active Line Array Loudspeaker, Amplifier at Top	LBC3252/00
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LBC 3252/10 Intellivox 2b Active Line Array Loudspeaker, Amplifier at Bottom	LBC3252/10
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Accessories

LBC 3260/00 WinControl Software	LBC3260/00
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LBC 3261/00 Intellivox Dual Lobe Software	LBC3261/00
--	-------------------

LBC 3262/00 Ambient Microphone and Temperature Sensor	LBC3262/00
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LBC 3270/00 Wall Mounting Bracket 90°	LBC3270/00
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LBC 3271/00 Wall Mounting Bracket 45°	LBC3271/00
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LBC 3253/xx Intellivox 2c Active Line Array Loud- speakers



Features

- ▶ **Active Loudspeakers**
- ▶ **Variable Elevation Angle**
- ▶ **Variable Vertical Opening Angle**
- ▶ **Focus Distance**
- ▶ **Even Sound Pressure and Constant Directivity**
- ▶ **Suppressed Acoustic Side Lobes**
- ▶ **WinControl**
- ▶ **Integrated Remote Monitoring**
- ▶ **AVC (Automatic Volume Control)**
- ▶ **Wall Mounting**

The Intellivox DDC (Digital Directivity Control) from Bosch Security Systems form a range of five active line array loudspeakers with unrivalled acoustical properties. Each loudspeaker produces clear, natural sound for excellent intelligibility of both speech and music. In addition, the audio characteristics of each line array can be adjusted by means of software to meet the acoustical requirements of the venue. This, along with the long acoustical reach ('throw'), means only a few loudspeakers are required for complete coverage. One loudspeaker can cover a distance of up to 70 meters. The extensive integrated remote monitoring possibilities of Intellivox loudspeakers also make them extremely reliable and a key element in voice evacuation systems.

Functions

Active Loudspeakers

All Intellivox loudspeakers have state-of-the-art class-D amplifiers as standard. This guarantees efficient and reliable operation without the need for external amplification. They also have an on-board DSP (Digital Signal Processor), which controls the frequency and delay time of each individual driver in the array, thus allowing software adjustment of loudspeaker characteristics like direction, opening angle and focus distance. As an added benefit, the presence of a DSP means there is no need for extra equalizers.

Variable Elevation Angle

Intellivox loudspeakers incorporate a feature known as Digital Directivity Control, which enables the direction of the main lobe to be tilted while the loudspeaker remains vertical. This is achieved by programming a different delay time for each individual driver in the array. As an example, by specifying a longer delay for the drivers at the bottom of the array, the lobe is effectively tilted downwards. These delay times, and therefore the elevation angle, are programmed into the on-board DSP using a PC. This feature gives much more mounting flexibility than conventional mechanical aiming. It also makes better use of the backward main lobe, because having the loudspeaker flat against a wall helps direct the sound from this lobe towards the listening area.

Variable Vertical Opening Angle

Being able to adjust the delay times and equalization settings for each driver in the array also makes it possible to specify the opening angle for all relevant frequencies. When the specified angle is narrow, sound can be pinpointed very accurately to a distant listening area. When the angle is wide, one loudspeaker can cover a very broad area.

Focus Distance

Intellivox loudspeakers are unique in allowing the loudspeaker focus distance to be set. The focus distance is the point at which the output of each driver in the array converges. Specifying the focus distance sets how far the main lobe reaches before the drivers' contributions are out of phase and their sound energy becomes part of the diffuse sound field.

Even Sound Pressure and Constant Directivity

By accurately adjusting the direction of the sound and vertical opening angle, a main lobe can be created that has all relevant frequencies present at nearly the same sound pressure level. With Intellivox loudspeakers, the variation throughout the entire listening area is no more than 3 dB. This means that the sound for listeners is not too loud at the front and not too quiet at the back. The constant directivity of Intellivox loudspeakers also helps ensure the presence of all relevant frequencies for more clear and natural sound.

Suppressed Acoustic Side Lobes

Intellivox loudspeakers produce extremely small side lobes, which gives a much clearer, less 'colored' sound, even when close to the loudspeakers.

WinControl

WinControl is a 32-bit Windows®-compatible program that enables programming, testing and configuring of Intellivox units through the serial port of the PC. The software allows:

- Adaptation of signal processing-related parameters such as beam settings, gain, EQ, pre-delay and auto gain.
- Updating or restoring of the DSP software.
- Adaptation of surveillance-related parameters such as amplifier/DSP status, temperature overload and pilot tone detection settings.
- Requesting of the loudspeaker status for error checking purposes.
- Factory unit initialization.

Integrated Remote Monitoring

An Intellivox loudspeaker can be configured to notify a building management, control or evacuation system through in- and output relays if an error occurs. The loudspeaker cabling can be automatically checked using a 20 kHz pilot tone. The status of each loudspeaker can also be continuously monitored via an RS-485 network. Over 10 different system parameters are checked - including temperature, pilot tone and amplifier condition - to guarantee system integrity.

AVC (Automatic Volume Control)

In certain environments, such as sport stadiums and passenger terminals, the background noise level fluctuates constantly. Intellivox loudspeakers are equipped with an external terminal for connecting a sensor (LBC 3262/00) for measuring the ambient SPL. This information is used by the auto gain of the loudspeaker amplifiers to constantly adjust the loudspeaker output so it is always the same level above the ambient noise.

Wall Mounting

There are several options for mounting the Intellivox against a wall. It can be supported by means of the wall brackets supplied as standard, or by the LBC 3270/00 swivel bracket (adjustable through 90 degrees) or the LBC 3271/00 swivel bracket (adjustable through 45 degrees). Both swivel brackets have to be ordered separately.

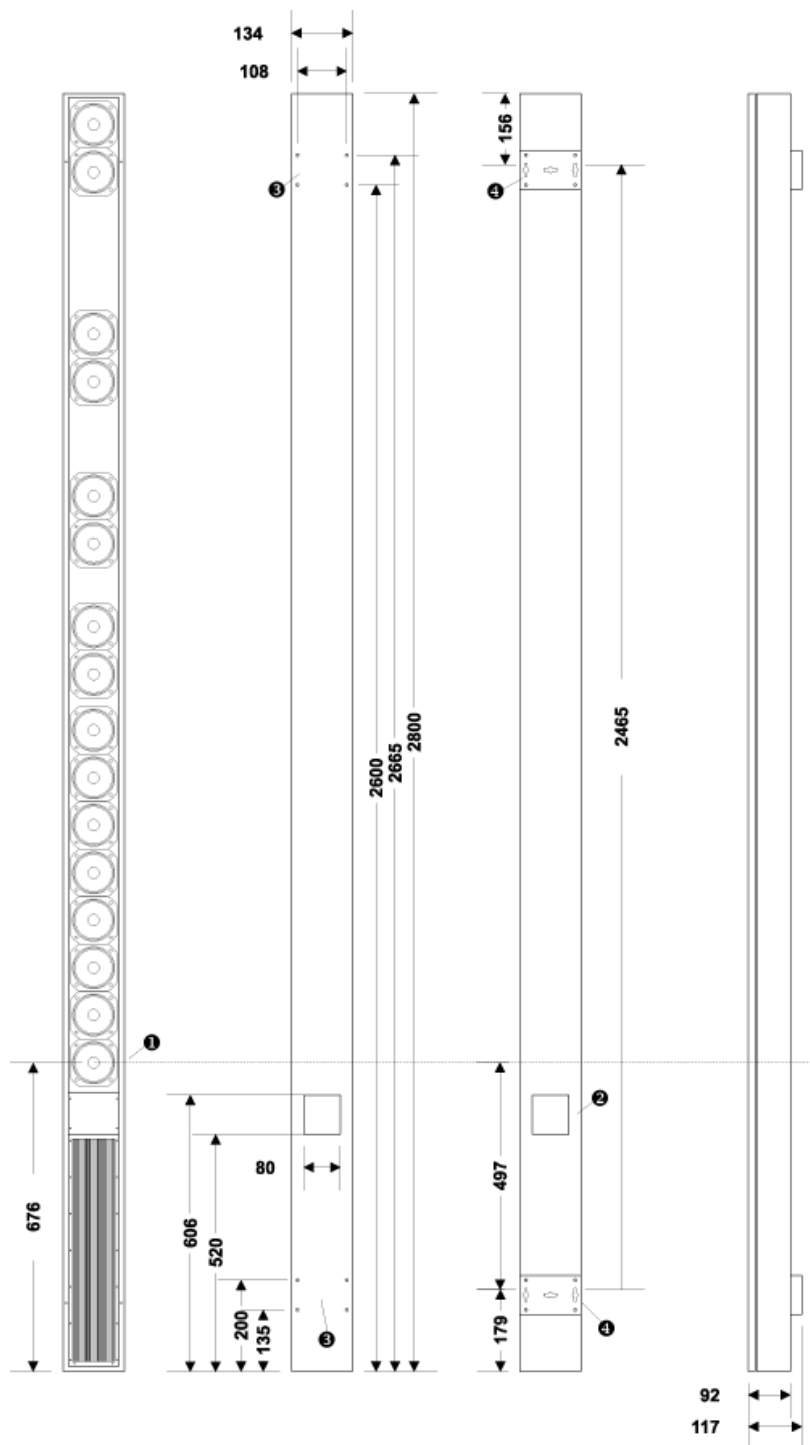
Safety and Evacuation Compliant

The unrivalled speech intelligibility, reliability and extensive monitoring features of Intellivox loudspeakers makes them a key element in voice evacuation systems. With Intellivox, systems can be built that comply with both the technical requirements and acoustical demands of IEC 60849 and BS 5839.

Certifications and Approvals

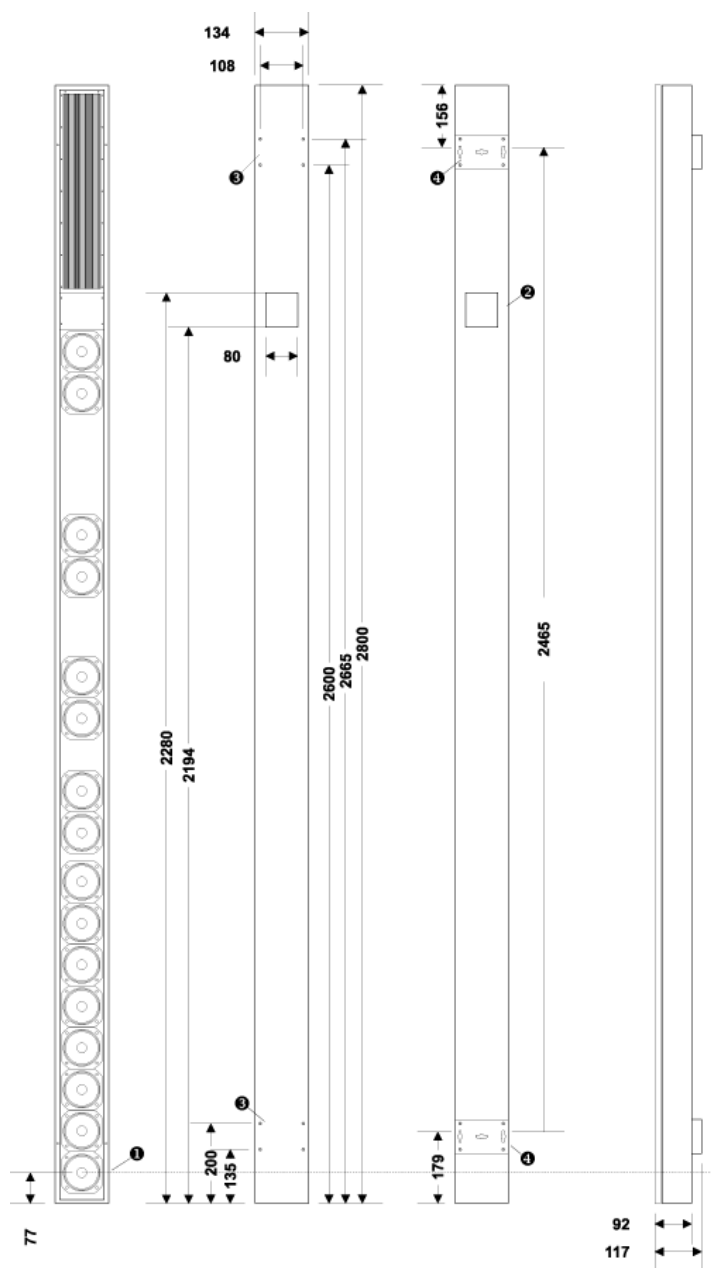
Region	Certification	
Europe	CE	Declaration of Conformity

Installation/Configuration Notes



LBC 3253/00

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry
- 3 4 x M5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used.



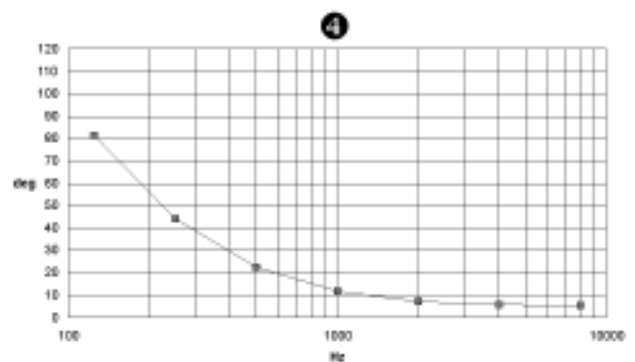
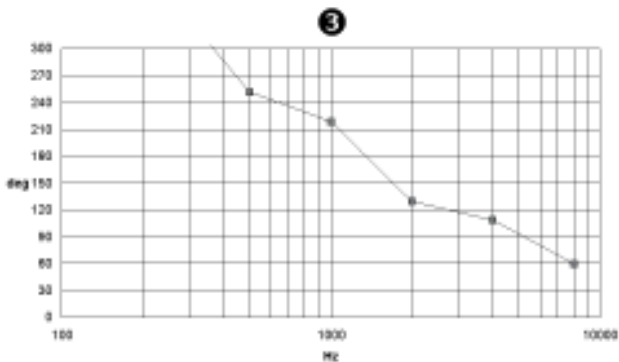
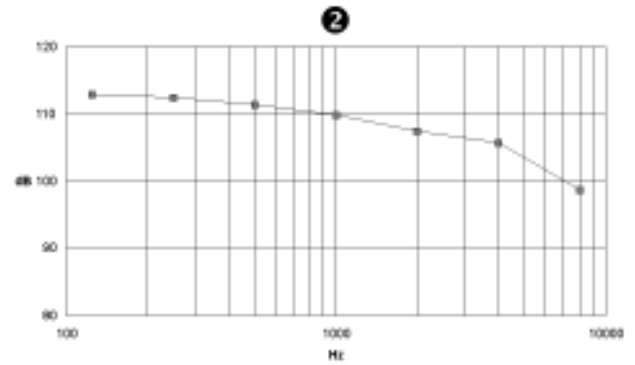
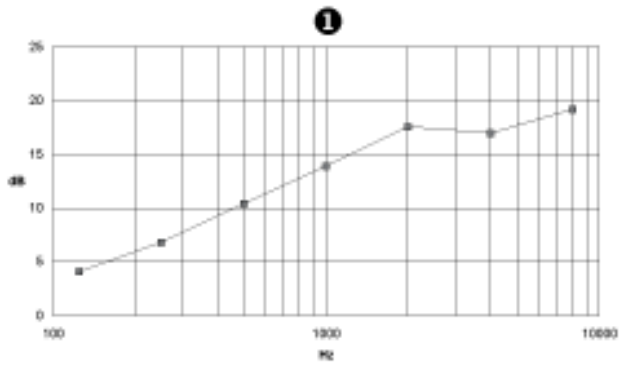
LBC 3253/10

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry
- 3 4 x M5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used

2k	17.6	108	129	7
4k	17.0	106	108	6
8k	19.2	99	60	6

Acoustical Data

Frequency ¹ (Hz)	DI ² (dB)	Pac ³ (dB _{PWL})	Horizontal coverage -6 dB (deg) ²	Vertical coverage -6 dB (deg) ²
125	4.1	113	360	81
250	6.8	113	360	44
500	10.4	111	252	23
1k	13.9	110	218	19



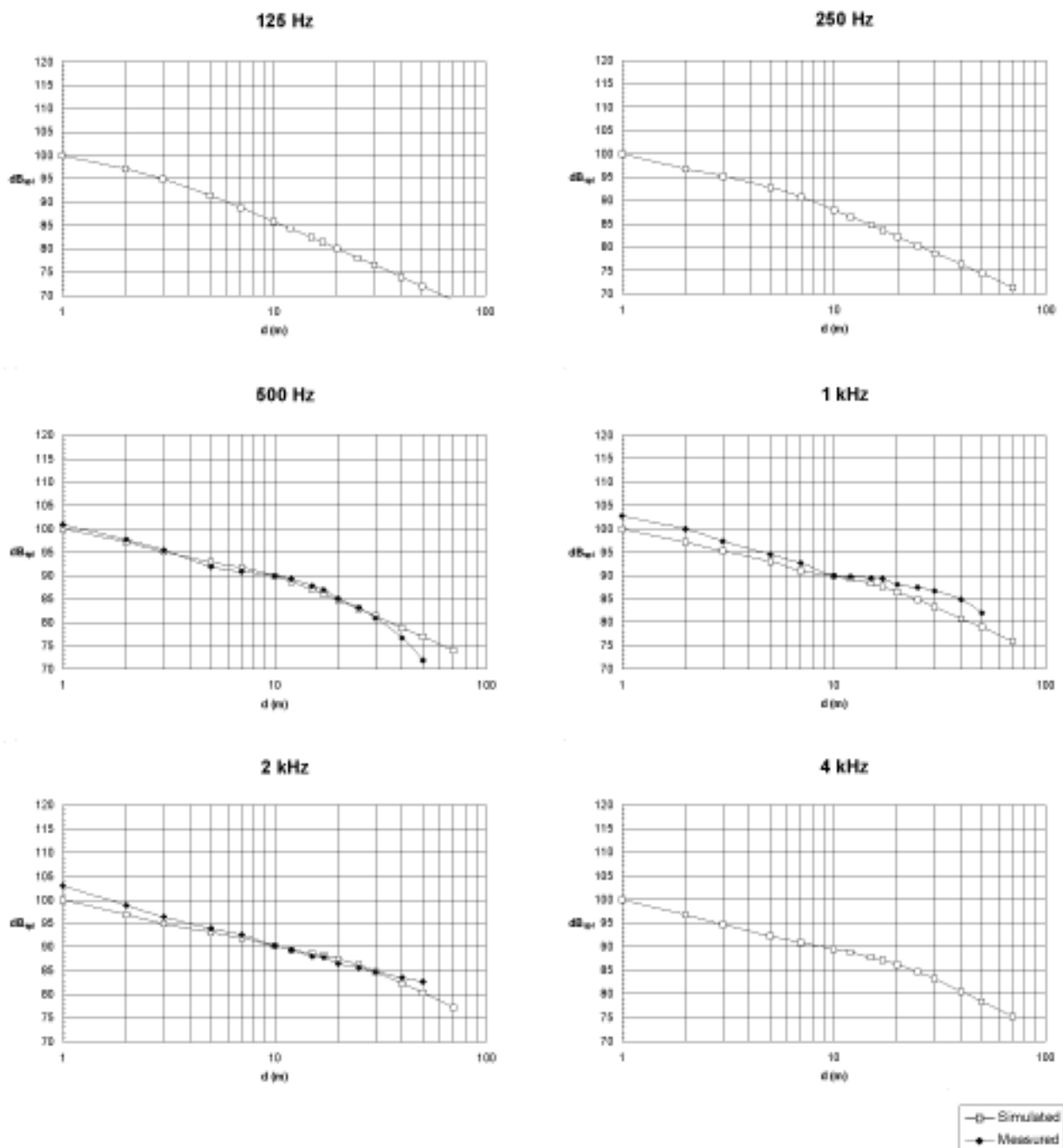
- | | |
|---------------------|------------------------------------|
| 1 Directivity index | 3 Horizontal opening angle (-6 dB) |
| 2 Acoustical power | 4 Vertical opening angle (-6 dB) |

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 8 deg,
Focus distance = 40 m.

1. All values from octave band averaged data.

2. Only valid in the far-field ($d > \text{approx. } 20 \text{ m}$), results from simulations, refer to general notes [2].
3. Acoustical power (P_{ac}) expressed in dB P_{WL} relative to 10^{-12} W , simulated with 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [2].



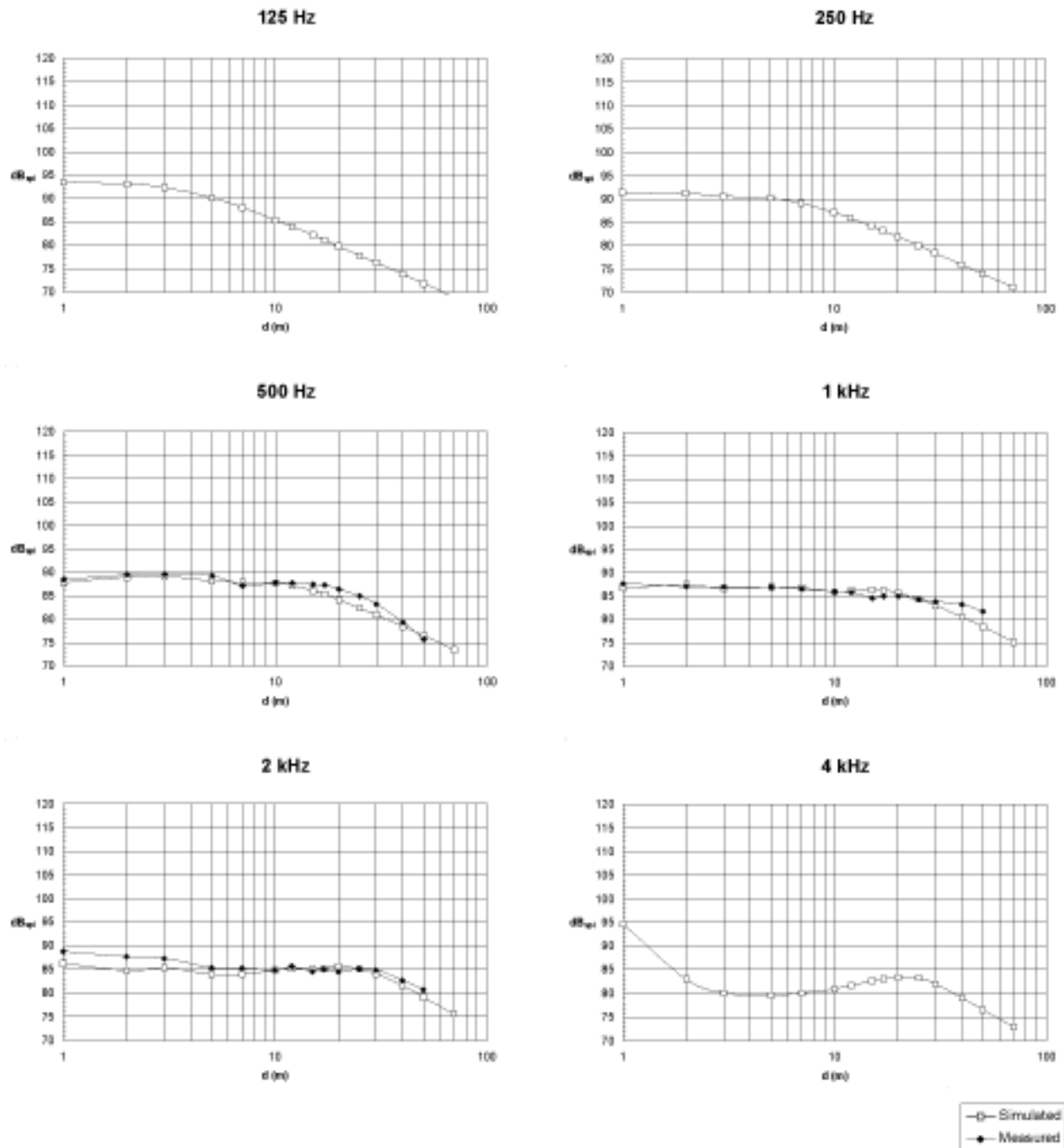
SPL Versus distance (on axis)

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 8 deg, Focus distance = 40 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band.

Measurements scaled to simulation results at $d = 10$ m, $z_c = z_{li} = 1.7$ m, see general notes [1] for measurement details.



SPL Versus Distance (Delta-z = 0,8)

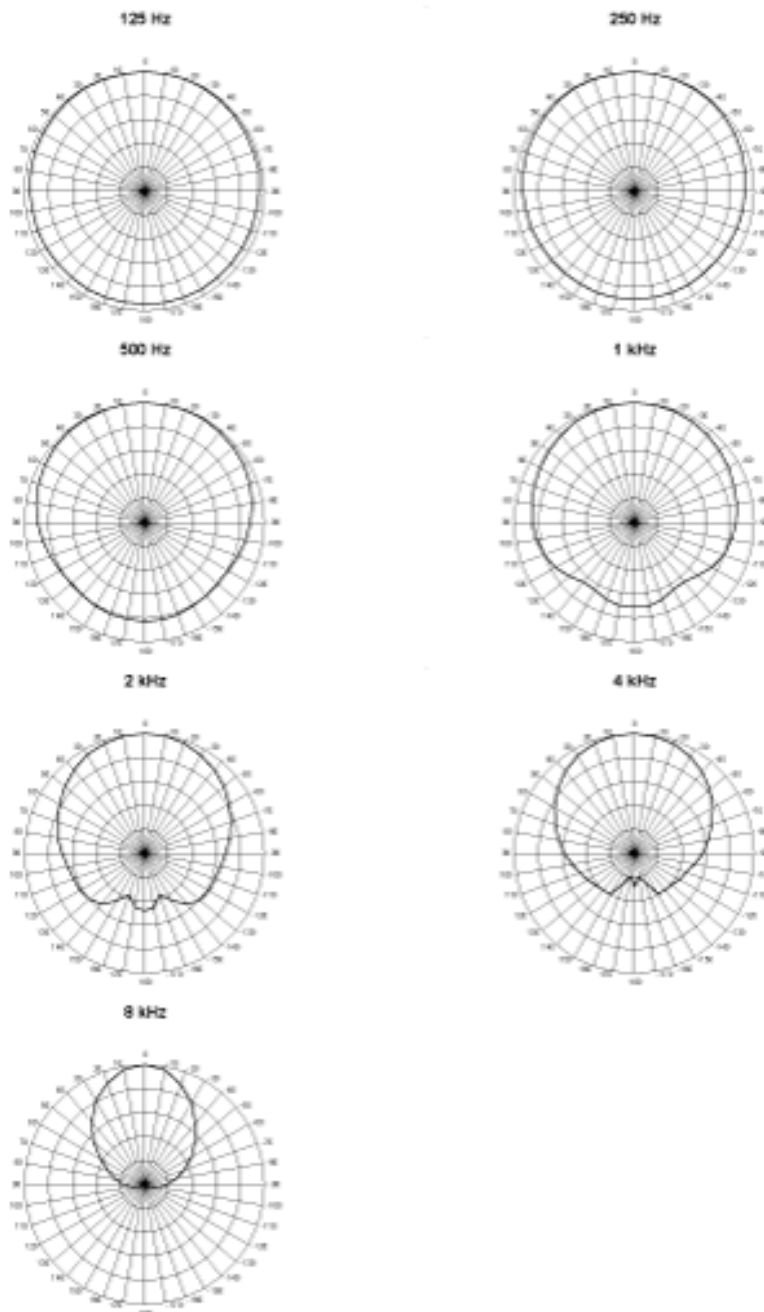
Notes:

Settings: Elevation angle = -1,5 deg, Opening angle = 8 deg,

Focus distance = 40 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2].

Measurements scaled to simulation results at $d = 10$ m, $z_c = 2.5$ m, $z_{li} = 1.7$ m see general notes [1] for measurement details



Horizontal Polar Data

Notes:

1/1 octave averaged far-field data ($r = 1000\text{ m}$)

Angular resolution 10 deg

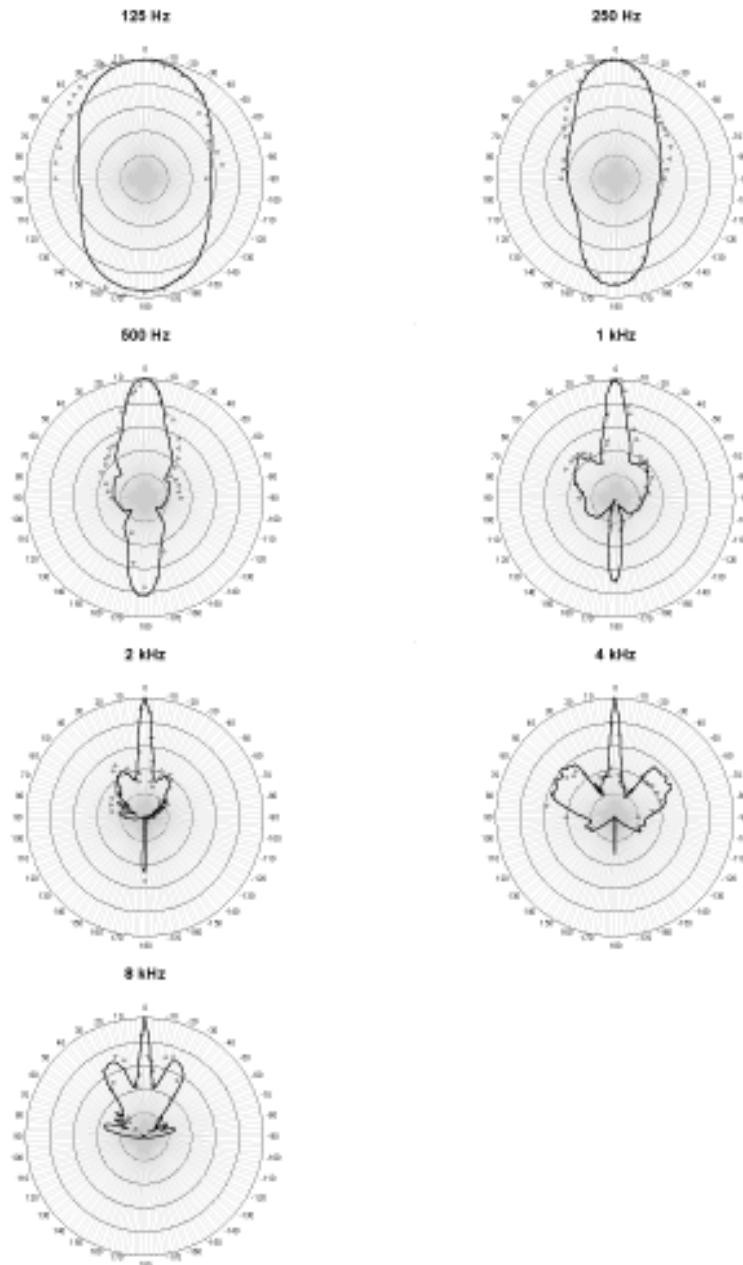
Scale 6 dB/div

Positive angles = left side (unit top view)

Settings:

- Elevation angle = 0 deg
- Opening angle = 8 deg
- Focus distance = 40 m

Simulations only



Vertical Polar Data

Notes:

1/1 octave averaged far-field data ($r = 30$ m)

Angular resolution 2.5 deg

Scale 6 dB/div

Positive angles = top side

Settings:

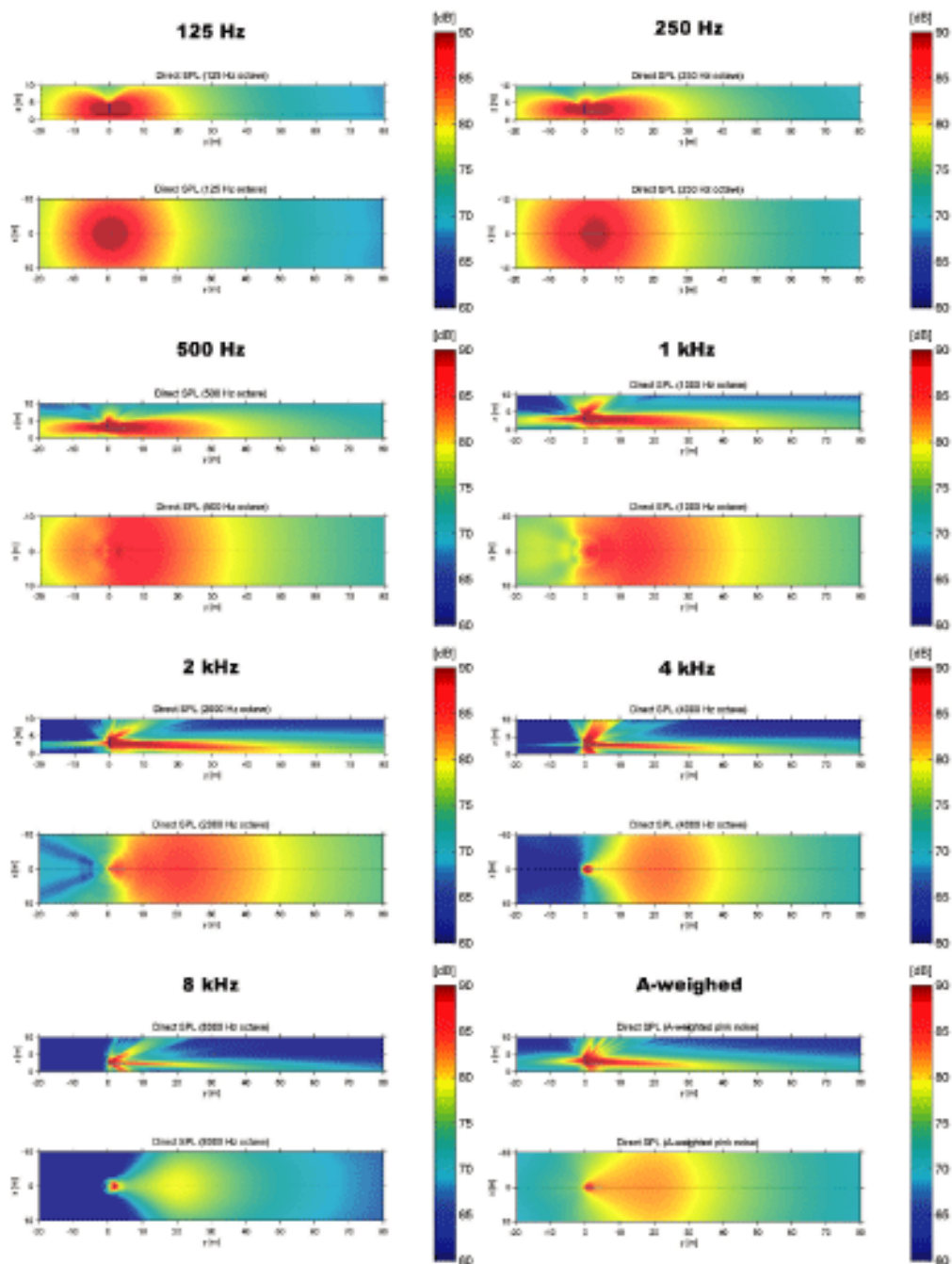
- Elevation angle = 0 deg

- Opening angle = 8 deg

- Focus distance = 30 m

Simulations (line) and measurements (dots)

Refer to general notes [3]



Vertical and Horizontal Beam Cross Sections

Notes:

Settings: Elevation angle = -1.5 deg, Opening angle = 8 deg, Focus distance = 40 m, Reference mounting height $z_c = 2.5$ m. Simulations 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [4].

Dimensions of all vertical cross sections (top) 100 m x 10 m.

Dimensions of all horizontal cross sections (bottom) 100 m x 20 m.

Technical Specifications**Acoustical⁽¹⁾****Frequency range²**

Single element	230 to 10k Hz (± 3 dB)
LF complete array	130 Hz (-3 dB)

Max SPL³

Continuous	92 dB _{SPL} A-weighted with pink noise at 30 m
Peak	96 dB _{SPL} at 30 m

Coverage

Horizontal (fixed) ⁴	150 deg
Vertical (adjustable) ⁵	Opening angle: 6° to 14° elevation (aiming) angle: -16° to 16° focus distance: 5 to 100 m

Dynamic range⁶

	88 dB
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Electrical**Input⁷**

Nominal level	0 dBu (line input) and +50 dBu (100 V input)
DLC threshold (1 kHz)	+3 dBu, 6 dB headroom before clip (gain / volume 0 dB)
Type	Transformer balanced
Impedance (balanced)	6.8 kohm (line input) and 2 Mohm (100 V input)

DSP Module⁸

Type	32-bit floating point
Memory	32 k words SRAM, 2 x 8 kB EEPROM
ADCs	Two channel, 18 bit sigma-delta converters
DACs	Eight channel, 18 bit sigma-delta converters
Sample frequency	48.8 kHz
Signal processing ⁹	• pre-delay (< 335 ms @ 32 bit float) • equalizer and compensation filtering • compressor and noise gate • volume and analog pre-gain • ambient noise level dependent gain adaptation ('fail-safe') • eight output filters • high resolution output channel delays ($\Delta T = 10.2 \mu s$)

Control unit

Network interface type	Serial full-duplex RS-485, 19.2 kbaud, optically isolated
Maximum number of units ¹⁰	126
Remote surveillance	• general status (DSP running, signal present etc.) • amplifier monitoring and load monitoring schemes • external pilot tone detection (20..30 kHz, level > -22 dBV) • ambient noise microphone monitoring • frost protection • fan control for optional external fan • thermal overload protection
Failure	- internal hardware bypass circuit - failure relay (external connector, maskable conditions)

Input⁷**Power amplifiers**

Type	PWM (class D)
Power	8 x 40 W _{rms} (4 ohm)
Protection	Thermal shutdown if $T_{junction} > 150^\circ C$ Current limiting output stage

Connectors

General type	5 mm pitch cage clamp (as WAGO series 231)
Audio inputs	6-pin male p1 = Line +, p2 = Line -, p3 = GND p4 = 100V +, p5 = 100V -, p6 = GND
RS-485 interface	5-pin male p1 = A, p2 = B, p3 = Z, p4 = Y, p5 = DGND
Ambient noise and temperature sensor	5-pin female p1 = MIC, p2 = AGND, p3 = NTC, p4 = AGND, p5 = GND
Failure detect and fan control	5-pin female failure relay: p1 = COM, p2 = NO, p3 = NC optional fan: p4 = -, p5 = +24 V
Mains	3-pin IEC

PSU

Mains voltage (+5/-10%) ¹¹	230 or 115 V
Mains fuse(s)	1 x 6.3 A (slow type)
Power consumption ¹²	58 VA (idle) / 450 VA (full load)
Power factor	0.55 (idle) / 0.60 (full load)
Max mains inrush current	25 A short-time peak (@ 230 V)
Protection	thermal protection output current limiting under-voltage lock out

Mechanical

Dimensions (H x W x D) ¹⁴	2800 x 134 x 92 mm
Weight	33 kg
Default color	Silver
Transducers	16 x 4" full range

Environmental

Operating temperature ¹³	-15 °C to +40 °C (5 °F to +104 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Notes:

1. Measured outside under semi-anechoic 'full-space' conditions with typical filter and delay settings unless stated otherwise.
2. Single transducer only, from 1/3 octave averaged data at 1 m. Actual measured frequency response of complete array is depending on the actual signal processing parameters and air absorption (at larger distances). Only low frequency -3 dB point is specified for complete array ('full-space').

3. Continuous level: rms level measured with SLM (slow, A-weighted) with pink noise source level just below DLC input limiter threshold. Peak level: the maximum short-term A-weighted rms sound pressure level measured with a SLM and a pulsating pink noise source.
4. Settings: Elevation angle = 0 deg, Opening angle = 15 deg, Focus distance = 10 m.
5. Opening angle -6 dB, average value 1k - 4k Hz octave band.
6. Opening angle -6 dB, typical values, only valid in the far-field (d > approx. 5 m).
7. For this measurement the signals at all power amplifier outputs are summed together. Measured as the A-weighted difference (in dB) between the maximum rms level (with pink noise input signal) and the noise output (with no input signal present).
8. Specs valid for default type 3 input board, 0 dBu = 0.775 V rms. Dual-line input available as an option.
9. "Dual lobe" and "Extended pre-delay" (up to 2684 ms) available as a DSP software / hardware option.
10. Maximum number that can be connected to one RS-485 subnet, multiple subnets can be controlled by one host PC.
11. Mains voltage can be selected on the IEC inlet, accessible from the outside of the unit.
12. Defined as the rms mains current multiplied by the rms mains voltage under normal operating conditions. 'Full load' figures are maximum values measured with a pulsating pink noise input signal.
13. With frost protection and installed ambient temperature sensor. Outdoor versions available upon request. Without frost protection, lower limit: 0 °C.
14. Depth of enclosure only (including heatsink), without mounting brackets.

Ordering Information

LBC 3253/00 Intellivox 2c Active Line Array Loudspeaker, Amplifier at Bottom	LBC3253/00
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LBC 3253/10 Intellivox 2c Active Line Array Loudspeaker, Amplifier at Top	LBC3253/10
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LBC 3253/11 Intellivox 2c Active Line Array Loudspeaker, Amplifier at Top, Outdoor version	LBC3253/11
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Accessories

LBC 3260/00 WinControl Software	LBC3260/00
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LBC 3261/00 Intellivox Dual Lobe Software	LBC3261/00
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LBC 3262/00 Ambient Microphone and Temperature Sensor	LBC3262/00
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LBC 3270/00 Wall Mounting Bracket 90°	LBC3270/00
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LBC 3271/00 Wall Mounting Bracket 45°	LBC3271/00
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LBC 3254/xx Intellivox 4c Active Line Array Loud- speakers



Features

- ▶ **Active Loudspeakers**
- ▶ **Variable Elevation Angle**
- ▶ **Variable Vertical Opening Angle**
- ▶ **Focus Distance**
- ▶ **Even Sound Pressure and Constant Directivity**
- ▶ **Suppressed Acoustic Side Lobes**
- ▶ **WinControl**
- ▶ **Integrated Remote Monitoring**
- ▶ **AVC (Automatic Volume Control)**
- ▶ **Wall Mounting**

The Intellivox DDC (Digital Directivity Control) from Bosch Security Systems form a range of five active line array loudspeakers with unrivalled acoustical properties. Each loudspeaker produces clear, natural sound for excellent intelligibility of both speech and music. In addition, the audio characteristics of each line array can be adjusted by means of software to meet the acoustical requirements of the venue. This, along with the long acoustical reach ('throw'), means only a few loudspeakers are required for complete coverage. One loudspeaker can cover a distance of up to 70 meters. The extensive integrated remote monitoring possibilities of Intellivox loudspeakers also make them extremely reliable and a key element in voice evacuation systems.

Functions

Active Loudspeakers

All Intellivox loudspeakers have state-of-the-art class-D amplifiers as standard. This guarantees efficient and reliable operation without the need for external amplification. They also have an on-board DSP (Digital Signal Processor), which controls the frequency and delay time of each individual driver in the array, thus allowing software adjustment of loudspeaker characteristics like direction, opening angle and focus distance. As an added benefit, the presence of a DSP means there is no need for extra equalizers.

Variable Elevation Angle

Intellivox loudspeakers incorporate a feature known as Digital Directivity Control, which enables the direction of the main lobe to be tilted while the loudspeaker remains vertical. This is achieved by programming a different delay time for each individual driver in the array. As an example, by specifying a longer delay for the drivers at the bottom of the array, the lobe is effectively tilted downwards. These delay times, and therefore the elevation angle, are programmed into the on-board DSP using a PC. This feature gives much more mounting flexibility than conventional mechanical aiming. It also makes better use of the backward main lobe, because having the loudspeaker flat against a wall helps direct the sound from this lobe towards the listening area.

Variable Vertical Opening Angle

Being able to adjust the delay times and equalization settings for each driver in the array also makes it possible to specify the opening angle for all relevant frequencies. When the specified angle is narrow, sound can be pinpointed very accurately to a distant listening area. When the angle is wide, one loudspeaker can cover a very broad area.

Focus Distance

Intellivox loudspeakers are unique in allowing the loudspeaker focus distance to be set. The focus distance is the point at which the output of each driver in the array converges. Specifying the focus distance sets how far the main lobe reaches before the drivers' contributions are out of phase and their sound energy becomes part of the diffuse sound field.

Even Sound Pressure and Constant Directivity

By accurately adjusting the direction of the sound and vertical opening angle, a main lobe can be created that has all relevant frequencies present at nearly the same sound pressure level. With Intellivox loudspeakers, the variation throughout the entire listening area is no more than 3 dB. This means that the sound for listeners is not too loud at the front and not too quiet at the back. The constant directivity of Intellivox loudspeakers also helps ensure the presence of all relevant frequencies for more clear and natural sound.

Suppressed Acoustic Side Lobes

Intellivox loudspeakers produce extremely small side lobes, which gives a much clearer, less 'colored' sound, even when close to the loudspeakers.

WinControl

WinControl is a 32-bit Windows®-compatible program that enables programming, testing and configuring of Intellivox units through the serial port of the PC. The software allows:

- Adaptation of signal processing-related parameters such as beam settings, gain, EQ, pre-delay and auto gain.
- Updating or restoring of the DSP software.
- Adaptation of surveillance-related parameters such as amplifier/DSP status, temperature overload and pilot tone detection settings.
- Requesting of the loudspeaker status for error checking purposes.
- Factory unit initialization.

Integrated Remote Monitoring

An Intellivox loudspeaker can be configured to notify a building management, control or evacuation system through in- and output relays if an error occurs. The loudspeaker cabling can be automatically checked using a 20 kHz pilot tone. The status of each loudspeaker can also be continuously monitored via an RS-485 network. Over 10 different system parameters are checked - including temperature, pilot tone and amplifier condition - to guarantee system integrity.

AVC (Automatic Volume Control)

In certain environments, such as sport stadiums and passenger terminals, the background noise level fluctuates constantly. Intellivox loudspeakers are equipped with an external terminal for connecting a sensor (LBC 3262/00) for measuring the ambient SPL. This information is used by the auto gain of the loudspeaker amplifiers to constantly adjust the loudspeaker output so it is always the same level above the ambient noise.

Wall Mounting

There are several options for mounting the Intellivox against a wall. It can be supported by means of the wall brackets supplied as standard, or by the LBC 3270/00 swivel bracket (adjustable through 90 degrees) or the LBC 3271/00 swivel bracket (adjustable through 45 degrees). Both swivel brackets have to be ordered separately.

Safety and Evacuation Compliant

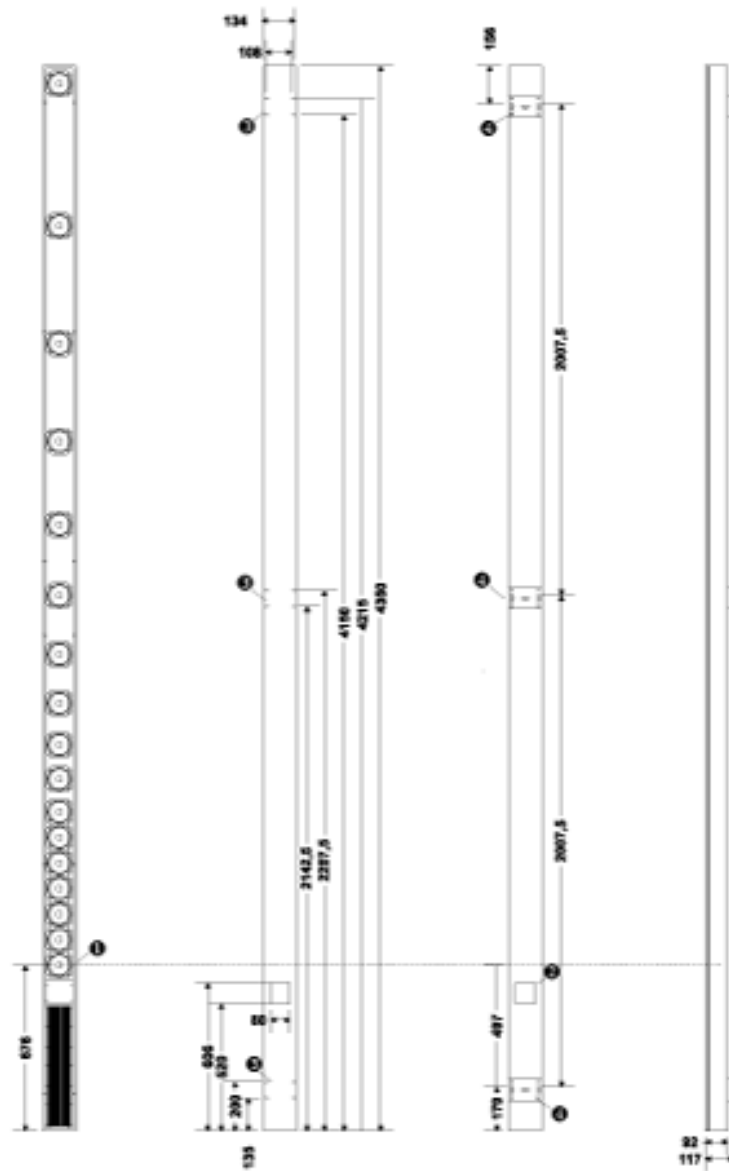
The unrivalled speech intelligibility, reliability and extensive monitoring features of Intellivox loudspeakers makes them a key element in voice evacuation systems. With Intellivox, systems can be built that comply with both the technical requirements and acoustical demands of IEC 60849 and BS 5839.

Certifications and Approvals

Region	Certification	
Europe	CE	Declaration of Conformity

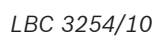
Installation/Configuration Notes

4



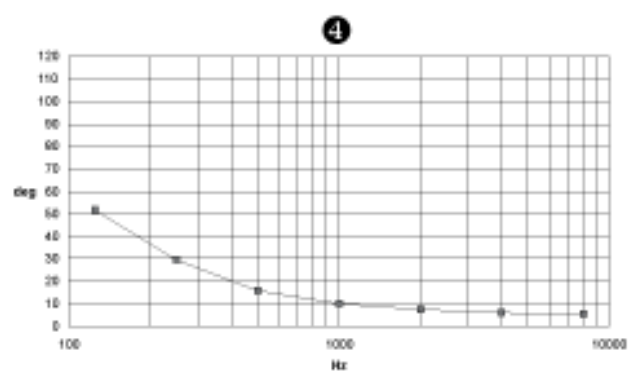
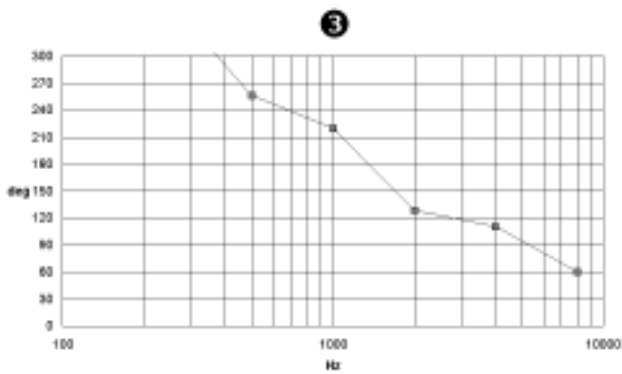
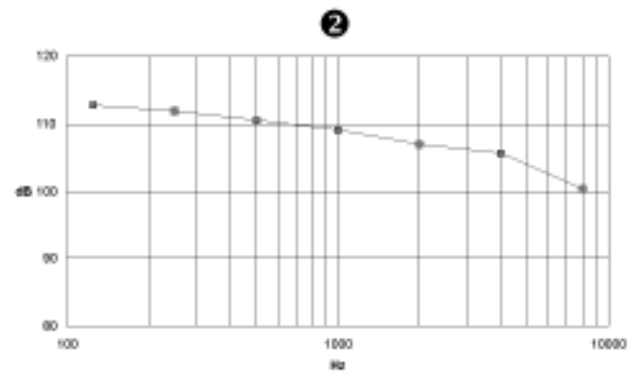
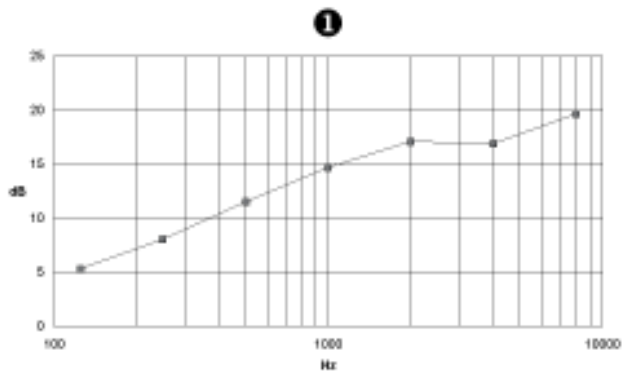
LBC 3254/00

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry
- 3 4xM5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used.



- | | | | | |
|----|------|-----|-----|---|
| 2k | 17.1 | 107 | 129 | 8 |
| 4k | 16.9 | 106 | 111 | 6 |
| 8k | 19.7 | 100 | 60 | 5 |

Frequency ¹ (Hz)	DI ² (dB)	Pac ³ (dB _{PWL})	Horizontal coverage -6 dB (deg) ²	Vertical coverage -6 dB (deg) ²
125	5.3	113	360	52
250	8.0	112	360	30
500	11.5	111	257	16
1k	14.7	109	220	10



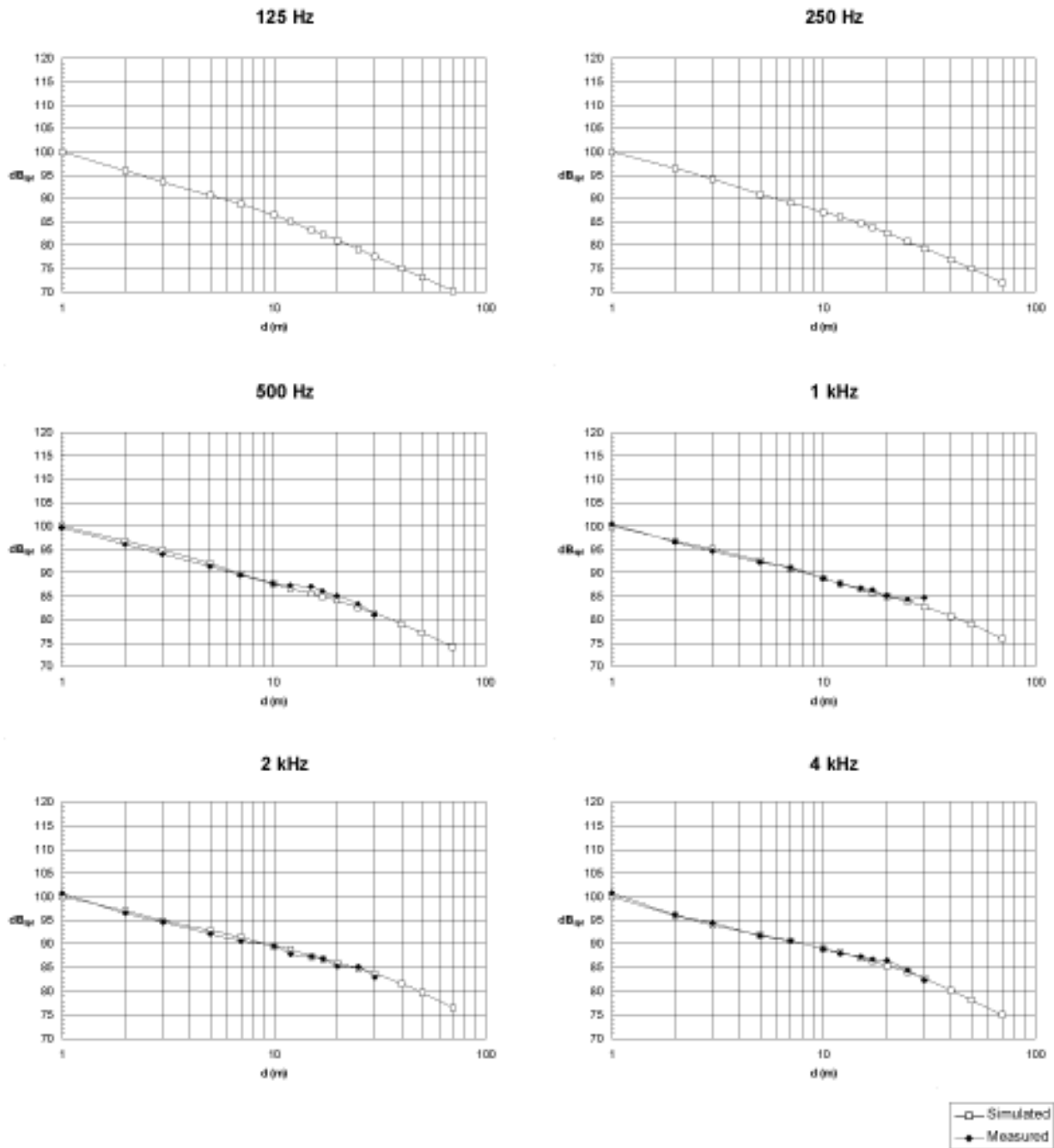
- | | |
|---------------------|------------------------------------|
| 1 Directivity index | 3 Horizontal opening angle (-6 dB) |
| 2 Acoustical power | 4 Vertical opening angle (-6 dB) |

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 8 deg,
Focus distance = 50 m.

1. All values from octave band averaged data.

2. Only valid in the far-field ($d > \text{approx. } 35 \text{ m}$), results from simulations, refer to general notes [2].
3. Acoustical power (P_{ac}) expressed in dB_{PWL} relative to 10^{-12} W , simulated with 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [2].



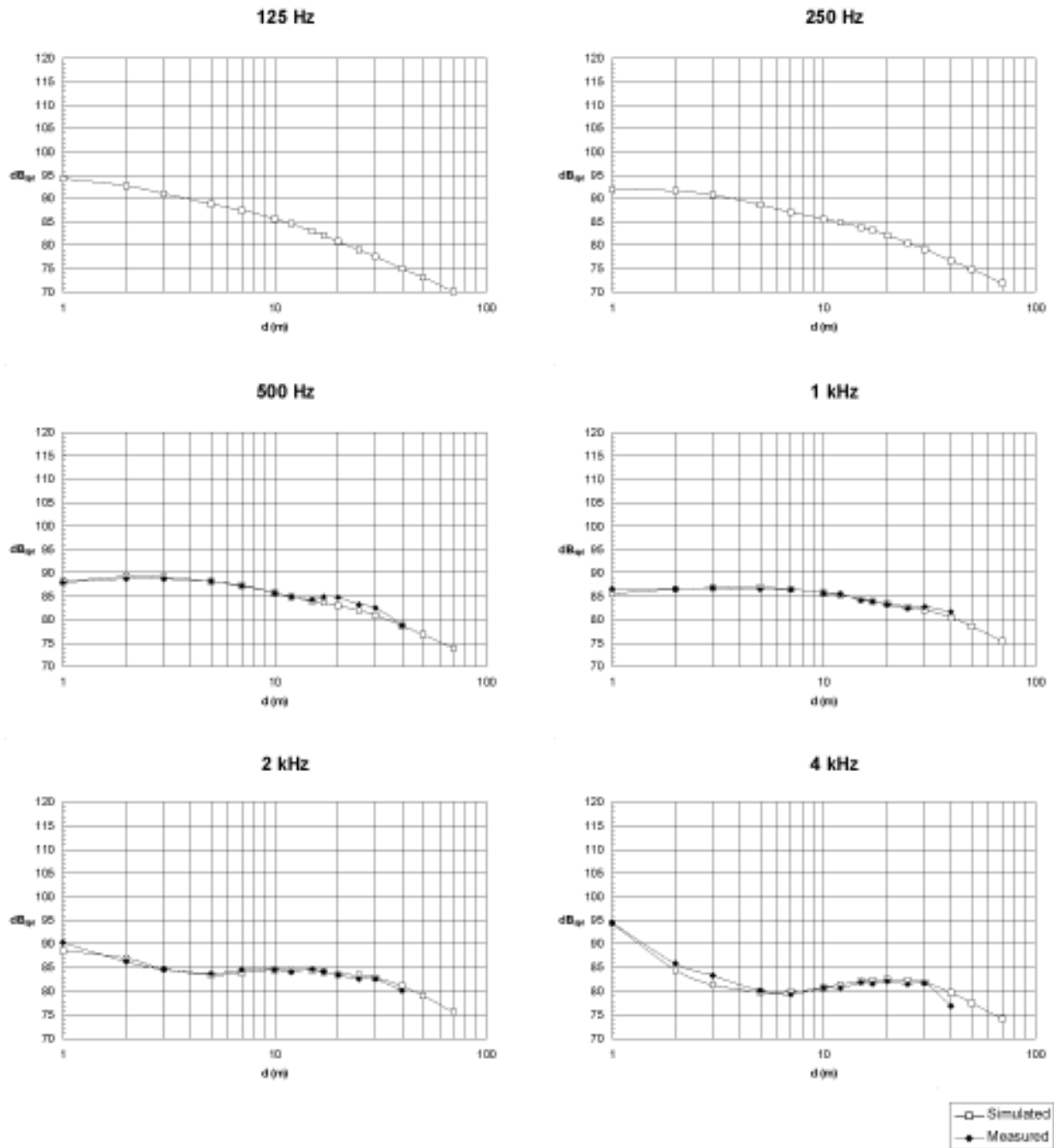
SPL Versus distance (on axis)

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 8 deg,
Focus distance = 50 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2].

Measurements scaled to simulation results at $d = 10$ m, $z_c = z_{li} = 1.7$ m, see general notes [1] for measurement details.



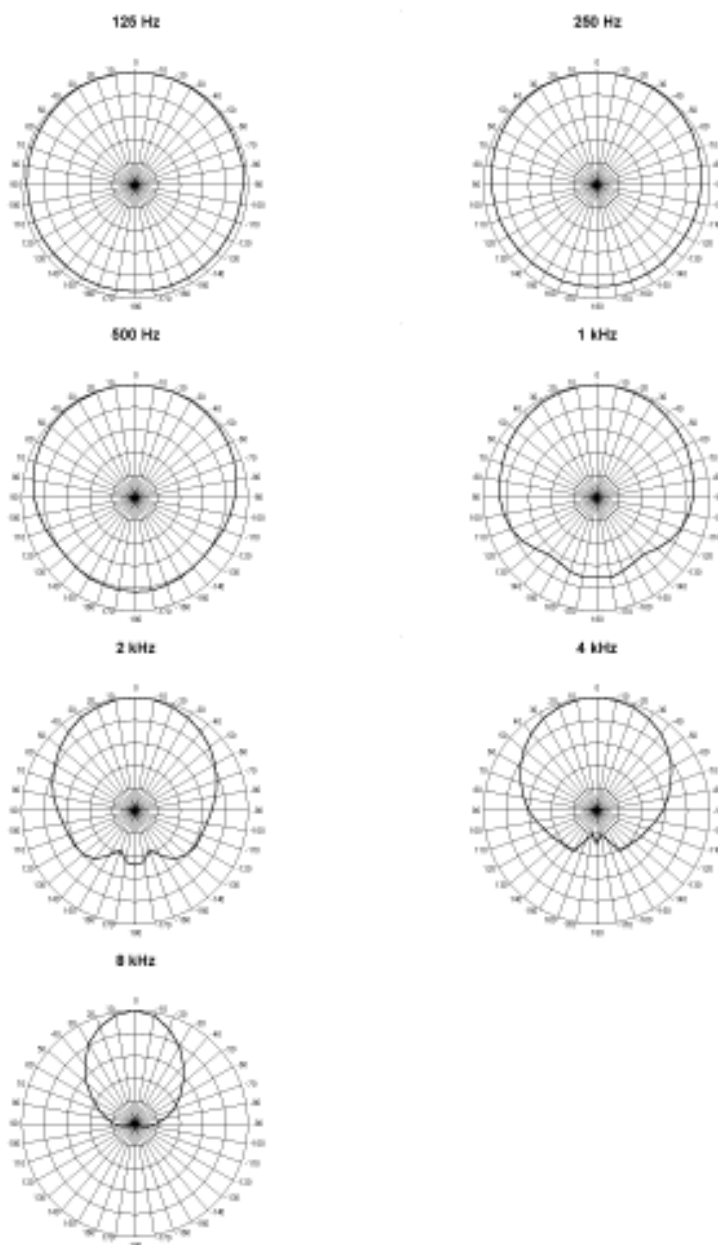
SPL Versus Distance (Delta-z = 0,8)

Notes:

Settings: Elevation angle = -1.1 deg, Opening angle = 8 deg,
Focus distance = 50 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2].

Measurements scaled to simulation results at $d = 10$ m, $z_c = 2.5$ m, $z_{li} = 1.7$ m see general notes [1] for measurement details



Horizontal Polar Data

Notes:

1/1 octave averaged far-field data ($r = 1000\text{ m}$)

Angular resolution 10 deg

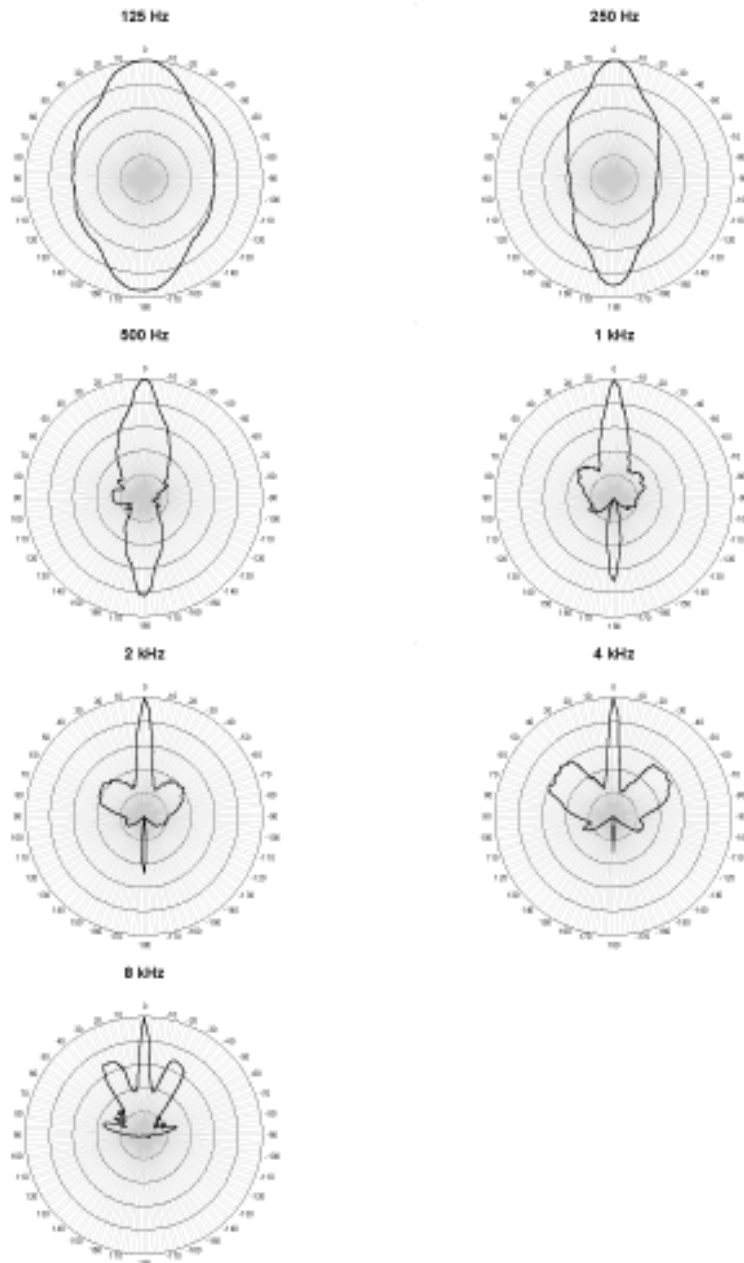
Scale 6 dB/div

Positive angles = left side (unit top view)

Settings:

- Elevation angle = 0 deg
- Opening angle = 8 deg
- Focus distance = 50 m

Simulations only



Vertical Polar Data

Notes:

1/1 octave averaged far-field data ($r = 50$ m)

Angular resolution 2.5 deg

Scale 6 dB/div

Positive angles = top side

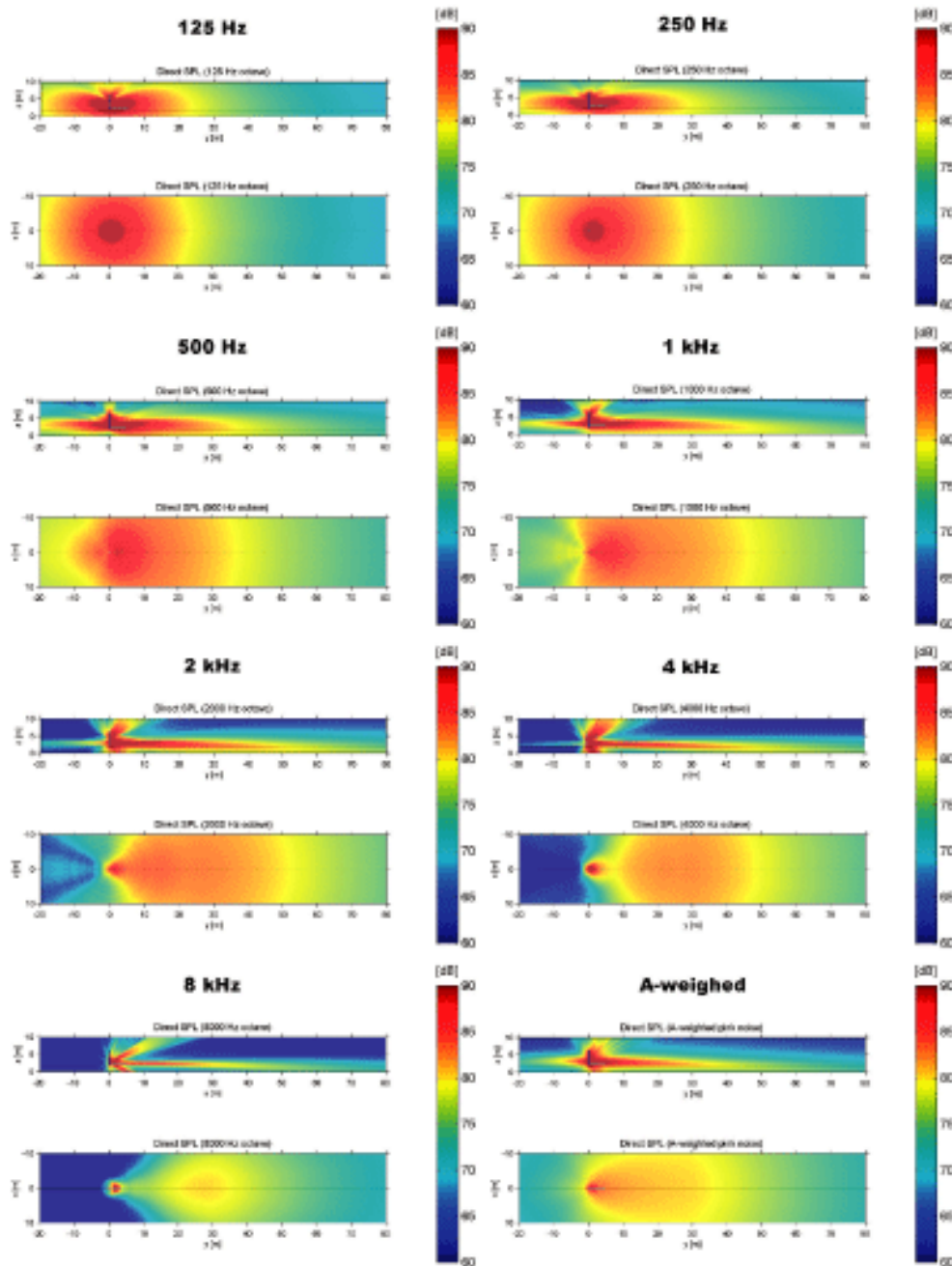
Settings:

- Elevation angle = 0 deg

- Opening angle = 8 deg

- Focus distance = 50 m

Simulations only



Vertical and Horizontal Beam Cross Sections

Notes:

Settings: Elevation angle = -1.1 deg, Opening angle = 6 deg, Focus distance = 50 m, Reference mounting height $z_c = 2.5$ m. Simulations 100 dB S_{PL} source level @ 1m 'on axis' for each octave band, see general notes [4].

Dimensions of all vertical cross sections (top) 100 m x 10 m.

Dimensions of all horizontal cross sections (bottom) 100 m x 20 m.

Technical Specifications

Acoustical⁽¹⁾

Frequency range²

Single element	230 to 10k Hz (± 3 dB)
LF complete array	130 Hz (~ 3 dB)

Max SPL³

Continuous	91 dB S_{PL} A-weighted with pink noise at 30 m
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Frequency range²

Peak	95 dB S_{PL} at 30 m
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Coverage

Horizontal (fixed) ⁴	150 deg
Vertical (adjustable) ⁵	Opening angle: 6° to 14° Elevation (aiming) angle: -16° to 16° Focus distance: 5 to 100 m

Dynamic range ⁶	88 dB
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Electrical**Input⁷**

Nominal level	0 dBu (line input) and +50 dBu (100 V input)
DLC threshold (1 kHz)	+3 dBu, 6 dB headroom before clip (gain / volume 0 dB)
Type	Transformer balanced
Impedance (balanced)	6.8 kohm (line input) and 2 Mohm (100 V input)

DSP module⁸

Type	32-bit floating point
Memory	32 k words SRAM, 2 x 8 kB EEPROM
ADCs	Two channel, 18 bit sigma-delta converters
DACs	Eight channel, 18 bit sigma-delta converters
Sample frequency	48.8 kHz

Signal processing ⁹	• pre-delay (< 335 ms @ 32 bit float) • equalizer and compensation filtering • compressor and noise gate • volume and analog pre-gain • ambient noise level dependent gain adaptation ('fail-safe') • eight output filters • high resolution output channel delays ($\Delta T = 10.2 \mu s$)
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Control unit

Network interface type	Serial full-duplex RS-485, 19k2 baud, optically isolated
Maximum number of units ¹⁰	63
Remote surveillance	• general status (DSP running, signal present etc.) • amplifier monitoring and load monitoring schemes • external pilot tone detection (20..30 kHz, level > -22 dBV) • ambient noise microphone monitoring • frost protection • fan control for optional external fan • thermal overload protection
Failure	- Internal hardware bypass circuit - Failure relay (external connector, maskable conditions)

Power amplifiers

Type	PWM (class D)
Power	16 x 40 W _{rms} (4 ohm)
Protection	Thermal shutdown if $T_{junction} > 150^\circ C$ Current limiting output stage

Connectors

General type	5 mm pitch cage clamp (as WAGO series 231)
Audio inputs	6-pin male p1 = Line +, p2 = Line -, p3 = GND p4 = 100V +, p5 = 100V -, p6 = GND
RS-485 interface	5-pin male p1 = A, p2 = B, p3 = Z, p4 = Y, p5 = DGND
Ambient noise and temperature sensor	5-pin female p1 = MIC, p2 = AGND, p3 = NTC, p4 = AGND, p5 = GND

Input⁷

Failure detect and fan control	5-pin female failure relay: p1 = COM, p2 = NO, p3 = NC optional fan: p4 = -, p5 = +24 V
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Mains	3-pin IEC
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PSU

Mains voltage (+5/-10%) ¹¹	230 or 115 V
Mains fuse(s)	2 x 6.3 A (slow type)
Power consumption ¹²	84 VA (idle) / 750 VA (full load)
Power factor	0.55 (idle) / 0.60 (full load)
Max mains inrush current	25 A short-time peak (@ 230 V)

Protection	thermal protection output current limiting under-voltage lock out
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Mechanical

Dimensions (H x W x D) ¹⁴	4350 x 134 x 92 mm
Weight	46 kg
Default color	Silver

Environmental

Operating temperature ¹³	-15 °C to +40
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%
Transducers	17 x 4" full range

Notes:

1. Measured outside under semi-anechoic 'full-space' conditions with typical filter and delay settings unless stated otherwise.
2. Single transducer only, from 1/3 octave averaged data at 1 m. Actual measured frequency response of complete array is depending on the actual signal processing parameters and air absorption (at larger distances). Only low frequency -3 dB point is specified for complete array ('full-space').
3. Continuous level: rms level measured with SLM (slow, A-weighted) with pink noise source level just below DLC input limiter threshold. Peak level: the maximum short-term A-weighted rms sound pressure level measured with a SLM and a pulsating pink noise source.
4. Settings: Elevation angle = 0 deg, Opening angle = 15 deg, Focus distance = 10 m.
5. Opening angle -6 dB, average value 1k - 4k Hz octave band.
6. Opening angle -6 dB, typical values, only valid in the far-field (d > approx. 5 m).
7. For this measurement the signals at all power amplifier outputs are summed together. Measured as the A-weighted difference (in dB) between the maximum rms level (with pink noise input signal) and the noise output (with no input signal present).
8. Specs valid for default type 3 input board, 0 dBu = 0.775 V rms. Dual-line input available as an option.
9. "Dual lobe" and "Extended pre-delay" (up to 2684 ms) available as a DSP software / hardware option.

10. Maximum number that can be connected to one RS-485 subnet, multiple subnets can be controlled by one host PC.
11. Mains voltage can be selected on the IEC inlet, accessible from the outside of the unit.
12. Defined as the rms mains current multiplied by the rms mains voltage under normal operating conditions. 'Full load' figures are maximum values measured with a pulsating pink noise input signal.
13. With frost protection and installed ambient temperature sensor. Outdoor versions available upon request. Without frost protection, lower limit: 0 °C.
14. Depth of enclosure only (including heatsink), without mounting brackets.

Ordering Information

LBC 3254/00 Intellivox 4c Active Line Array Loudspeaker, Amplifier at Bottom	LBC3254/00
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LBC 3254/10 Intellivox 4c Active Line Array Loudspeaker, Amplifier at Top	LBC3254/10
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LBC 3254/11 Intellivox 4c Active Line Array Loudspeaker, Amplifier at Top, Outdoor version	LBC3254/11
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Accessories

LBC 3260/00 WinControl Software	LBC3260/00
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LBC 3261/00 Intellivox Dual Lobe Software	LBC3261/00
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LBC 3262/00 Ambient Microphone and Temperature Sensor	LBC3262/00
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LBC 3270/00 Wall Mounting Bracket 90°	LBC3270/00
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LBC 3271/00 Wall Mounting Bracket 45°	LBC3271/00
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LBC 3256/xx Intellivox 6c Active Line Array Loud- speakers



Features

- ▶ **Active Loudspeakers**
- ▶ **Variable Elevation Angle**
- ▶ **Variable Vertical Opening Angle**
- ▶ **Focus Distance**
- ▶ **Even Sound Pressure and Constant Directivity**
- ▶ **Suppressed Acoustic Side Lobes**
- ▶ **WinControl**
- ▶ **Integrated Remote Monitoring**
- ▶ **AVC (Automatic Volume Control)**
- ▶ **Wall Mounting**

The Intellivox DDC (Digital Directivity Control) from Bosch Security Systems form a range of five active line array loudspeakers with unrivalled acoustical properties. Each loudspeaker produces clear, natural sound for excellent intelligibility of both speech and music. In addition, the audio characteristics of each line array can be adjusted by means of software to meet the acoustical requirements of the venue. This, along with the long acoustical reach ('throw'), means only a few loudspeakers are required for complete coverage. One loudspeaker can cover a distance of up to 70 meters. The extensive integrated remote monitoring possibilities of Intellivox loudspeakers also make them extremely reliable and a key element in voice evacuation systems.

Functions

Active Loudspeakers

All Intellivox loudspeakers have state-of-the-art class-D amplifiers as standard. This guarantees efficient and reliable operation without the need for external amplification. They also have an on-board DSP (Digital Signal Processor), which controls the frequency and delay time of each individual driver in the array, thus allowing software adjustment of loudspeaker characteristics like direction, opening angle and focus distance. As an added benefit, the presence of a DSP means there is no need for extra equalizers.

Variable Elevation Angle

Intellivox loudspeakers incorporate a feature known as Digital Directivity Control, which enables the direction of the main lobe to be tilted while the loudspeaker remains vertical. This is achieved by programming a different delay time for each individual driver in the array. As an example, by specifying a longer delay for the drivers at the bottom of the array, the lobe is effectively tilted downwards. These delay times, and therefore the elevation angle, are programmed into the on-board DSP using a PC. This feature gives much more mounting flexibility than conventional mechanical aiming. It also makes better use of the backward main lobe, because having the loudspeaker flat against a wall helps direct the sound from this lobe towards the listening area.

Variable Vertical Opening Angle

Being able to adjust the delay times and equalization settings for each driver in the array also makes it possible to specify the opening angle for all relevant frequencies. When the specified angle is narrow, sound can be pinpointed very accurately to a distant listening area. When the angle is wide, one loudspeaker can cover a very broad area.

Focus Distance

Intellivox loudspeakers are unique in allowing the loudspeaker focus distance to be set. The focus distance is the point at which the output of each driver in the array converges. Specifying the focus distance sets how far the main lobe reaches before the drivers' contributions are out of phase and their sound energy becomes part of the diffuse sound field.

Even Sound Pressure and Constant Directivity

By accurately adjusting the direction of the sound and vertical opening angle, a main lobe can be created that has all relevant frequencies present at nearly the same sound pressure level. With Intellivox loudspeakers, the variation throughout the entire listening area is no more than 3 dB. This means that the sound for listeners is not too loud at the front and not too quiet at the back. The constant directivity of Intellivox loudspeakers also helps ensure the presence of all relevant frequencies for more clear and natural sound.

Suppressed Acoustic Side Lobes

Intellivox loudspeakers produce extremely small side lobes, which gives a much clearer, less 'colored' sound, even when close to the loudspeakers.

WinControl

WinControl is a 32-bit Windows®-compatible program that enables programming, testing and configuring of Intellivox units through the serial port of the PC. The software allows:

- Adaptation of signal processing-related parameters such as beam settings, gain, EQ, pre-delay and auto gain.
- Updating or restoring of the DSP software.
- Adaptation of surveillance-related parameters such as amplifier/DSP status, temperature overload and pilot tone detection settings.
- Requesting of the loudspeaker status for error checking purposes.
- Factory unit initialization.

Integrated Remote Monitoring

An Intellivox loudspeaker can be configured to notify a building management, control or evacuation system through in- and output relays if an error occurs. The loudspeaker cabling can be automatically checked using a 20 kHz pilot tone. The status of each loudspeaker can also be continuously monitored via an RS-485 network. Over 10 different system parameters are checked - including temperature, pilot tone and amplifier condition - to guarantee system integrity.

AVC (Automatic Volume Control)

In certain environments, such as sport stadiums and passenger terminals, the background noise level fluctuates constantly. Intellivox loudspeakers are equipped with an external terminal for connecting a sensor (LBC 3262/00) for measuring the ambient SPL. This information is used by the auto gain of the loudspeaker amplifiers to constantly adjust the loudspeaker output so it is always the same level above the ambient noise.

Wall Mounting

There are several options for mounting the Intellivox against a wall. It can be supported by means of the wall brackets supplied as standard, or by the LBC 3270/00 swivel bracket (adjustable through 90 degrees) or the LBC 3271/00 swivel bracket (adjustable through 45 degrees). Both swivel brackets have to be ordered separately.

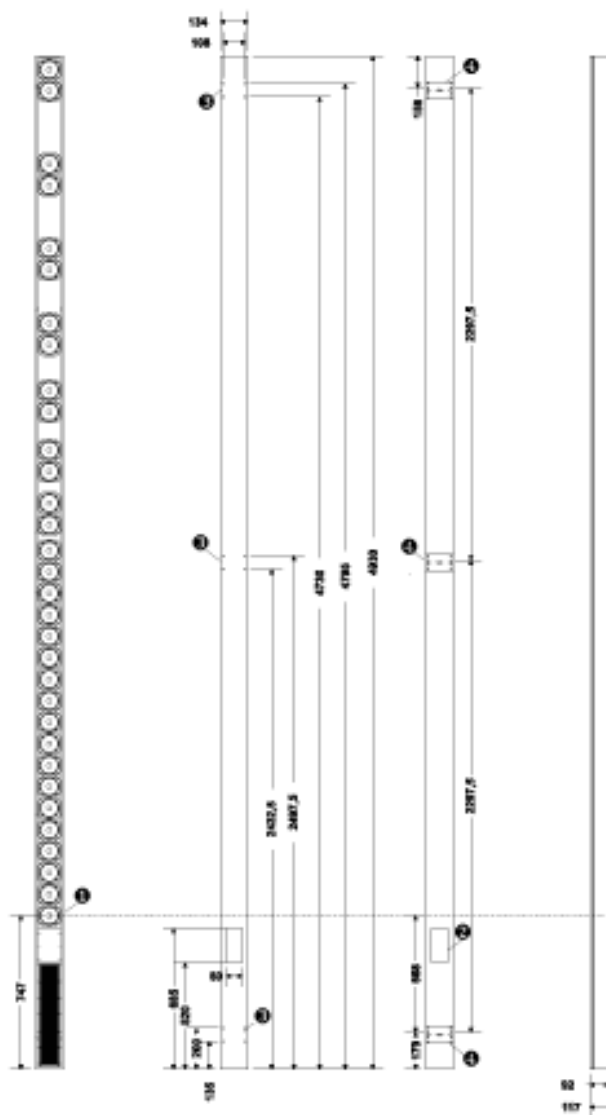
Safety and Evacuation Compliant

The unrivalled speech intelligibility, reliability and extensive monitoring features of Intellivox loudspeakers makes them a key element in voice evacuation systems. With Intellivox, systems can be built that comply with both the technical requirements and acoustical demands of IEC 60849 and BS 5839.

Certifications and Approvals

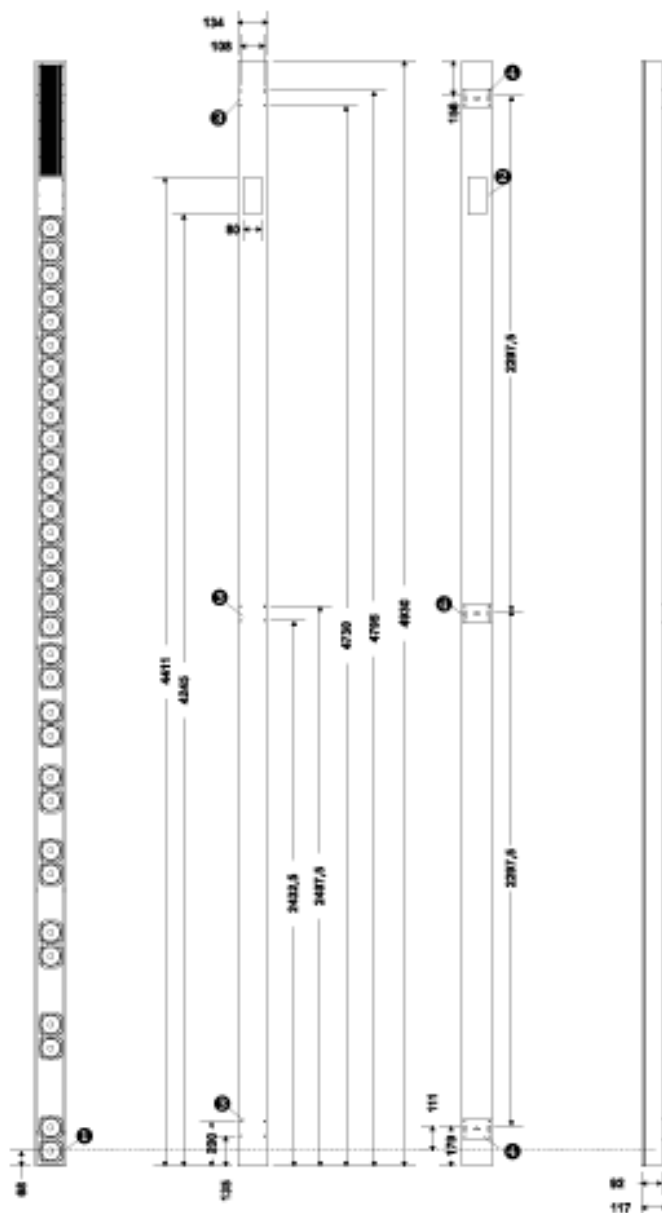
Region	Certification	
Europe	CE	Declaration of Conformity

Installation/Configuration Notes



LBC 3256/00

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry
- 3 4 x M5 threaded bushing at wall bracket positions.
(can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used.



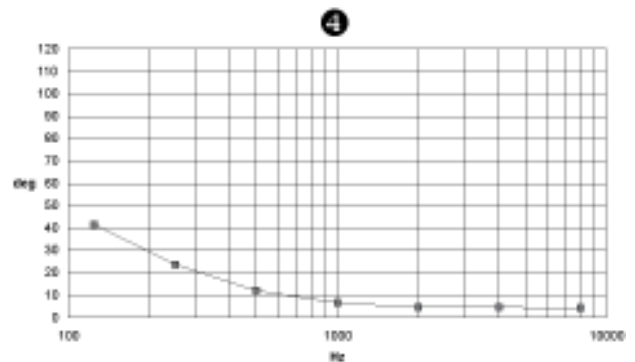
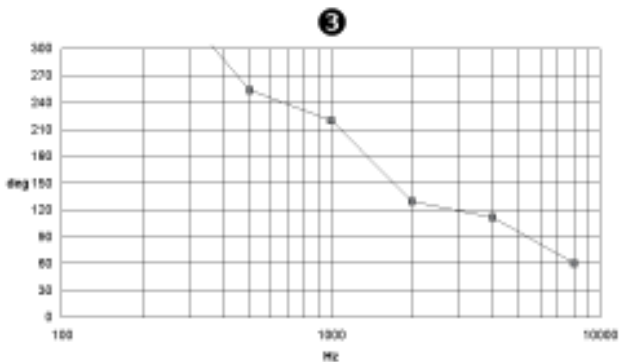
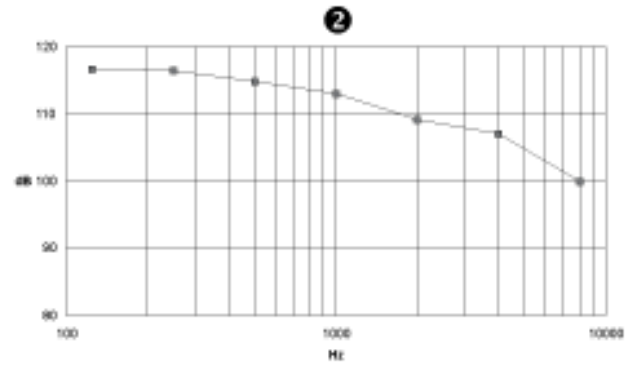
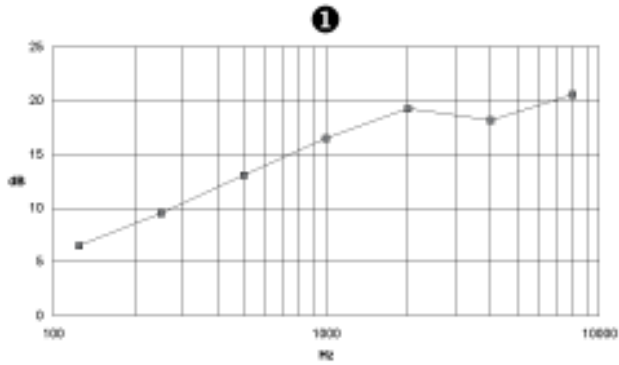
LBC 3256/10

- 1 Offset for acoustical mounting height on axis lowest speaker
- 2 Cable entry
- 3 4 x M5 threaded bushing at wall bracket positions. (can alternatively be used instead of wall brackets)
- 4 Drill position when wall brackets are used

2k	19.3	109	129	5
4k	18.2	107	111	5
8k	20.6	100	60	4

Acoustical Data

Frequency ¹ (Hz)	DI ² (dB)	Pac ³ (dB _{PWL})	Horizontal coverage -6 dB (deg) ²	Vertical coverage -6 dB (deg) ²
125	6.5	117	360	42
250	9.5	116	360	24
500	13.1	115	254	12
1k	16.5	113	220	7



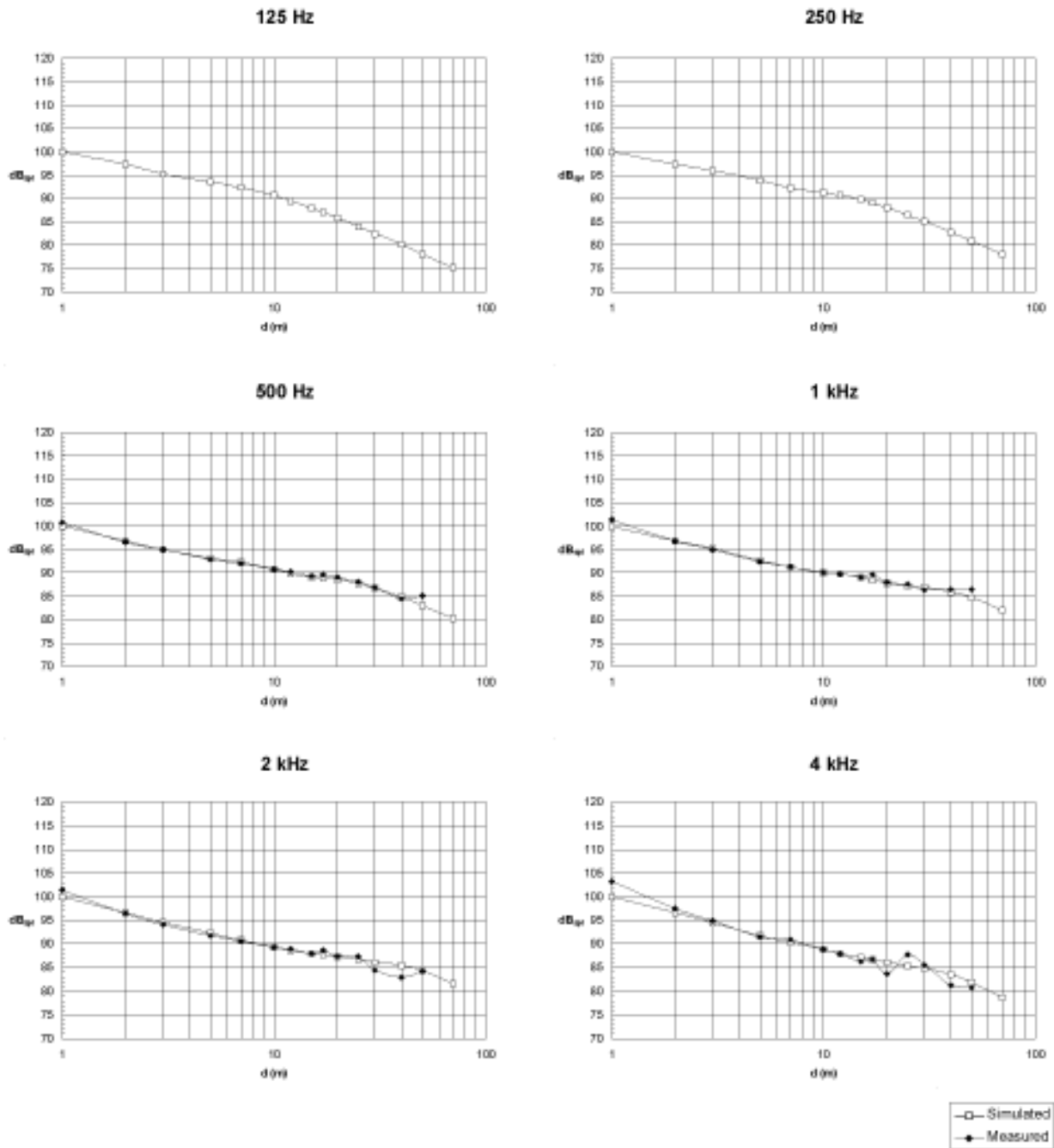
- | | |
|---------------------|------------------------------------|
| 1 Directivity index | 3 Horizontal opening angle (-6 dB) |
| 2 Acoustical power | 4 Vertical opening angle (-6 dB) |

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 6 deg,
Focus distance = 70 m.

1. All values from octave band averaged data.

2. Only valid in the far-field ($d > \text{approx. } 50 \text{ m}$), results from simulations, refer to general notes [2].
3. Acoustical power (P_{ac}) expressed in dB_{PWL} relative to 10^{-12} W , simulated with 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [2].



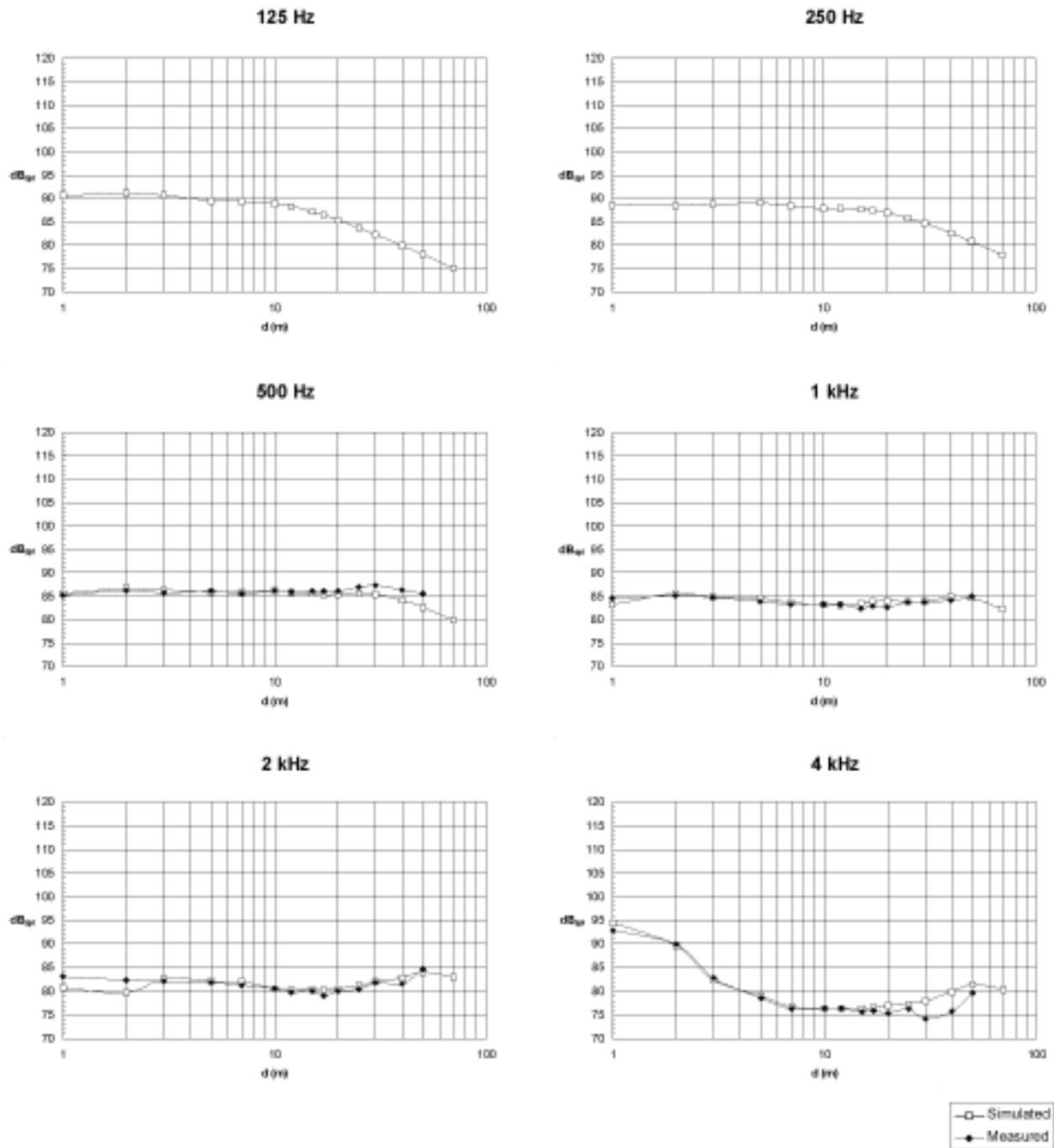
SPL Versus distance (on axis)

Notes:

Settings: Elevation angle = 0 deg, Opening angle = 6 deg,
Focus distance = 70 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2]

Measurements scaled to simulation results at $d = 10$ m, $z_c = z_{li} = 1.7$ m, see general notes [1] for measurement details.



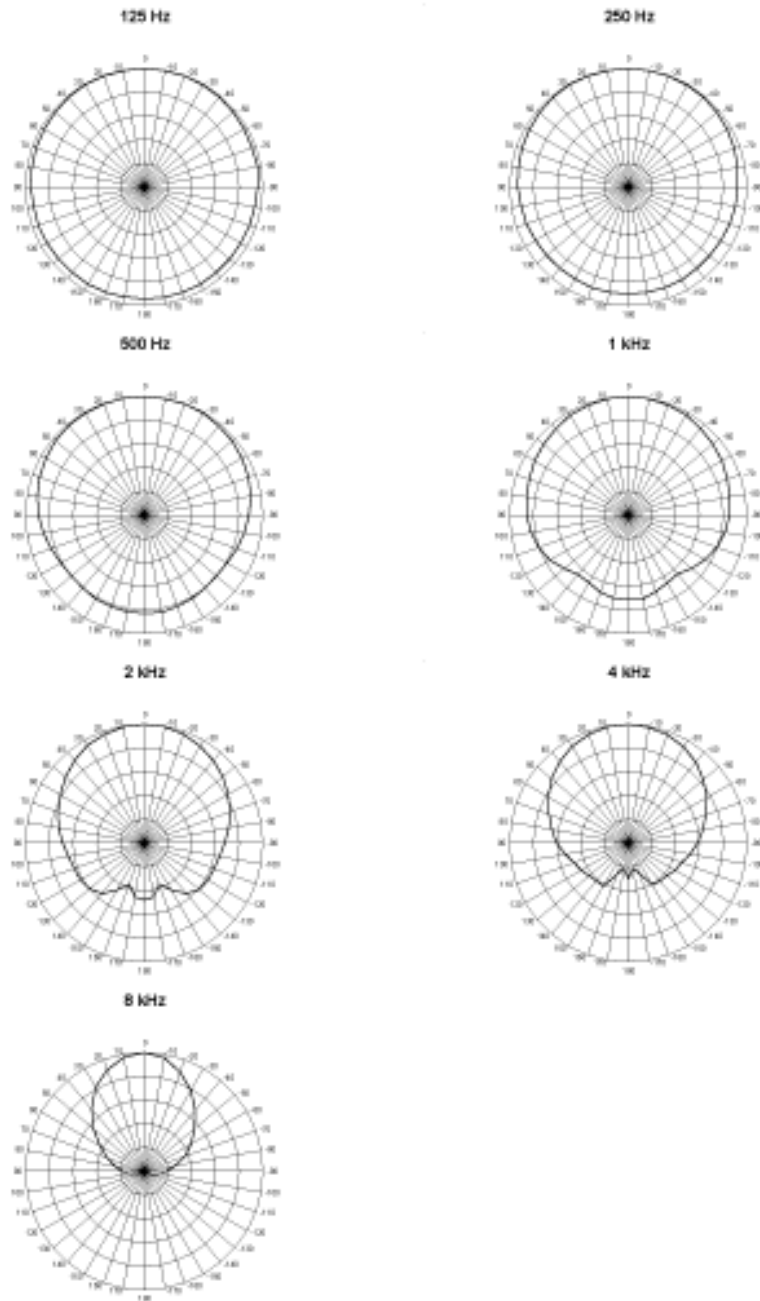
SPL Versus Distance (Delta-z = 0,5)

Notes:

Settings: Elevation angle = -0.9 deg, Opening angle = 4 deg,
Focus distance = 70 m.

Simulations 100 dB_{SPL} source level @ 1m 'on axis' for each octave band, see general notes [2].

Measurements scaled to simulation results at $d = 10$ m, $z_c = 2.8$ m, $z_{li} = 1.7$ m see general notes [1] for measurement details



Horizontal Polar Data

Notes:

1/1 octave averaged far-field data ($r = 1000\text{ m}$)

Angular resolution 10 deg

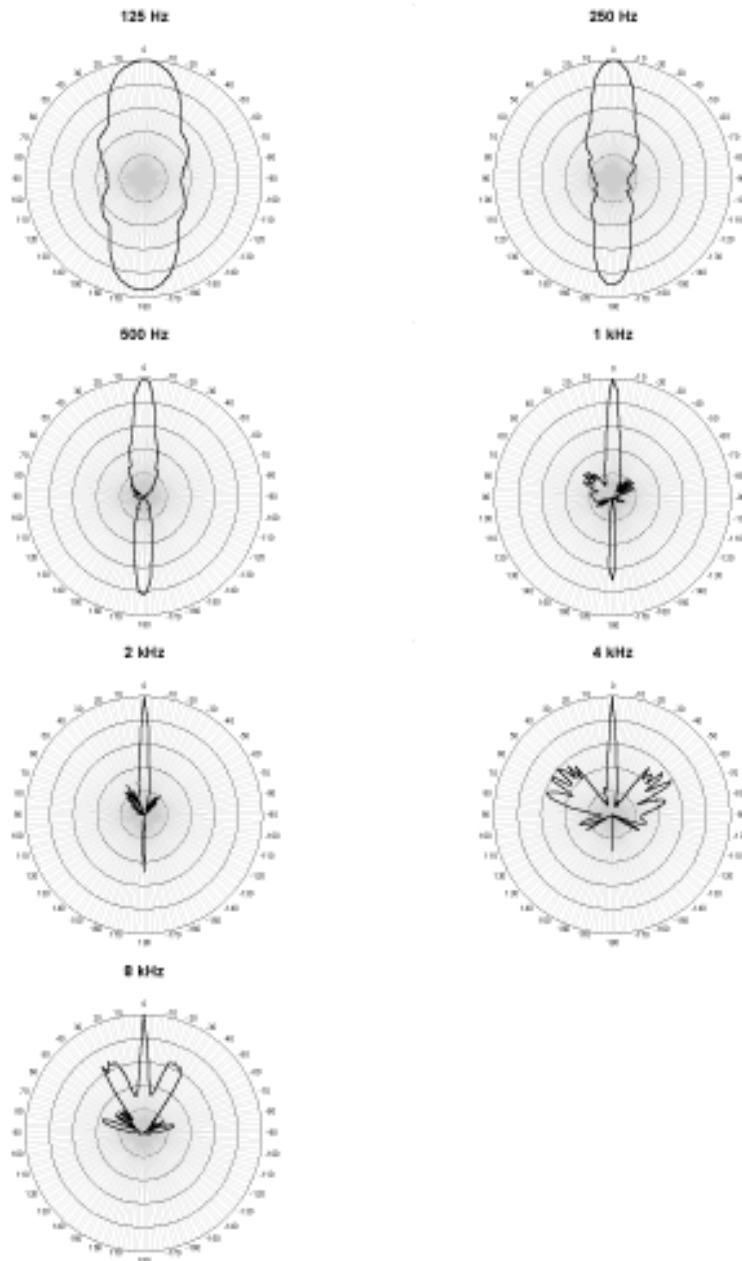
Scale 6 dB/div

Positive angles = left side (unit top view)

Settings:

- Elevation angle = 0 deg
- Opening angle = 6 deg
- Focus distance = 70 m

Simulations only



Vertical Polar Data

Notes:

1/1 octave averaged far-field data ($r = 70\text{ m}$)

Angular resolution 2.5 deg

Scale 6 dB/div

Positive angles = top side

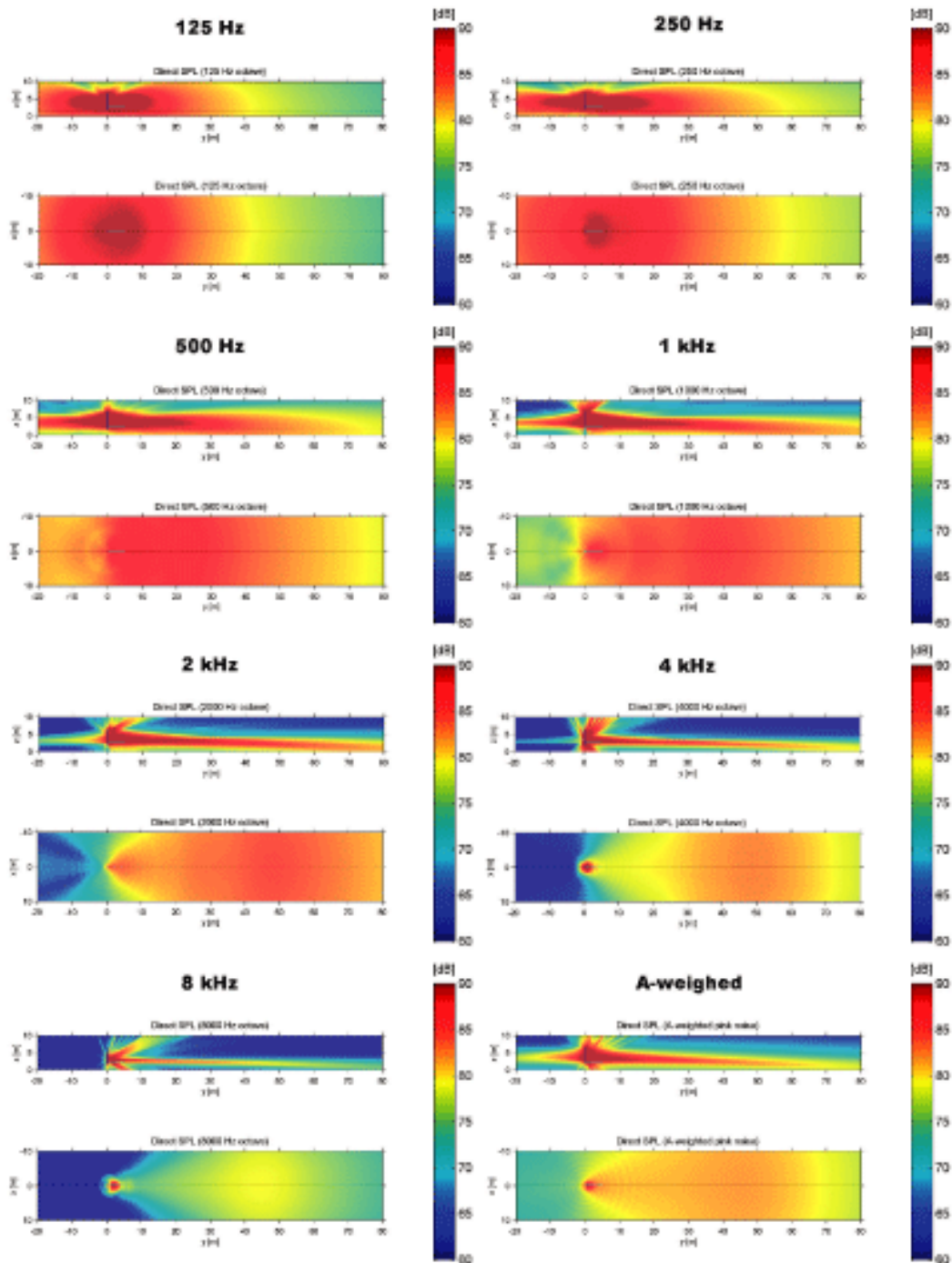
Settings:

- Elevation angle = 0 deg

- Opening angle = 6 deg

- Focus distance = 70 m

Simulations only



Vertical and Horizontal Beam Cross Sections

Notes:

Settings: Elevation angle = -0.9 deg, Opening angle = 4 deg, Focus distance = 70 m, Reference mounting height $z_c = 2.5$ m. Simulations 100 dB SPL source level @ 1m 'on axis' for each octave band, see general notes [4].

Dimensions of all vertical cross sections (top) 100 m x 10 m.

Dimensions of all horizontal cross sections (bottom) 100 m x 20 m.

Technical Specifications**Acoustical⁽¹⁾****Frequency range²**

Single element	230 to 10 kHz (± 3 dB)
LF complete array	130 Hz (-3 dB)

Max SPL³

Continuous	94 dB _{SPL} A-weighted with pink noise at 50 m
Peak	98 dB _{SPL} at 50 m

Coverage

Horizontal (fixed) ⁴	150 deg
Vertical (adjustable) ⁵	Opening angle: 4° to 10° Elevation (aiming) angle: -16° to 16° Focus distance: 5 to 100 m

Dynamic range⁶

	88 dB
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Electrical**Input⁷**

Nominal level	0 dBu (line input) and +50 dBu (100 V input)
DLC threshold (1 kHz)	+3 dBu, 6 dB headroom before clip (gain / volume 0 dB)
Type	Transformer balanced
Impedance (balanced)	6.8 kohm (line input) and 2 Mohm (100 V input)

DSP module⁸

Type	32-bit floating point
Memory	32 k words SRAM, 2 x 8 kB EEPROM
ADCs	Two channel, 18 bit sigma-delta converters
DACs	Eight channel, 18 bit sigma-delta converters
Sample frequency	48.8 kHz
Signal processing ⁹	• pre-delay (< 335 ms @ 32 bit float) • equalizer and compensation filtering • compressor and noise gate • volume and analog pre-gain • ambient noise level dependent gain adaptation ('fail-safe') • eight output filters • high resolution output channel delays ($\Delta T = 10.2 \mu s$)

Control unit

Network interface type	Serial full-duplex RS-485, 19.2 kbaud, optically isolated
Maximum number of units ¹⁰	63
Remote surveillance	• general status (DSP running, signal present etc.) • amplifier monitoring and load monitoring schemes • external pilot tone detection (20..30 kHz, level > -22 dBV) • ambient noise microphone monitoring • frost protection • fan control for optional external fan • thermal overload protection
Failure	- Internal hardware bypass circuit - Failure relay (external connector, maskable conditions)

Input⁷**Power amplifiers**

Type	PWM (class D)
Power	16 x 40 W _{rms} (4 ohm)
Protection	Thermal shutdown if $T_{junction} > 150^\circ C$ Current limiting output stage

Connectors

General type	5 mm pitch cage clamp (as WAGO series 231)
Audio inputs	6-pin male p1 = Line +, p2 = Line -, p3 = GND p4 = 100V +, p5 = 100V -, p6 = GND
RS-485 interface	5-pin male p1 = A, p2 = B, p3 = Z, p4 = Y, p5 = DGND
Ambient noise and temperature sensor	5-pin female p1 = MIC, p2 = AGND, p3 = NTC, p4 = AGND, p5 = GND
Failure detect and fan control	5-pin female failure relay: p1 = COM, p2 = NO, p3 = NC optional fan: p4 = -, p5 = +24 V
Mains	3-pin IEC

PSU

Mains voltage (+5/-10%) ¹¹	230 or 115 V
Mains fuse(s)	2 x 6.3 A (slow type)
Power consumption ¹²	84 VA (idle) / 920 VA (full load)
Power Factor	0.55 (idle) / 0.60 (full load)
Max mains inrush current	25 A short-time peak (@ 230 V)
Protection	thermal protection output current limiting under-voltage lock out

Mechanical

Dimensions (H x W x D) ¹⁴	4930 x 134 x 92 mm
Weight	60 kg
Default color	Silver
Transducers	32 x 4" full range

Environmental

Operating temperature ¹³	-15 °C to +40 °C (5 °F to +104 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Environmental**Notes:**

1. Measured outside under semi-anechoic 'full-space' conditions with typical filter and delay settings unless stated otherwise.
2. Single transducer only, from 1/3 octave averaged data at 1 m. Actual measured frequency response of complete array is depending on the actual signal processing parameters and air absorption (at larger distances). Only low frequency -3 dB point is specified for complete array ('full-space').

3. Continuous level: rms level measured with SLM (slow, A-weighted) with pink noise source level just below DLC input limiter threshold. Peak level: the maximum short-term A-weighted rms sound pressure level measured with a SLM and a pulsating pink noise source.
4. Settings: Elevation angle = 0 deg, Opening angle = 15 deg, Focus distance = 10 m.
5. Opening angle -6 dB, average value 1k - 4k Hz octave band.
6. Opening angle -6 dB, typical values, only valid in the far-field (d > approx. 5 m).
7. For this measurement the signals at all power amplifier outputs are summed together. Measured as the A-weighted difference (in dB) between the maximum rms level (with pink noise input signal) and the noise output (with no input signal present).
8. Specs valid for default type 3 input board, 0 dBu = 0.775 V rms. Dual-line input available as an option.
9. "Dual lobe" and "Extended pre-delay" (up to 2684 ms) available as a DSP software / hardware option.
10. Maximum number that can be connected to one RS-485 subnet, multiple subnets can be controlled by one host PC.
11. Mains voltage can be selected on the IEC inlet, accessible from the outside of the unit.
12. Defined as the rms mains current multiplied by the rms mains voltage under normal operating conditions. 'Full load' figures are maximum values measured with a pulsating pink noise input signal.
13. With frost protection and installed ambient temperature sensor. Outdoor versions available upon request. Without frost protection, lower limit: 0 °C.
14. Depth of enclosure only (including heatsink), without mounting brackets.

Ordering Information

LBC 3256/00 Intellivox 6c Active Line Array Loudspeaker, Amplifier at Bottom **LBC3256/00**

LBC 3256/10 Intellivox 6c Active Line Array Loudspeaker, Amplifier at Top **LBC3256/10**

LBC 3256/11 Intellivox 6c Active Line Array Loudspeaker, Amplifier at Top, Outdoor version **LBC3256/11**

Accessories

LBC 3260/00 WinControl Software **LBC3260/00**

LBC 3261/00 Intellivox Dual Lobe Software **LBC3261/00**

LBC 3262/00 Ambient Microphone and Temperature Sensor **LBC3262/00**

LBC 3270/00 Wall Mounting Bracket 90° **LBC3270/00**

LBC 3271/00 Wall Mounting Bracket 45° **LBC3271/00**

LBC 3260/00 WinControl Software

The Intellivox active line arrays are accessed via WinControl; the dedicated control software. WinControl (LBC 3260/00) is a 32 bit Windows-compatible program for configuring, testing and monitoring Intellivox. It offers the possibility to change the Intellivoxes' electro-acoustical properties by setting the beam settings, volume and equalization. Furthermore there is a possibility to update or restore DSP firmware.

The Program set (LBC 3260/00) is including the RS-232 to RS-485 converter, 5 m cable (RS-485 9P sub-D to Wago 231), assembly and the WinControl CD-Rom.

Intellivox monitors its system status in great detail, when an error has been reported via the input/output relays to a voice evacuation system. WinControl is used to access Intellivox locally or in an on-site network to diagnose the system status in detail.

Installation/Configuration Notes

Configuration

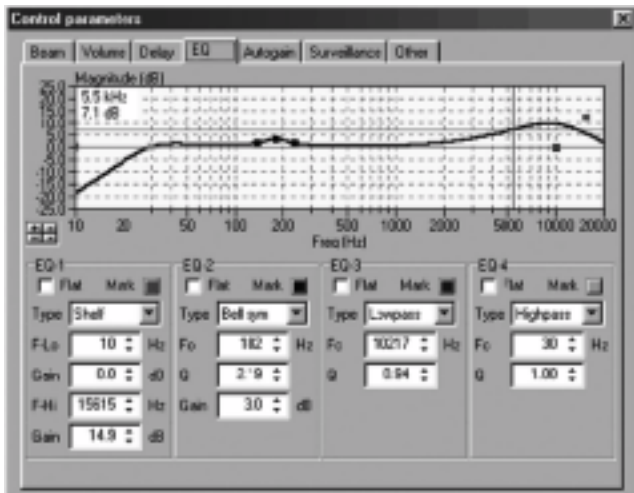


Intellivox Beam Parameters

The three parameters that determine the shape of the line array's main lobe: i.e. elevation angle, opening angle and focus distance are set in the control parameter screen. There is the possibility to configure a second lobe as well for an additional listening plane in the same venue with the Dual lobe software (LBC 3261/00).

Then there is the possibility to set the volume of the entire Intellivox and to configure the analogue gain on the input. If delay is required that can be set as well.

The onboard-DSP is not only used to shape the directivity but also has parametric equalizing function for room equalization.



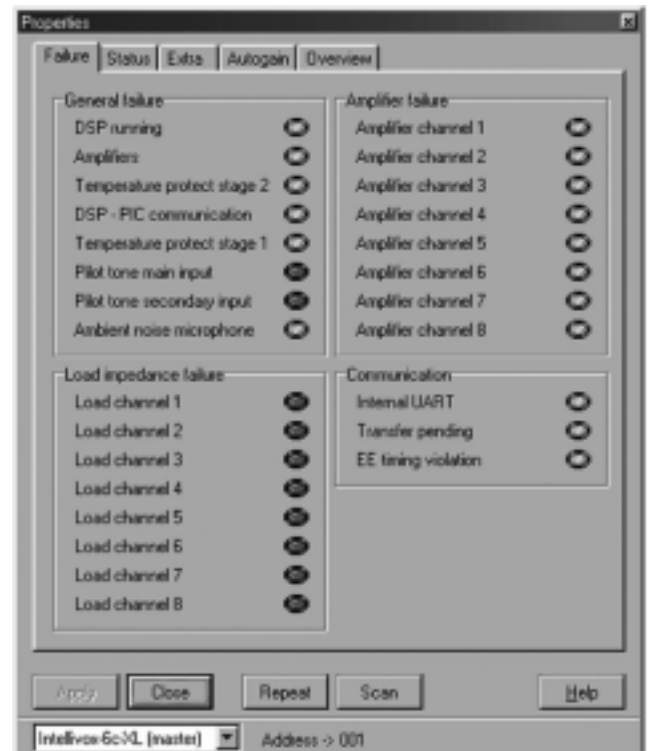
Intellivox Integrated Equalizer

The last element that can be configured is the Automatic Volume Control. With a separate noise sensing microphone (LBC 3262/00) the volume in the listening area can be determined and the Intellivox is programmed to make a call at a pre-specified level above ambient noise.

The system can be configured to run in frost protection mode; A sensor reports ambient temperature and if there is a risk of drivers freezing, active counter measures are initiated. For a system not operating continuously, for instance at night, via WinControl the Intellivox can be configured to go into green mode, saving energy.

Monitoring and Diagnosis Reporting

A variety of functions are monitored in Intellivox loudspeakers to ensure that the whole system is performing. In great detail Intellivox keeps track if the DSP (Digital Signal Processor) is still active. Whether each individual amplifier and associated driver in the line array is on-line or if the amplifiers went to a low power mode because of temperature conditions. Also the line and 100V inputs are checked (via 20 kHz pilot tone/ audio monitoring) and the noise sensing microphone. Even the status of the Analog Input Limiter (DLC) is monitored.



Monitoring Screen of a Loudspeaker

When a fault occurs, for instance the input signal (20 kHz pilot tone) is not detected anymore an output relay switches for instance to alarm a voice evacuation system, fire system or building management system. Either directly to the Intellivox or via a RS-485 network the detailed system status of all the above mentioned parameters can be read out in WinControl.

Another option is to (at intervals) check system status by doing a scan of all Intellivoxes in the network via WinControl. When a fault occurs the Intellivox pops up red in the overview tab and a detailed read-out of system status can be requested. The results are logged in a log file.

Hardware

The Intellivox Line Arrays are equipped with a serial RS-485 interface for external communication purposes. Via a RS-485 to RS-232 convertor they can be connected to the RS-232 serial port of a personal computer. Connected to a loop through network, up to 126 Intellivoxes can be connected to one line in an addressing scheme. Up to 8 lines can be installed in the parallel for the largest of venues.

Upgrading the firmware in Intellivox does not require units to be swapped or physically removed. Simply connecting a PC directly or via the RS-485 network allows for software and firmware restoration and downloads.



Overview of Intellivox Network

The minimal system requirements for the PC are:

- Pentium II, 200 MHz, 32 MB RAM, at least 10 MB of free drive space.
- Windows 95, 98, ME, 2000 or XP.
- One free serial RS-232 COM port.

Ordering Information

LBC 3260/00 WinControl Software

LBC3260/00

Accoustical Considerations for Active Line Array Loudspeakers

The advantages of using digital controlled vertical line arrays are obvious. Constant SPL over large areas significantly reduces the total number of sources needed, while the high directivity of the source enhances the intelligibility.

The next paragraphs contain some 'rules of the thumb' to help you select the right Intellivox type for your project. Although not meant for the experienced acoustical cracks, reading can save a lot of time at a later stage. For sound pressure level and speech intelligibility calculations acoustical simulation software is advisable.

System Overview

Choosing the intellivox type

When considering the Intellivox type most suited for a specific application, the following should be taken into consideration.

Size of listening area

The size of the Intellivox types influences the throw of the speaker. Longer types can achieve required sound pressure levels and speech intelligibility requirements at a longer distance from the speaker. An indication for the listening area that can be covered with one Intellivox can be found in the table. Bear in mind that the horizontal opening angle is frequency dependent with an average value of around 150° (-6 dB, 1 to 4 kHz).

Sound pressure level

When carefully placed and adjusted all types are capable of generating a maximum continuous direct level of approx. 90 dB SPL (pink noise, A-weighted) over the indicated covered distance.

Room height

As pointed out in the next chapter, the Intellivox needs to be mounted at a specific acoustical mounting height well above the listening plane. Sometimes other regulations also dictate a minimum mounting height. Of course the room has to allow this mounting height.

Low frequency pattern control

The longer a line array is, the better the directivity for low frequencies is. If superb directivity of low frequencies is required one of the longer Intellivox types (like the 4c and 6c types) is advisable. As an example, for an Intellivox-2c with the standard 8° opening angle setting, the frequency below which pattern control is lost is around 1.5 kHz

Type Intellivox	1b	2b	2c	4c	6c
DSP/ amplifier channels	8	8	8	16	16
Transducers	6 x 4"+ 2 x 10 mm*	12 x 4"	16 x 4"	17 x 4"	32 x 4"
Physical length	0.7 m	1.8 m	2.8 m	4.3 m	4.9 m
Default vertical opening angle	20°	10°	8°	8°	6°
Covered distance (-3 dB 0)	8 m	15 m	30 m	50 m	70 m

* Coaxial tweeter

Overview of Intellivox Type

Type: the intellivox type number

DSP/amp: Number of discrete amplifier and DSP channels in the type determines processing power

Transducers: Number and type of loudspeakers used in the model

Physical length: Total mechanical length of the unit

Default vertical opening angle: The angle is software controlled, this value can be used as a starting point

Covered distance: the distance in the horizontal plane which indicates the reach or "throw" of the type. (the direct sound pressure is dropped by 3 dB at 1 kHz octave band)

The values specified in the above table are for comparative purposes only.

Choosing the Right Location

This paragraph describes some aspects regarding the location optimization of the line array(s). The goal with optimal loudspeaker placement is to cover the specified listening area with a minimal number of sources. As with every acoustical design this will enhance the intelligibility by keeping the diffuse sound energy (containing only disturbing information) at the lowest possible level.

All remarks of the following list have to be taken into consideration regarding potential mounting positions.

- One Intellivox is capable of generating a constant direct SPL over a fairly large listening area as shown in the previous chapter. In the normal case this area is maximized if the Intellivox is positioned at some specific height above the listening plane and exactly perpendicular to this plane. Care should be taken if the listening area is not flat or divided into multiple parts located at different heights.
- Keep the path from the Intellivox to any point in the listening plane free from objects blocking the direct sound. So from the listening position a free line of sight to at least one line array is required. This is especially important for an Intellivox based acoustical design because usually one or two arrays have to do the job

- Because the Intellivox usually covers a large listening area, care should be taken with respect to arrival times if the sound system design also includes conventional distributed (ceiling) loudspeakers. If a substantial overlapping area exists and the difference in arrival times from the two systems (line array and conventional) exceeds 50 ms, the conventional system should be delayed to limit the loss of intelligibility in the transition area.
- Position the Intellivox against or recessed into a wall. In this way the horizontal baffle dimensions of the line array are extended, resulting in an increased far-field Directivity Index for the lower frequency bands. If the unit is flush mounted, the direct frequency response will show less irregularities. Two units back to back will handle two direction sound coverage, an example is a railway platform.
- In case a full 360° horizontal coverage is required, the use of three units each covering 120° is advised.

Choosing the Right Beam Parameters

In the initial design the DDC beam parameters can be chosen according to some simple rules of thumb. It is assumed that the acoustic center of the array is mounted approx. 0.3 to 0.8 m above the listening plane. A typical array-listener configuration is shown in the figure below.

- **Vertical opening angle**
The initial vertical opening angle can be set to its default value.

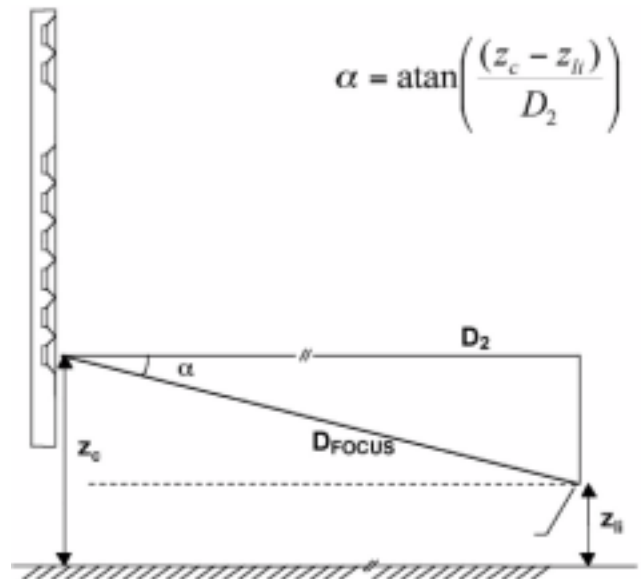
Type	Default vertical opening angle (degrees)
Intellivox-1b	20
Intellivox-2b	10
Intellivox-2c	8
Intellivox-4c	8
Intellivox-6c	6

- **Elevation (vertical aiming angle)**
The initial elevation angle can be calculated from the difference between the height of the acoustic center and the listening plane ($z_c - z_{li} > 0$), and the depth of the desired coverage area (D_2) using:

$$\alpha = \arctan\left(\frac{(z_c - z_{li})}{D_2}\right)$$

Note that angle α is always positive. For a horizontal listening area, the beam should be aimed slightly downwards. Therefore, the elevation angle equals $-\alpha$. For a tilted audience, the elevation angle should be corrected according to the slope of the audience plane.

- **Focus distance**
The initial focus distance can be set to the distance between the acoustic center of the array (i.e., lowest loudspeaker) and the farthest listener.



LBC 3950/01 Ceiling Loudspeaker



Features

- ▶ **Compact yet powerful**
- ▶ **Very wide opening angle**
- ▶ **Modern unobtrusive styling**
- ▶ **Installation friendly**
- ▶ **Splash-waterproof**
- ▶ **Comply with international installation and safety regulations**

The LBC 3950/01 is a compact, 6 W loudspeaker with a circular plastic grille. It has excellent audio performance and is easy to install with its integral mounting clips. The loudspeaker is IPx4 water protected from the front so it can be installed in humid environments.

Functions

The LBC 3950/01 has a circular pattern plastic grille with a plastic surround, finished in an attractive off-white RAL color. The unobtrusive styling of this loudspeaker complements modern interior lighting.

The loudspeaker feature a very wide opening angle, which means fewer units are required to cover a given area. The wide frequency range means better speech and music reproduction. The unit is supplied with a 100 V matching transformer with taps on the primary winding for full-power, half-power, quarter-power and eighth-power radiation.

The loudspeaker (with special treated paper cone), is IP 4 water protected from the front and can be applied in humidity environments for example bathrooms, saunas, atriums and swimming pool areas.

Certifications and Approvals

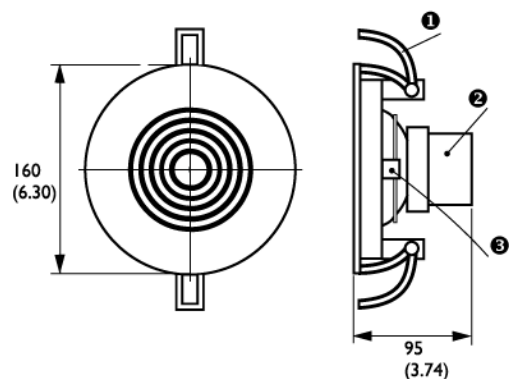
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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 manufactured from self-extinguishing high-impact ABS material (according to UL 94V0).

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Water protected		acc. to EN 60529, IPx4

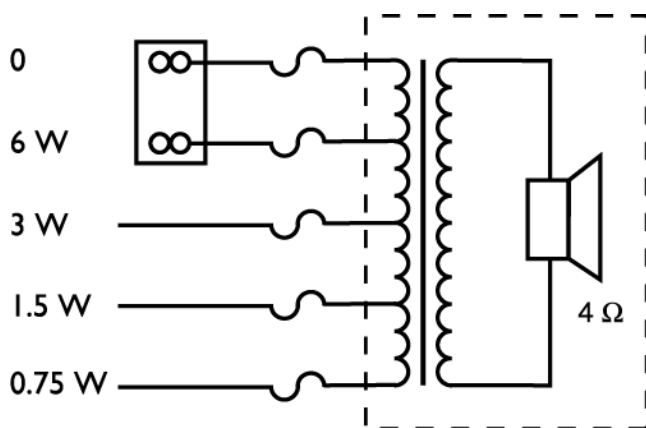
Installation/Configuration Notes

Installation is easy with integral clips that securely hold the ceiling loudspeaker in its cut-out. Ceilings from 9 to 25 mm thick can be accommodated. A template is also provided for accurately marking the cutout in ceiling panels. Wiring is via a connection block with push-type terminals, making installation possible without using any special tools. The terminal blocks have provision for loop-through wiring. The transformer is delivered wired for 6 W rated output power, but can easily be changed for other connections using the color-coded wires and terminal block.

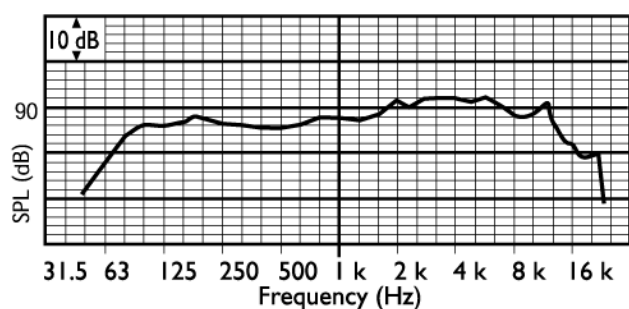


- 01 Clamp
- 02 Matching transformer
- 03 Terminal block

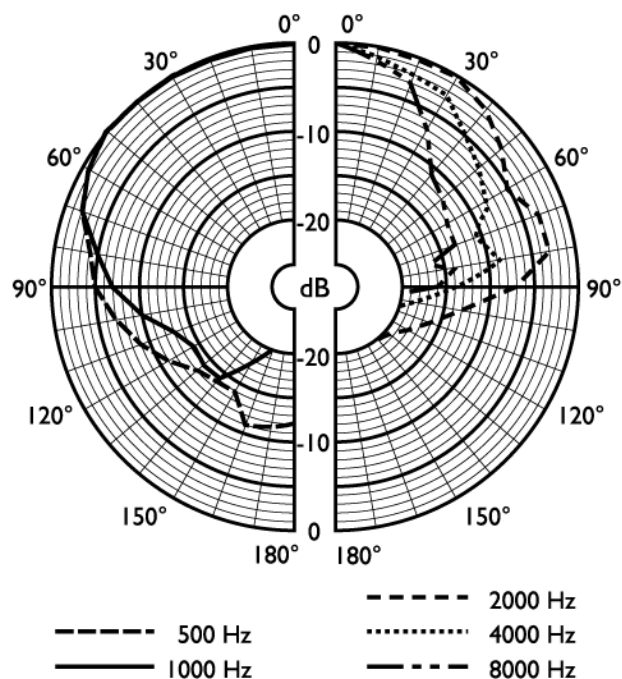
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	87	88	86	88	89	91	89
SPL max.	95	96	94	96	97	99	97
Q-factor	4	5.6	2.6	3	3.8	8.1	15
Efficiency	0.16	0.14	0.19	0.27	0.26	0.19	0.06

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
H. angle	180	180	180	170	165	90	55
V. angle	180	180	180	170	165	90	55

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	96 dB / 88 dB (SPL)
Effective frequency range (-10 dB)	60 Hz to 18 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	170° / 90°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	2-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	160 mm (6.30 in)
Maximum depth	95 mm (3.74 in)
Ceiling thickness	9 to 25 mm (0.35 to 0.98 in)
Mounting cut-out	145 mm (5.71 in)
Speaker diameter	101.6 mm (4 in)
Weight	690 g (1.52 lb)
Color	Off-white (RAL 9010)
Magnet weight	101 g (3.57 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3950/01 Ceiling Loudspeaker 6 W, with a circular plastic grille.	LBC3950/01
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Accessories

LBC 1256/00 EVAC Connection Adapter 3-pole screw connector, 100 pieces	LBC1256/00
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LBC 3951/11 Ceiling Loudspeaker



Features

- ▶ **Compact yet powerful**
- ▶ **Very wide opening angle**
- ▶ **Modern unobtrusive styling**
- ▶ **Installation friendly**
- ▶ **Splash - waterproof**
- ▶ **Comply with international installation and safety regulations**

The LBC 3951/11 is a compact, 6 W loudspeaker with a perforated metal grille. It has excellent audio performance and is easy to install with its integral mounting clips. The loudspeaker is IPx4 water protected from the front so it can be installed in humid environments.

Functions

The LBC 3951/11 has a perforated metal grille with a plastic surround, finished in an attractive off-white RAL color. The unobtrusive styling of this loudspeaker complements today's interior lighting.

The loudspeaker feature a very wide opening angle, which means fewer units are required to cover a given area. The wide frequency range means better speech and music reproduction. The unit is supplied with a 100 V matching transformer with taps on the primary winding for full-power, half-power, quarter-power and eighth-power radiation.

The loudspeaker (with special treated paper cone), is IPx4 water protected from the front and can be applied in humidity environments for example bathrooms, saunas, atriums and swimming pool areas.

Certifications and Approvals

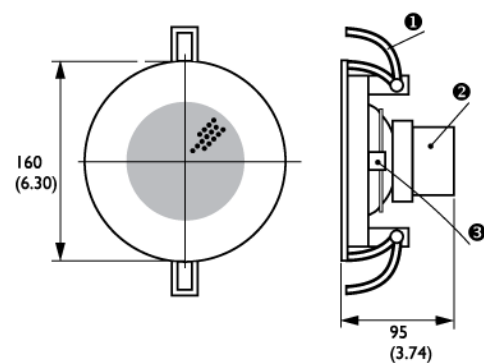
All plastic parts are manufactured from self-extinguishing high-impact ABS material (according to UL 94V0).

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.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Water protected	acc. to EN 60529, IPx4

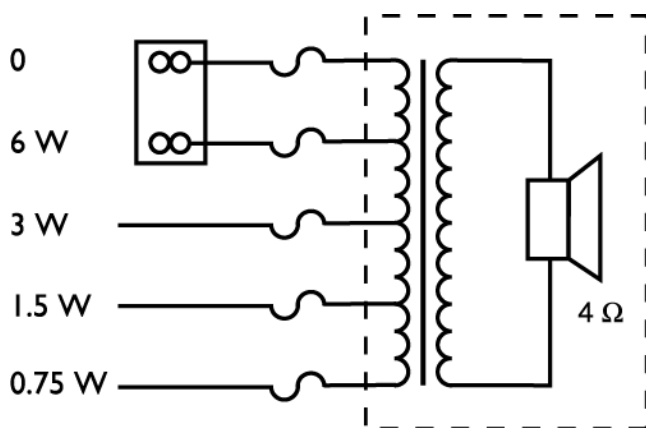
Installation/Configuration Notes

Installation is easy with integral clips that securely hold the ceiling loudspeaker in its cut-out. Ceilings from 9 to 25 mm thick can be accommodated. A template is also provided for accurately marking the cutout in ceiling panels. Wiring is via a connection block with push-type terminals, making installation possible without using any special tools. The terminal blocks have provision for loop-through wiring. The transformer is delivered wired for 6 W rated output power, but can easily be changed for other connections using the color-coded wires and terminal block.

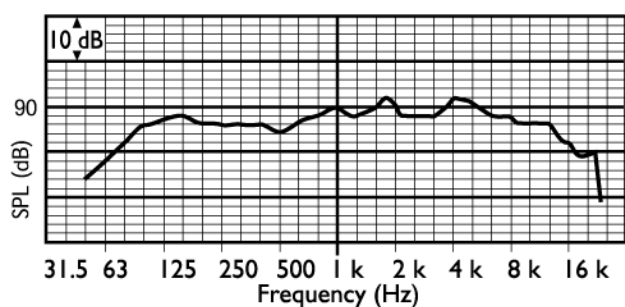


- 01 Clamp
- 02 Matching transformer
- 03 Terminal block

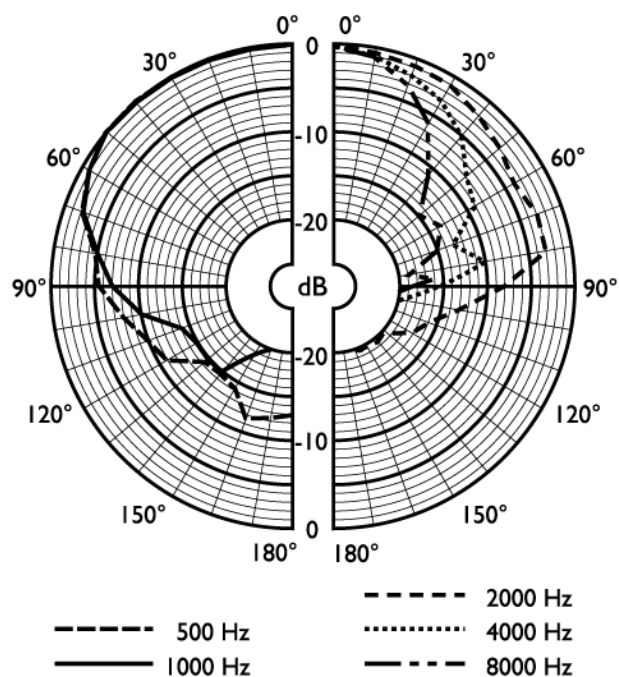
Dimensions in mm (inch)



Circuit diagram



Frequency response



Polar diagram

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	87	87	85	88	89	89	86
SPL max.	95	95	93	96	97	97	94
Q-factor	4	5.6	2.2	3.2	4.6	10.7	19
Efficiency	0.16	0.11	0.18	0.25	0.22	0.09	0.03

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
H. angle	180	180	180	170	160	80	60
V. angle	180	180	180	170	160	80	60

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	96 dB / 88 dB (SPL)
Effective frequency range (-10 dB)	60 Hz to 18 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	170° / 80°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	2-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	160 mm (6.30 inch)
Maximum depth	95 mm (3.74 inch)
Ceiling thickness	9 to 25 mm (0.35 to 0.98 inch)
Mounting cut-out	145 mm (5.71 inch)
Speaker diameter	101.6 mm (4 in)
Weight	690 g (1.52 lb)
Color	off-white (RAL 9010)
Magnet weight	101 g (3.57 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3951/11 Ceiling Loudspeaker	LBC3951/11
6 W loudspeaker with a perforated metal grille.	

Accessories

LBC 1256/00 EVAC Connection Adapter	LBC1256/00
3-pole screw connector, 100 pieces	

LHM 0606/10 Ceiling Loudspeaker



Features

- ▶ Suitable for speech and music reproduction
- ▶ Flush-mounting in ceiling cavity
- ▶ Easy to install
- ▶ Simple power setting
- ▶ Unobtrusive in virtually all interiors
- ▶ Complies with international installation and safety regulations

The LHM 0606/10 is a general purpose, 6 W, cost-effective ceiling loudspeaker. It is clamp mounted into the ceiling. An optional fire dome is available.

Functions

An economic flushing-mounting ceiling loudspeaker is available for general purpose applications. This full range loudspeaker is suitable for both speech and music reproduction in shops, department stores, schools, offices, sports halls, hotels and restaurants.

The speaker assembly consists of a single-piece, 6W dual cone loudspeaker and frame, with a 100 V, matching transformer mounted on the back. A circular metal grille is an integrated part of the front. The appearance and neutral white color has been selected to be unobtrusive in virtually all interiors.

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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety	acc. to EN 60065	

Installation/Configuration Notes

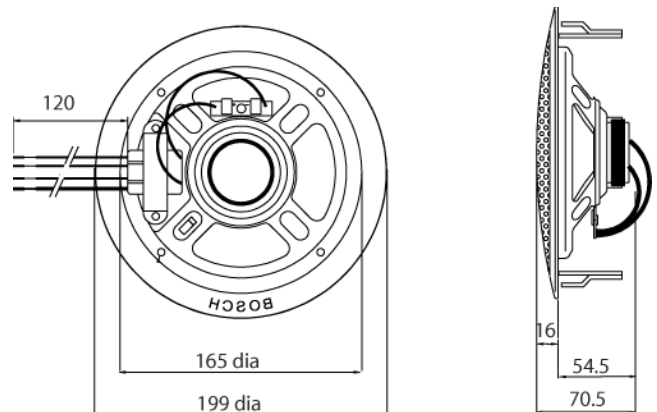
Mounting

The assembly is simply and quickly installed into a hole in the ceiling cavity. It is secured by two integral spring-loaded ceiling locking clamps. A circular template for marking a 165 mm diameter hole is included with the loudspeaker.

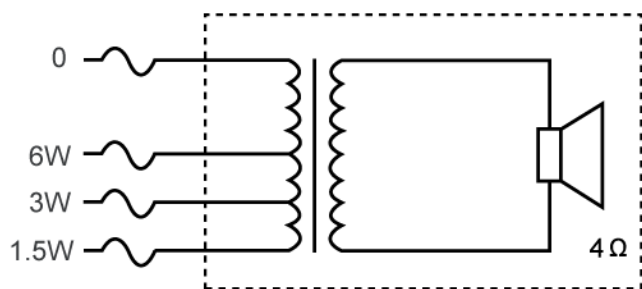
Three lead wires on the matching transformer (primary) provide selection of nominal full-power, half-power or quarter-power radiation.

Fire dome

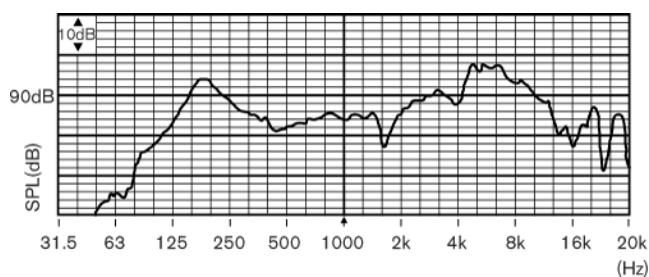
During a fire, the ceiling cavity in which loudspeakers are installed can allow flames to spread throughout a building. To prevent fire entering the caving via the loudspeaker, the ceiling loudspeaker can be fitted with a protective steel fire dome (LBC 3080/01). This optional fire dome is mounted on the loudspeaker assembly using four self-tapping screws, supplied as standard. There are four knock-out holes; two (2) for rubber grommets (supplied) and two (2) for cable glands. (PG13).



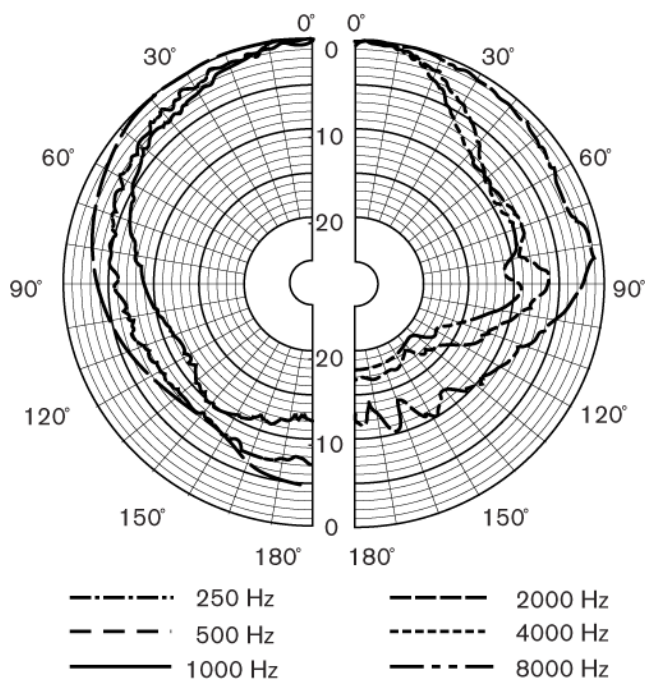
Dimensions in mm



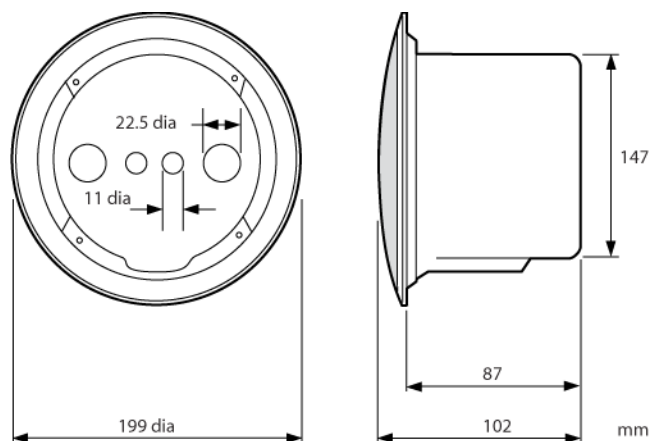
Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

LBC 3080/01 Fire Dome (optional)

LHM 0606/10 + LBC 3080/01 Fire dome assembly dimensions in mm

Technical Specifications**Electrical**

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	94 dB / 86 dB (SPL)
Effective frequency range (-10 dB)	80 Hz to 18 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	175° / 55°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	Flying leads

Mechanical

Diameter	199 mm (7.8 in)
Maximum depth	70.5 mm (2.8 in)
Mounting cut-out	165 + 5 mm (6.5 + 0.20 in)
Speaker diameter	152.4 mm (6 in)
Weight	620 g (1.37 lb)
Color	Off-white (RAL 9010)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LHM 0606/10 Ceiling Loudspeaker	LHM0606/10
6 W, cost-effective ceiling loudspeaker.	

Accessories

LBC 1256/00 EVAC Connection Adapter	LBC1256/00
3-pole screw connector, 100 pieces	

LBC 3086/41 Ceiling Loudspeaker



4

Features

- ▶ Suitable for speech and music reproduction
- ▶ Flush-mounting in ceiling cavity
- ▶ Easy to install
- ▶ Simple power setting
- ▶ Optional certified fire dome
- ▶ Unobtrusive in virtually all interiors
- ▶ Complies with international installation and safety regulations
- ▶ BS 5839-8 compliant

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal evacuation announcements is governed by regulations. The LBC 3086/41 is designed for use in voice alarm systems and is compliant with British standard BS 5839-8.

Functions

The loudspeaker unit is a 6 W, dual-cone loudspeaker with an integrated circular metal grille. A 100 V matching transformer is mounted on the back. The appearance and neutral white RAL color have been selected to be unobtrusive in virtually all interiors.

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 ceramic terminal blocks,

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.

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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
EVAC		acc. to BS 5839-8

Installation/Configuration Notes

Installation

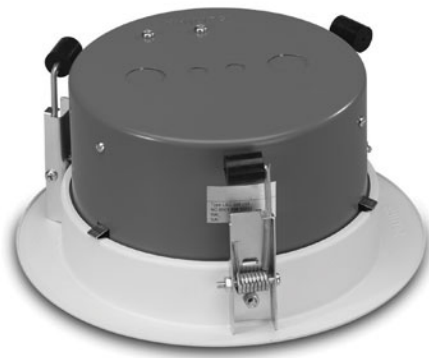
The assembly is quickly installed into a hole in the ceiling cavity. A separate mounting ring, secured by three integral spring-loaded ceiling locking clamps (for ceilings and wall boards from 9 to 25 mm thick) holds it in place. The clamps are provided with protective rubbers to avoid damaging soft ceiling material. A circular template for marking a 196 mm (7.7 in) diameter hole is included with the loudspeaker. The loudspeaker unit is held in the mounting ring with a bayonet fitting.

Terminal Block

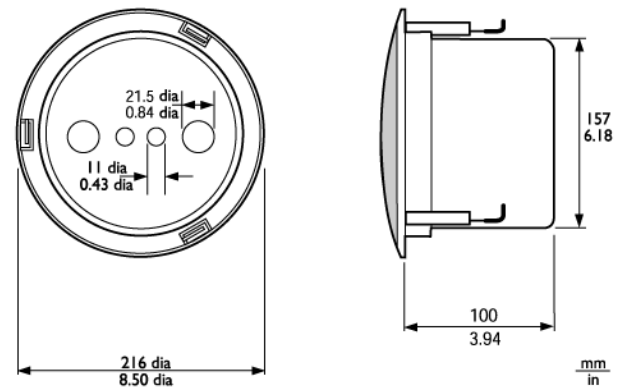
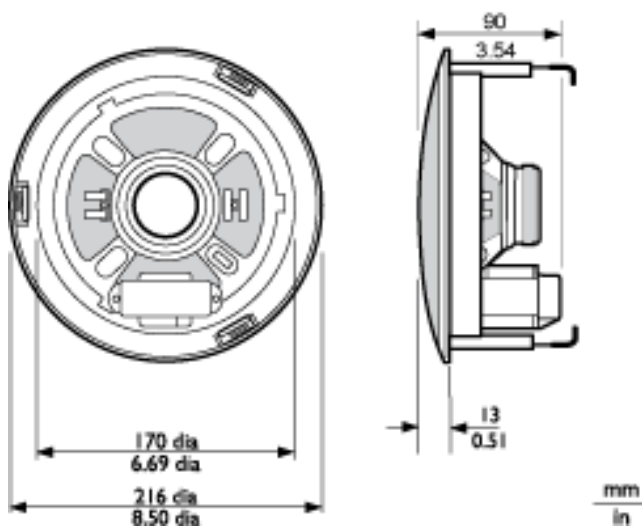
The unit has a three-way terminal block with screw connections suitable for loop-through wiring. Four primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power, quarter-power or eighth power radiation (i.e. in 3 dB steps).

LBC 3081/02 Fire Dome Assembly

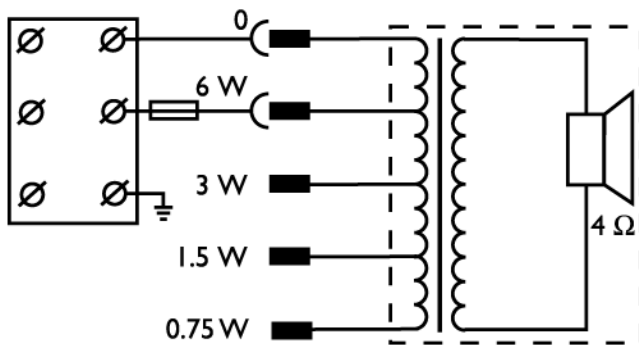
During a fire, the ceiling cavity in which loudspeakers are installed can allow flames to spread throughout a building. To prevent fire entering the cavity via the loudspeaker, the ceiling loudspeaker can be fitted with a protective steel fire dome (LBC 3081/02).



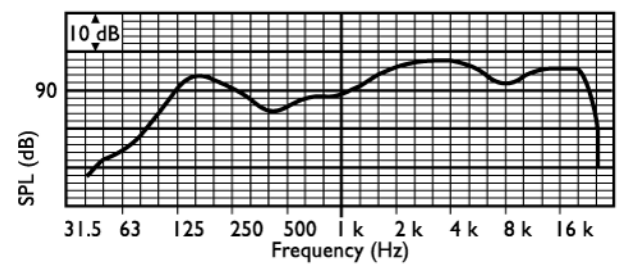
LBC 3086/41 with LBC 3081/02 fire dome assembly

LBC 3086/41 with LBC 3081/02 fire dome assembly
dimensions in mm (in)

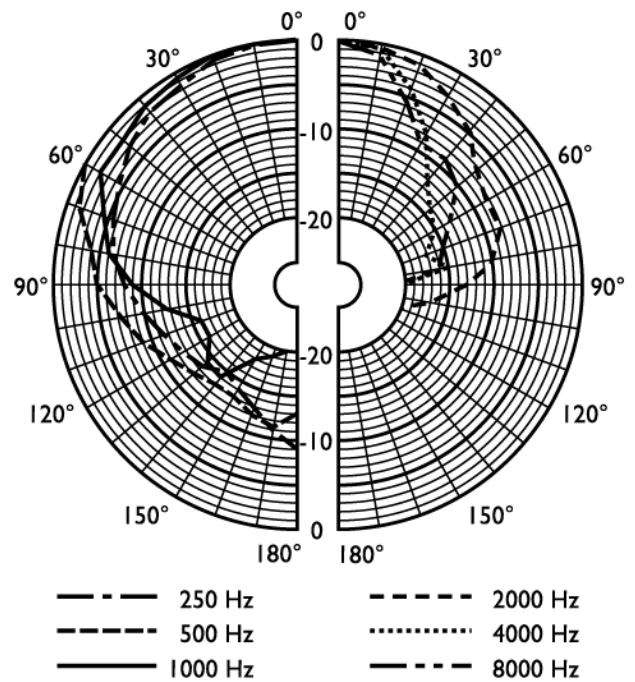
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	92	90	85	90	96	98	92
SPL max.	100	98	93	98	104	106	100
Q-factor	4.8	4.4	2.5	3.7	8.3	20	21
Efficiency	0.42	0.29	0.16	0.34	0.6	0.4	0.1

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
H. angle	160	160	180	160	90	50	40
V. angle	160	160	180	160	90	50	40

Acoustical performance specified per octave

Parts Included

Quantity	Components
1	LBC 3086/41 Ceiling Loudspeaker
1	196 mm circular template

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	98 dB / 90 dB (SPL)
Effective frequency range (-10 dB)	90 Hz to 20 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	180° / 50°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	3-pole push-in terminal block

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

Mechanical

Diameter	216 mm (8.5 in)
Maximum depth	90 mm (3.54 in)
Mounting cut-out	196 mm (7.7 in)
Weight	1.3 kg (2.86 lb)
Color	off-white (RAL 9010)
Magnet weight	150 g (5.3 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3086/41 Ceiling Loudspeaker	LBC3086/41
6 W, dual-cone loudspeaker with an integrated circular metal grille.	

Accessories

LBC 3081/02 Fire Dome	LBC3081/02
metal fire dome for LBC 3086/41 ceiling loudspeaker	

LBC 3087/41 Ceiling Loudspeaker



Features

- ▶ Suitable for speech and music reproduction
- ▶ Increased sensitivity
- ▶ Flush-mounted in ceilings
- ▶ Screw mounting
- ▶ Simple power setting
- ▶ Optional certified fire dome
- ▶ Unobtrusive white metal grille
- ▶ Ball-proof
- ▶ Complies with international installation and safety regulations
- ▶ BS 5839-8 compliant

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal evacuation announcements is governed by regulations. The LBC 3087/41 is designed for use in voice alarm systems and is compliant with British standard BS 5839-8.

Functions

The LBC 3087/41 is an economic flush-mounting ceiling loudspeaker for general-purpose applications. It is a full-range loudspeaker for speech and music reproduction in shops, department stores, schools, offices, sports halls, hotels and restaurants.

The LBC 3087/41 has a single-piece, 6 W, dual-cone loudspeaker. A 100 V matching transformer is mounted on the back of the frame. The circular metal grille is an integrated part of the front, and is finished in an unobtrusive white color (RAL 9010)

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 ceramic terminal blocks, 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.

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.

Region	Certification
Europe	CE Declaration of Conformity
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
Ball-proof	acc. to DIN 18032-3

Installation/Configuration Notes

Installation

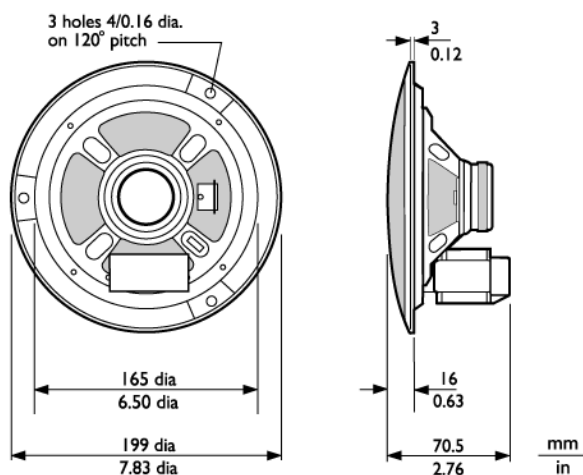
The assembly is quickly installed into a hole in the ceiling cavity and secured with three white-colored screws (supplied). A circular template for marking a 165 mm (6.5 in) diameter hole is included with the loudspeaker.

Terminal Block

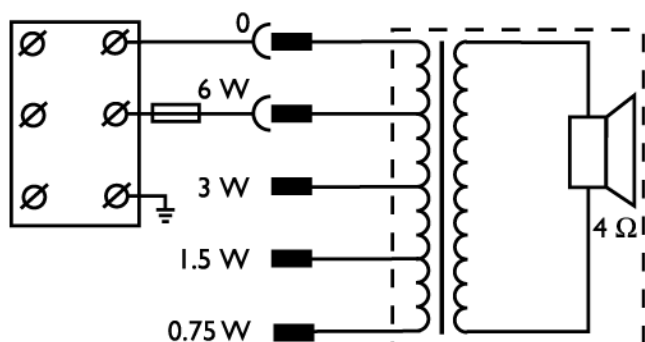
The unit has a three-way terminal block with screw connections suitable for loop-through wiring. Four primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power, quarter-power or eighth power radiation (i.e. in 3 dB steps).

Fire dome

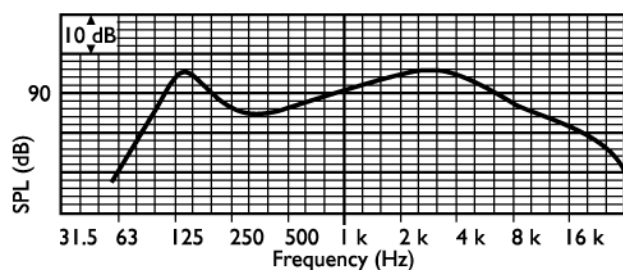
During a fire, the ceiling cavity in which loudspeakers are installed can allow flames to spread throughout a building. To prevent fire entering the cavity via the loudspeaker, the ceiling loudspeaker can be fitted with a protective steel fire dome (LBC 3080/01). This optional fire dome is mounted on the loudspeaker assembly using four self-tapping screws, supplied as standard. There are four knock-out holes; two (2) for rubber grommets (supplied) and two (2) for cable glands. (PG13).



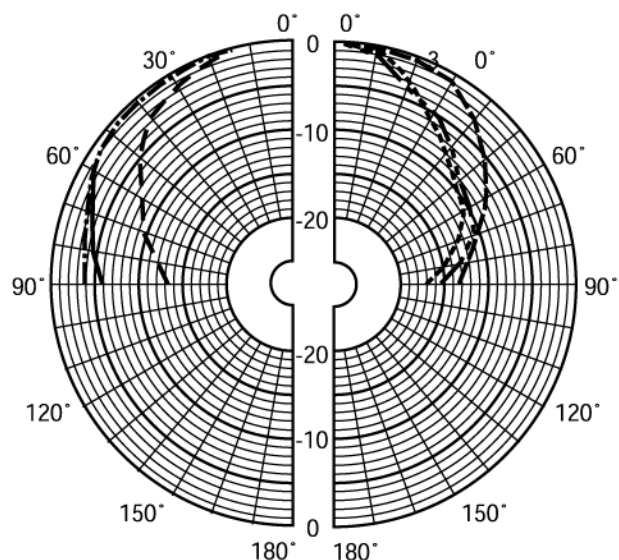
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	94	91	86	89	94	94	86
SPL max.	102	99	94	97	102	102	94
Q-factor	3	4.7	2.3	4.5	6.6	11	17
Efficiency	1.1	0.4	0.2	0.22	0.48	0.3	0.03
H. angle	170	150	180	160	100	65	55
V. angle	170	150	180	160	100	65	55

Acoustical performance specified per octave

Parts Included

Quantity	Component
1	LBC 3087/41 Ceiling Loudspeaker
3	White colored screws
1	165 mm circular template

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	97 dB / 89 dB (SPL)
Effective frequency range (-10 dB)	80 Hz to 18 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	160° / 65°
Rated voltage	100 V

Rated impedance	1667 ohm
Connector	3-pole screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	199 mm (7.8 in)
Maximum depth	70.5 mm (2.8 in)
Mounting cut-out	165 + 5 mm (6.5 + 0.20 in)
Speaker diameter	152.4 mm (6 in)
Weight	720 g (1.6 lb)
Color	Off-white (RAL 9010)
Magnet weight	80 g (2.8 oz)

Environmental

Operating temperature	-25 to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3087/41 Ceiling Loudspeaker	LBC3087/41
6 W, dual-cone flush-mounting ceiling loudspeaker for general-purpose applications.	

Accessories

LBC 3080/01 Fire Dome	LBC 3080/01
metal fire dome for the LBC 3087/41, LBC 3090/01 and LBC 3090/31 ceiling loudspeakers	

LBC 3090/01 Ceiling Loudspeaker



4

Features

- ▶ Suitable for speech and music reproduction
- ▶ Increased sensitivity
- ▶ Flush-mounting in ceiling cavity
- ▶ Easy to install
- ▶ Protective dust cover
- ▶ Optional certified fire dome
- ▶ Simple power setting
- ▶ Matching surface mounting box
- ▶ Comply with international safety regulations

The LBC 3090/01 is an economic flush-mounting ceiling loudspeaker for general purpose applications. It is a full range loudspeaker for speech and music reproduction in shops, department stores, schools, offices, sports halls, hotels and restaurants.

Functions

The LBC 3090/01 has a single-piece, 6 W dual cone loudspeaker. A 100 V matching transformer is mounted behind the front panel assembly. The moulded plastic front panel is mounted onto the loudspeaker's metal frame, and a dust cover protects the rear. The appearance and colour are unobtrusive in any interior.

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 manufactured from self-extinguishing high-impact ABS material (according to UL 94V0).

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065

Installation/Configuration Notes

Installation

Installation is both quick and easy, as the unit(s) have two built-in spring-loaded locking clamps that secure them into holes in the ceiling (for suspended ceilings and wall boards from 9 to 25 mm thick). Alternatively, they can be fixed with four screws (using pre-drilled holes) in ceiling or wall panels less than 9 mm thick. A circular template for marking a 182 mm (7.1 in) diameter hole is included with the loudspeaker.

Terminal Block

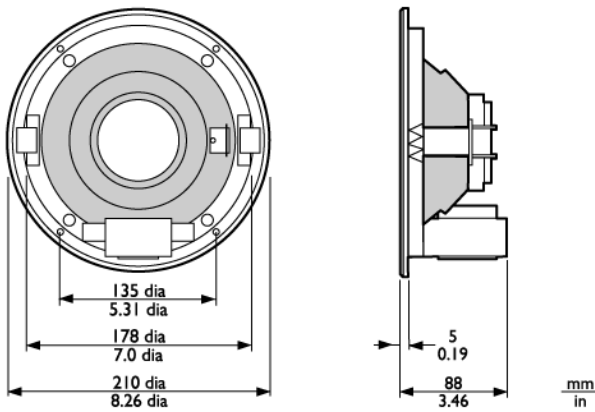
The unit has a two-way terminal block with push connections suitable for loop-through wiring. Three primary taps are provided on the matching transformer to allow selection of nominal full- power, half-power or quarter-power radiation (i.e. in 3 dB steps).

LBC 3091/01 Surface Mounting Box

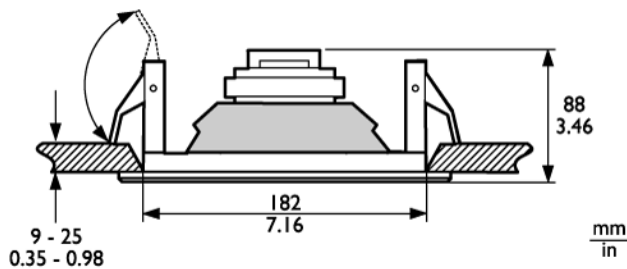
For mounting onto the surface of a wall or ceiling, the color-matched surface mounting box LBC 3091/01 is available.

LBC 3080/01 Fire Dome

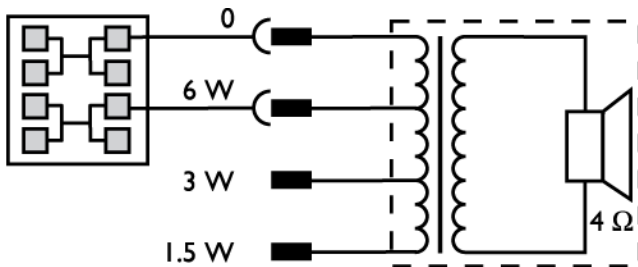
During a fire, the ceiling cavity can allow fire or smoke to spread throughout a building. To inhibit fire entering the cavity via the ceiling loudspeaker, it can be fitted with an LBC 3080/01 steel fire dome. This is mounted on the loudspeaker assembly using four self-tapping screws supplied with the fire dome. The fire-dome has knock-out holes for two grommets (supplied) and two cable glands (PG 13).



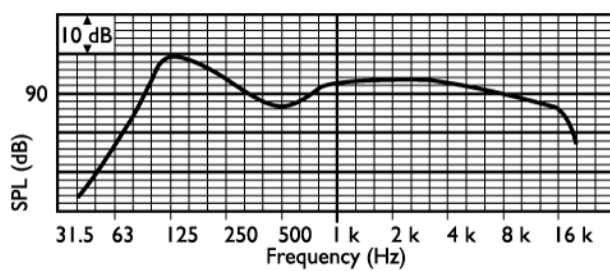
Dimensions in mm (in)



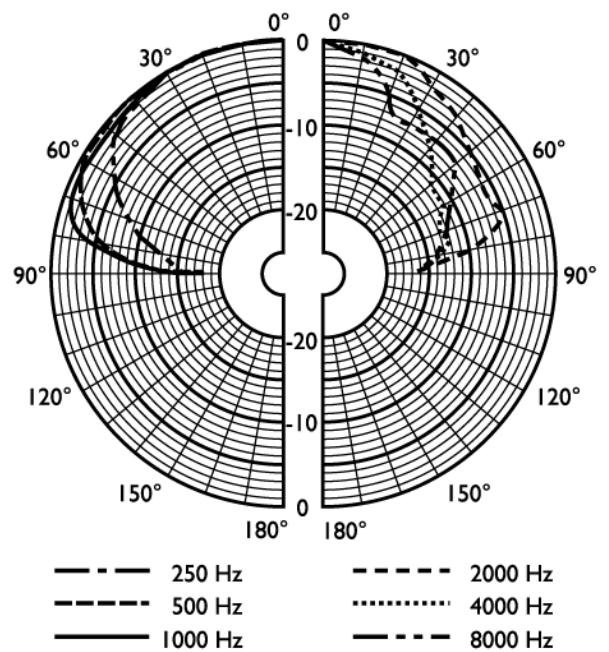
Dimensions in mm (in)



Circuit diagram



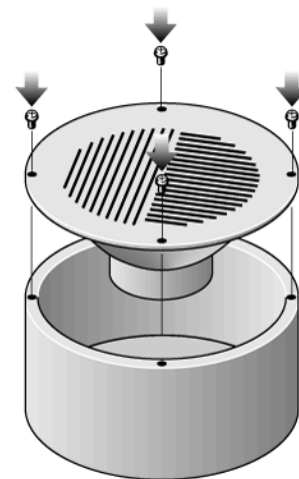
Frequency response



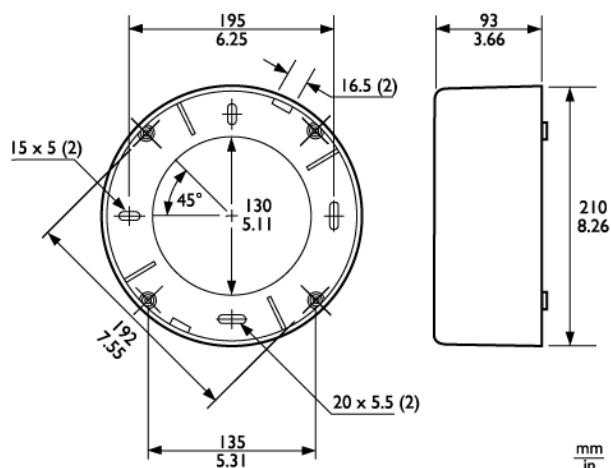
Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	94	91	89	91	93	95	89
SPL max.	102	99	97	99	101	103	97
Q-factor	4.8	5	3	3.4	6.3	18	20
Efficiency	0.66	0.32	0.34	0.46	0.4	0.22	0.05
H. angle	150	140	180	160	140	55	45
V. angle	150	140	180	160	140	55	45

Acoustical performance specified per octave

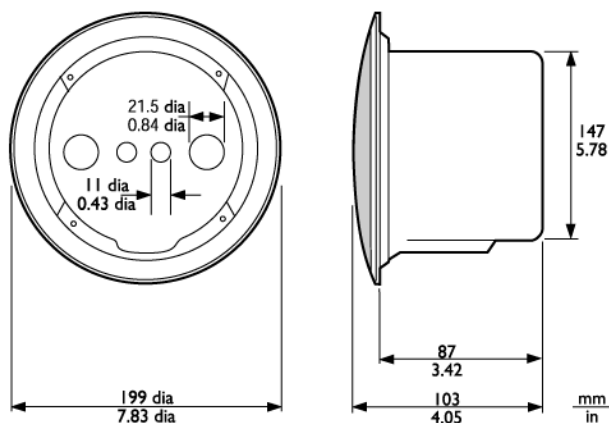
LBC 3091/01 Surface Mounting Box

LBC 3090/01 and LBC 3091/01 assembly



Dimensions in mm (in)

LBC 3080/01 Fire Dome



LBC 3090/01 + LBC 3080/01 fire dome assembly dimensions in mm (in)

Parts Included

Quantity	Component
1	LBC 3090/01 Ceiling Loudspeaker
1	182 mm circular template

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	99 dB / 91 dB (SPL)
Effective frequency range (-10 dB)	70 Hz to 18 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	160° / 55°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	2-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	210 mm (8.3 in)
Maximum depth	88 mm (3.5 in)
Mounting cut-out	182 + 5 mm (7.2 in)
Speaker diameter	152.4 mm (6 in)
Weight	1.1 kg (2.4 lb)
Color	Off-white (RAL 9010)
Magnet weight	150 g (5.3 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

LBC 3091/01

Diameter	210 mm (8.3 in)
Maximum depth	93 mm (3.6 in)
Weight	290 g (0.6 lb)
Color	Off white (RAL 9010)

LBC 3080/01

Diameter	147 mm (5.8 in)
Maximum depth	87 mm (3.4 in)
Weight	360 g (0.8 lb)
Color	Off white (RAL 9010)
Certified B15	acc. to DIN 4102

Ordering Information**LBC 3090/01 Ceiling Loudspeaker** **LBC3090/01**

6 W dual cone economic flush-mounting ceiling loudspeaker for general purpose applications.

Accessories**LBC 3091/01 Surface Mounting Box** **LBC 3091/01****LBC 1256/00 EVAC Connection Adapter** **LBC1256/00**

3-pole screw connector, 100 pieces

LBC 3080/01 Fire Dome **LBC 3080/01**

metal fire dome for the LBC 3087/41, LBC 3090/01 and LBC 3090/31 ceiling loudspeakers

LBC 3090/31 Ceiling Loudspeaker



4

Features

- ▶ Suitable for speech and music reproduction
- ▶ Increased sensitivity
- ▶ Flush-mounting in ceiling cavity
- ▶ Easy to install
- ▶ Simple power setting
- ▶ Protective dust cover
- ▶ Optional certified fire dome
- ▶ Unobtrusive in virtually all interiors
- ▶ Ball-proof
- ▶ Complies with international installation and safety regulations

Bosch loudspeakers offer a combination of quality, performance and innovation in public address. They are the result of over half a century's experience in professional audio, and meet virtually all sound reinforcement system requirements.

Functions

A flush-mounting ceiling loudspeaker is available for general purpose applications. This full-range loudspeaker offers a high sound pressure level and a wide frequency range, and is suitable for both speech and music reproduction in shops, department stores, schools, offices, sports halls, hotels and restaurants.

The loudspeaker assembly consists of a single-piece, 6 W dual-cone loudspeaker and frame, with a 100 V matching transformer mounted on the back. A circular metal grille is integrated with the front. The appearance and neutral white colour have been selected to be unobtrusive in virtually all interiors. A dust cover protects the rear.

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.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Ball-proof		acc. to DIN 18032-3

Installation/Configuration Notes

Installation

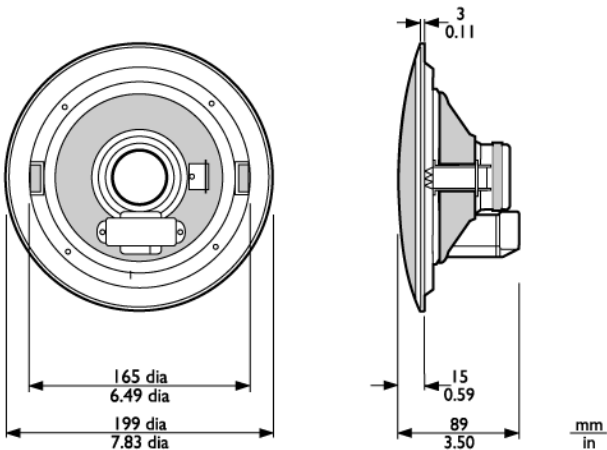
The assembly can be simply and quickly installed into a hole in the ceiling cavity and secured by two integral spring-loaded ceiling locking clamps (for ceilings and wall boards from 9 to 25 mm thick). A circular template for marking a 172 mm (6.7 in) diameter hole is included with the loudspeaker.

Terminal Block

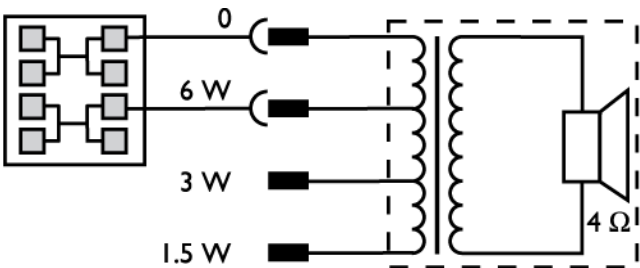
The unit has a two-way terminal block with push connections suitable for loop-through wiring. Three primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power radiation (i.e. in 3 dB steps).

LBC 3080/01 Fire Dome

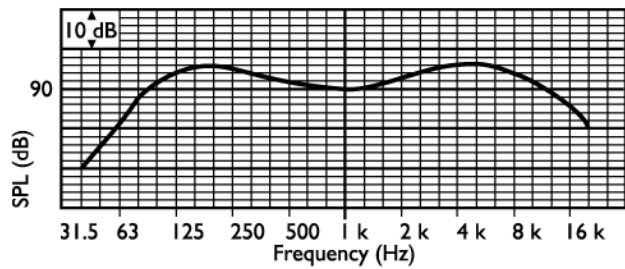
During a fire, the ceiling cavity can allow fire or smoke to spread throughout a building. To inhibit fire entering the cavity via the ceiling loudspeaker, it can be fitted with an LBC 3080/01 steel fire dome. This is mounted on the loudspeaker assembly using four self-tapping screws supplied with the fire dome. The fire-dome has knock-out holes for two grommets (supplied) and two cable glands (PG 13).



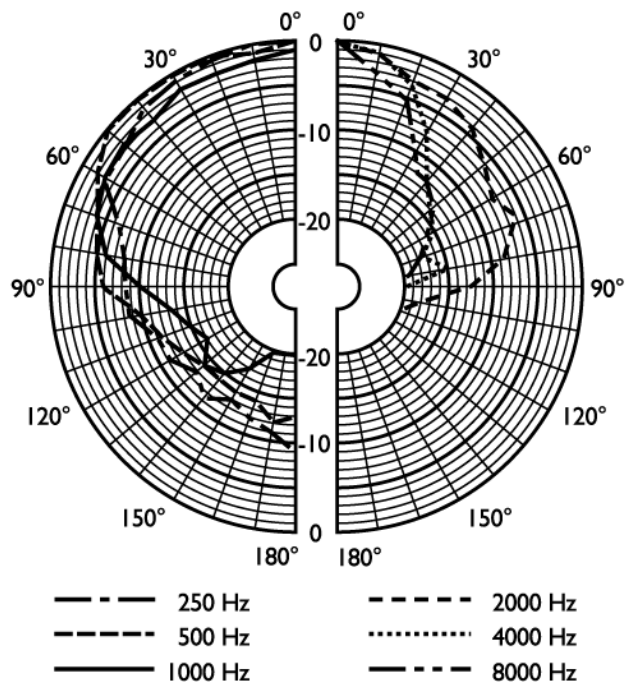
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

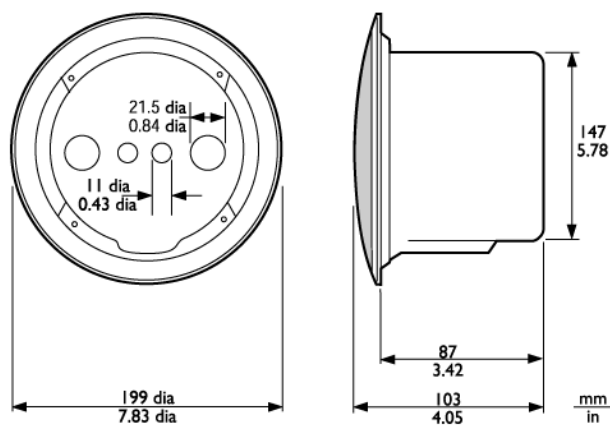
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	94	91	88	91	93	96	92
SPL max.	102	99	96	99	101	104	100
Q-factor	4.8	5	3	3.4	6.3	18	20
Efficiency	0.66	0.32	0.27	0.47	0.4	0.28	0.1
H. angle	150	140	180	160	140	55	45
V. angle	150	140	180	160	140	55	45

Acoustical performance specified per octave

LBC 3080/01 Fire Dome



LBC 3080/01



LBC 3090/31 + LBC 3080/01 fire dome assembly dimensions in mm (in)

Parts Included

Quantity Component

1	LBC 3090/31 Ceiling Loudspeaker
1	172 mm circular template

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	99 dB / 91 dB (SPL)
Effective frequency range (-10 dB)	70 Hz to 18 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	160° / 55°
Rated voltage	100 V
Rated impedance	1667 ohm
Connector	2-pole push-in terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	199 mm (7.8 in)
Maximum depth	89 mm (3.5 in)
Mounting cut-out	172 mm (6.5 in)
Speaker diameter	152.4 mm (6 in)
Weight	990 g (2.2 lb)
Color	Off-white (RAL 9010)
Magnet weight	150 g (5.3 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

LBC 3080/01

Diameter	147 mm (5.8 in)
Maximum depth	87 mm (3.4 in)
Weight	360 g (0.8 lb)
Color	Off white (RAL 9010)
Certified B15	acc. to DIN 4102

Ordering Information

LBC 3090/31 Ceiling Loudspeaker

LBC3090/31

6 W dual-cone loudspeaker and frame, with a 100 V matching transformer mounted on the back.

Accessories

LBC 1256/00 EVAC Connection Adapter

LBC1256/00

3-pole screw connector, 100 pieces

LBC 3080/01 Fire Dome

LBC 3080/01

metal fire dome for the LBC 3087/41, LBC 3090/01 and LBC 3090/31 ceiling loudspeakers

LBC 3099/41 Ceiling Loudspeaker



Features

- ▶ **Excellent speech and music reproduction**
- ▶ **High sound pressure level**
- ▶ **Ideal for high-ceiling applications**
- ▶ **Flush mounted in ceilings**
- ▶ **Clamp mounting**
- ▶ **Simple power setting**
- ▶ **Unobtrusive white metal grille**
- ▶ **Ball-proof**
- ▶ **Complies with international installation and safety regulations**
- ▶ **Compliant with EVAC standards**

The LBC 3099/41 is a flush-mounting ceiling loudspeaker for applications where extra power is required, such as rooms with high ceilings. It delivers a high sound pressure level and has a wide frequency range to ensure excellent speech intelligibility and good quality music reproduction. It is used in applications like shops, department stores, schools, offices, sports halls, hotels and restaurants.

Functions

The LBC 3099/41 has a single-piece, 24 W, dual-cone loudspeaker. A 100 V matching transformer is mounted on the back of the frame. An attractive metal grille is integrated with the front, and finished in an unobtrusive white color (RAL 9010).

Voice alarm loudspeaker

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal evacuation announcements is governed by regulations. The LBC 3099/41 is designed for use in voice alarm systems and is compliant with EVAC standards.

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 LBC 3082/00 to increase protection of the cable termination.

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.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
Ball-proof	acc. to DIN 18032-3

Installation/Configuration Notes

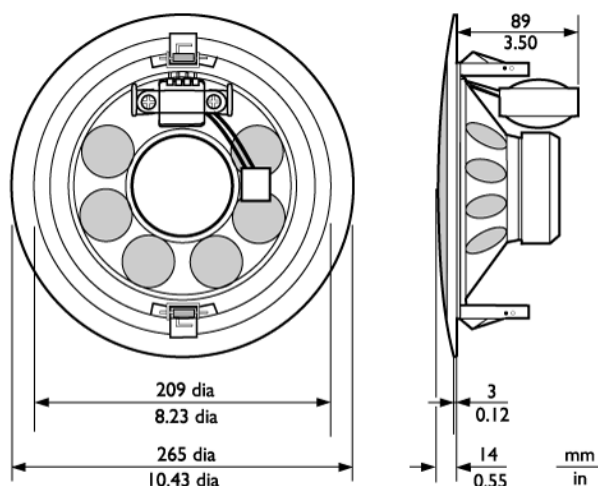


LBC 3099/41 with LBC 3082/00 fire dome assembly

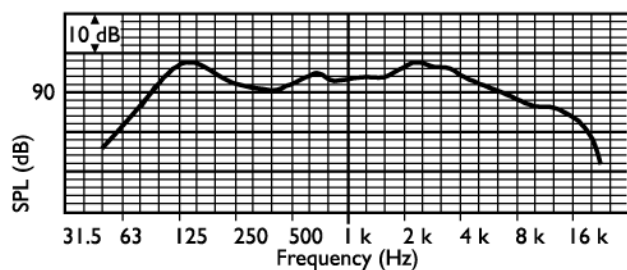
The unit has two built-in spring-loaded locking clamps to secure it into a hole in suspended ceilings and wallboards from 9 to 25 mm (0.35 to 1.0 in) thick. A circular template for marking a 210 mm (8.3 in) diameter hole is included with the loudspeaker.

Terminal Block

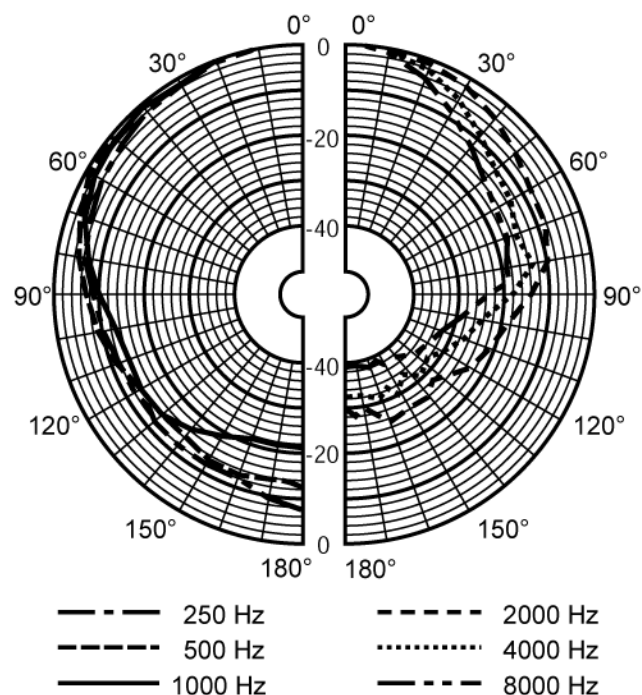
The unit has a three-way terminal block with screw connections (including earth) suitable for loop-through wiring. Three primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).



Dimensions in mm (in)



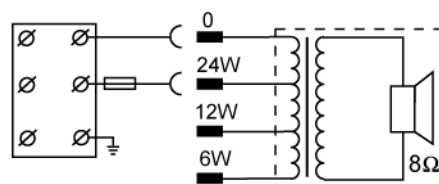
Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	94	92	90	92	94	93	86
SPL max.	108	106	104	106	108	107	100
Q-factor	3.7	4.5	2.8	5.2	8.9	17.4	34
Efficiency	0.85	0.44	0.63	0.38	0.36	0.14	0.02
H. angle	180	180	180	160	90	60	40
V. angle	180	180	180	160	90	60	40

Acoustical performance specified per octave



Circuit diagram

Parts Included

Quantity	Components
1	LBC 3099/41 Ceiling Loudspeaker
1	210 mm (8.3 in) circular template

Technical Specifications

Electrical*

Maximum power	36 W
Rated power (PHC)	24 / 12 / 6 W
Sound pressure level at 24 W/1 W (1 kHz, 1 m)	106 dB / 92 dB (SPL)
Effective frequency range (-10 dB)	60 Hz to 18 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	160° / 60°
Rated voltage	100 V
Rated impedance	417 ohm
Connector	3-pole screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Diameter	265 mm (10.4 in)
Maximum depth	89 mm (3.5 in)
Mounting cut-out	210 mm (8.3 in)
Speaker diameter	203.2 mm (8 in)
Weight	1.8 kg (4 lb)
Color	White (RAL 9010)
Magnet weight	283 g (10 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3099/41 Ceiling Loudspeaker LBC3099/41

24 W, dual-cone loudspeaker. A 100 V matching transformer is mounted on the back of the frame.

Accessories

LBC 3082/00 Fire Dome LBC 3082/00

metal fire dome for LBC 3099/41 ceiling loudspeaker

LC1 Modular Ceiling Loudspeaker Range



4

Features

- ▶ **Excellent speech and music reproduction**
- ▶ **Easy installation with one grille size and one complete set of accessories**
- ▶ **Suitable for 70 V and 100 V**
- ▶ **Choice of different ceiling mounting methods**
- ▶ **Optional Pilot Tone indication**
- ▶ **Provision for mounting of the optional line / loudspeaker supervision board**
- ▶ **Installation friendly fire-dome with innovative ceramic connector (patent pending)**
- ▶ **BS 5839-8 and EN 60849 compliant**

The LC1 Modular Ceiling Loudspeaker range can be used for a wide variety of ceiling environments. They provide excellent speech and music in indoor public address applications. The range offers a choice of four loudspeakers distinguished by input power, opening angle and sound reproduction. It includes two 6 W single cone loudspeakers offering a choice of opening angle and two high performance 12 W and 24 W coaxial loudspeaker drivers. They all have the same grille size and can be used in combination with the same mounting accessories.

The loudspeaker frame includes provision for mounting the optional pilot-tone indication board or WLS board and has standard a light conductor to indicate the pilot-tone status.

Functions

Voice Alarm applications

Voice alarm loudspeakers are specifically designed for use in buildings where system performance for verbal evacuation announcements is governed by regulations. The LC1 Modular Ceiling Loudspeaker range is designed for use in voice alarm systems and is compliant with British standard BS 5839-8.

Protection

The loudspeakers have built-in protection to ensure that fire damage to the loudspeakers does not cause failure of the connected circuit. In this way system integrity is maintained, ensuring loudspeakers in other areas can still be used to inform people of the situation.

The loudspeakers can also be used in combination with a metal fire-dome to increase protection of the cable termination.

Connections

The loudspeakers have a ceramic screw-terminal connection block, thermal fuse and heat-resistant, high-temperature wiring.

Certifications and Approvals

All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 68-5 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 UL 94 V0.

Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8 part 8
	acc. to EN 60849

Installation/Configuration Notes

Installation

The LC1 Modular Ceiling Loudspeaker range is very installation friendly. The loudspeaker consists of a frame with the loudspeaker driver and metal grille with integrated light guide, matching transformer and ceramic screw terminal connection block. On the bracket frame are provisions for mounting the optional pilot-tone indication board and optional line/loudspeaker surveillance board.

Power tapping on the 70 V / 100 V matching transformer allows selection of full-power, half-power, quarter-power and eight-power radiation.

Ordering information

Due to the modular concept of this system, it is important to order not only the ceiling loudspeaker LC1-xMxxE, but also the flush ceiling mounting accessory of your choice, as mentioned here below. The loudspeakers can be flush mounted into the ceiling by means of the “U” shaped Metal Mounting support bracket LC1-MMSB or the ABS Ceiling Mounting ring LC1-CMR with optional Back Box LC1-CBB.

LC1-MMSB Mounting support bracket

The metal mounting support bracket has two ceiling clamps, which are secured with thumb screws in the ceiling hole. The bracket is also provided with two 4 mm holes for mounting the bracket with two screws into thin (metal) ceilings. Two spring catchers (for accepting the V-shaped loudspeaker springs) are provided. The bracket provides a provision for attaching an optional safety steel cord.



LC1-MMSB Metal Mounting Support Bracket

LC1-CMR mounting ring

The LC1_CMR is an alternative for the ceiling mounting support bracket. The ABS mounting ring has two screw driving clamps to fix the mounting ring into the ceiling board. Inside the ring, two spring catchers (for accepting the V-shaped loudspeaker springs) are provided.

LC1-CBB back box

On top of the mounting ring, provisions are present to “click-on” the optional back box. The combination of mounting ring and back box prevents sound traveling via the ceiling cavity to adjacent areas, and fully protects the loudspeaker from dust, falling objects.



LC1-CMR and LC1-CBB Ceiling Mounting Ring and Back Box assembly

LC1-CSMB surface mounting box

This ABS surface mounting box is available for securing the ceiling loudspeaker to walls or hard ceilings. For optional single point suspension of the assembly of ceiling loudspeaker and surface mounting box, a separate metal suspension kit, LC1-MSK is available.



LC1-CSMB Surface Mounting Box

LC1-MSK Metal suspension kit

This kit contains a tri-angled metal plate to be attached by two screws onto the rear of the surface mounting box and includes three suspension chains, converged in an eye-hook.

LC1-MFD metal fire dome

Ease of installation for individual loudspeaker and loudspeaker/fire-dome combinations. The fire dome mounting is fixed in the ceiling, prior to the ceiling speaker mounting. The fire dome has a dual connection entry, enabling loop-through cabling and provision for attaching an optional safety steel cord.

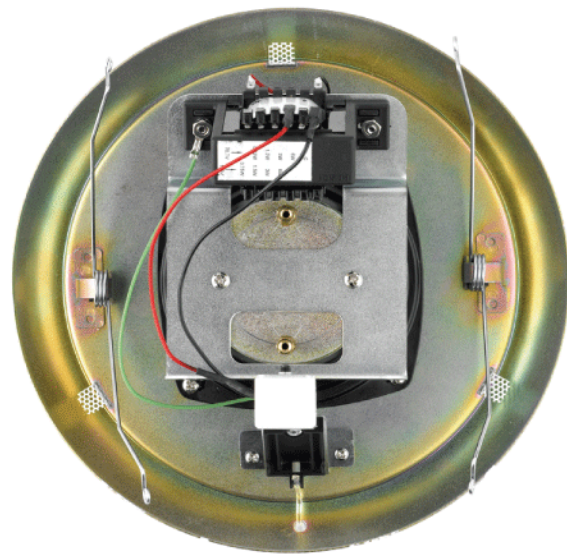
Connections are made using an innovative ceramic screw terminal connection block on the metal fire dome with loop-through facility.



LC1-MFD Metal Fire Dome with innovative ceramic connector (patent pending)

LC1-PIB Pilot-tone indication board

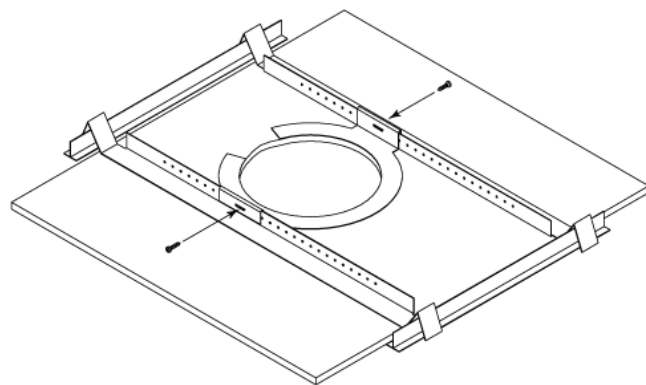
The loudspeakers have provision for optional mounting of the Pilot-tone indication board. This small PCB with LED can be fixed into a holder, connected to a light conductor standard fitted. The functioning of the loudspeaker can be visually checked by means of the flashing of the LED, integrated in the front grille rim. The required level of the pilot tone signal is 4 V rms @ 20 kHz and the load to the amplifier from these boards is negligible.



Rear view LC1-WM06E8 showing the optional mounting for LC1-PIB

LM1-TB Tile bridge / C-ring

This accessory consists of a C-ring and two tile rails, to be used for reinforce the ceiling material and to spread out the pressure from the ceiling speaker clamps. The C-ring can be guided through the cut-out opening in the ceiling and place it on the back side of the hole before inserting the loudspeaker. The tile rails are suitable for 600 mm distance ceiling tile support rails.

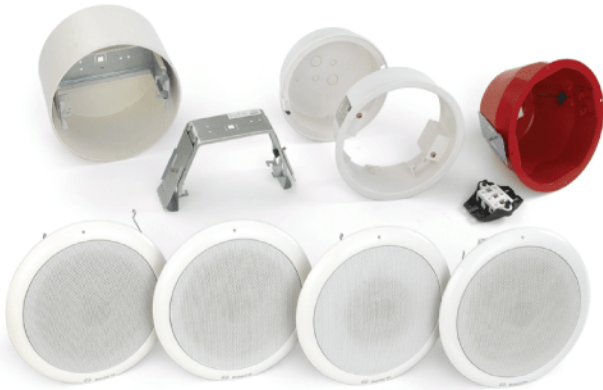


LM1-TB Tile bridge / C-Ring

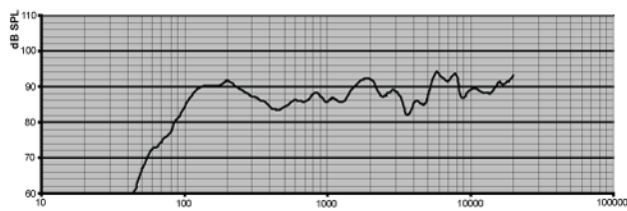
Type number overview

LC1-WM06E8	Ceiling Loudspeaker (6 W)
LC1-UM06E8	Ceiling Loudspeaker (6 W)
LC1-UM12E8	Ceiling Loudspeaker (12 W)
LC1-UM24E8	Ceiling Loudspeaker (24 W)
LC1-MMSB	Mounting support bracket
LC1-CMR	Mounting Ring
LC1-CBB	Back Box
LC1-CSMB	Surface Mounting Box
LC1-MSK	Metal Suspension Kit
LC1-MFD	Metal Fire Dome

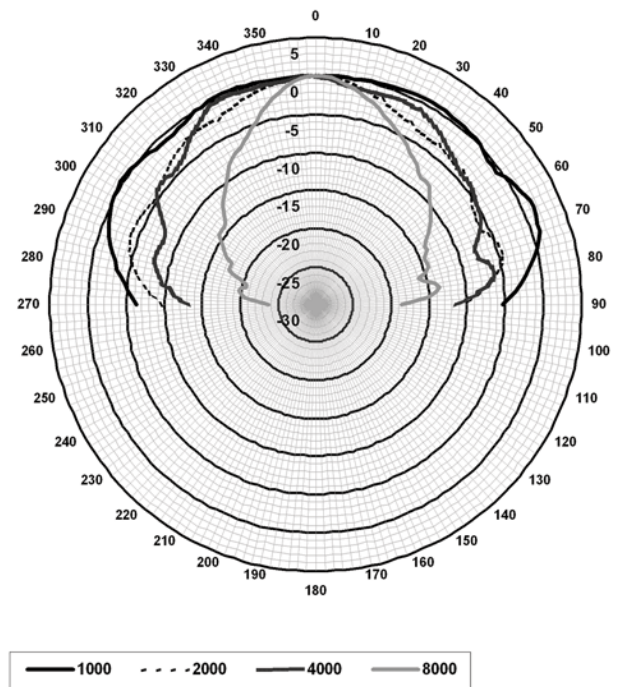
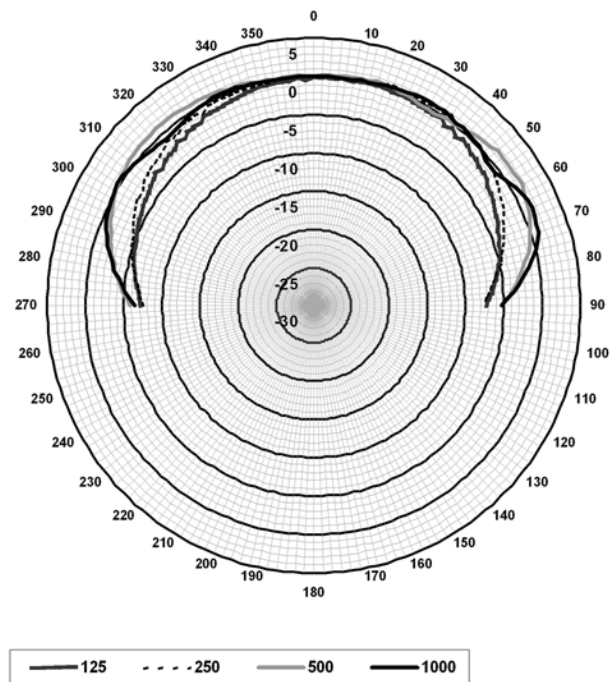
LC1-PIB	Pilot-Tone Indication Board
LM1-TB	Tile bridge / C-ring



LC1 Modular Ceiling Loudspeaker Range overview



LC1-WM06E8 Frequency response



LC1-WM06E8 Polar diagrams

Octave band sensitivity LC1-WM06E8

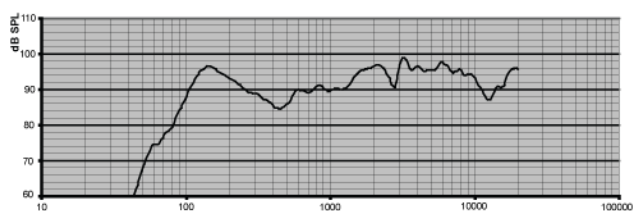
	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	89.4	-	-
250 Hz	89.7	-	-
500 Hz	85.5	-	-
1000 Hz	87.2	-	-
2000 Hz	90.3	-	-
4000 Hz	88.1	-	-
8000 Hz	92.1	-	-
A-weighted	-	86.6	93.4
Lin-weighted	-	88.7	94.6

Octave band opening angles LC1-WM06E8

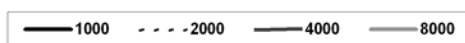
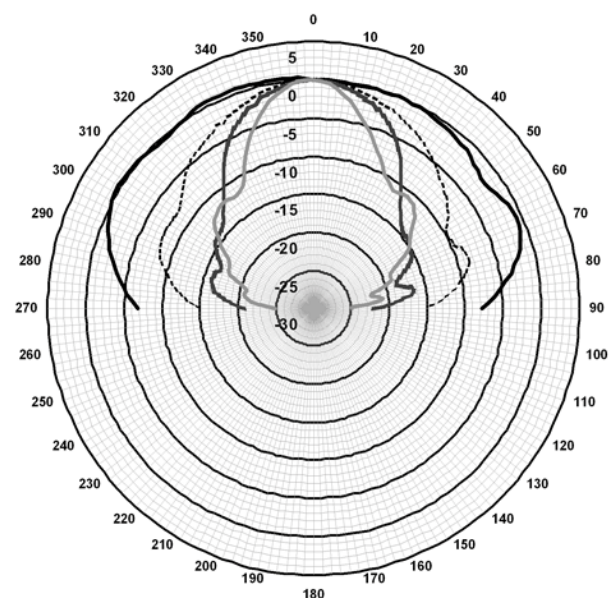
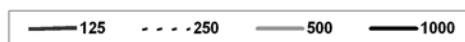
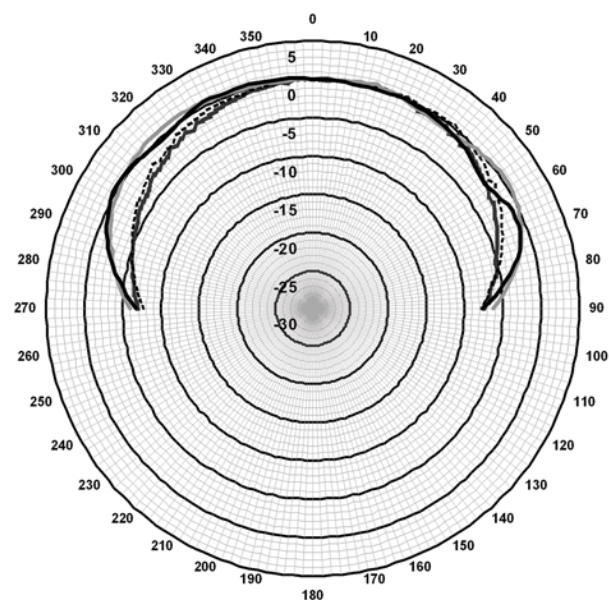
	Horizontal	Vertical
125 Hz	180	180
250 Hz	180	180
500 Hz	180	180
1000 Hz	180	180
2000 Hz	140	140
4000 Hz	124	124
8000 Hz	52	52

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dBSPL).



LC1-UM06E8 Frequency response



LC1-UM06E8 Polar diagrams

Octave band sensitivity LC1-UM06E8

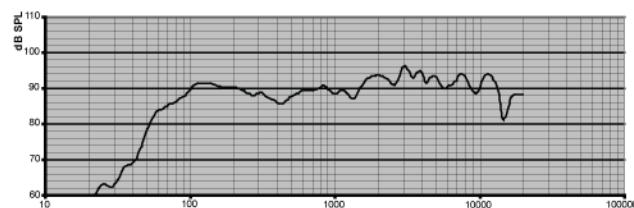
	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	94.6	-	-
250 Hz	91.4	-	-
500 Hz	87.6	-	-
1000 Hz	90.4	-	-
2000 Hz	95.1	-	-
4000 Hz	96.4	-	-
8000 Hz	95.3	-	-
A-weighted	-	91.6	98.9
Lin-weighted	-	92.7	99.1

Octave band opening angles LC1-UM06E8

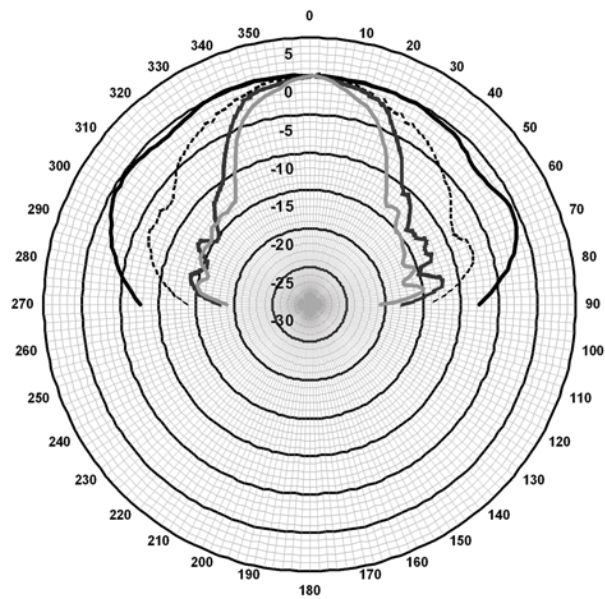
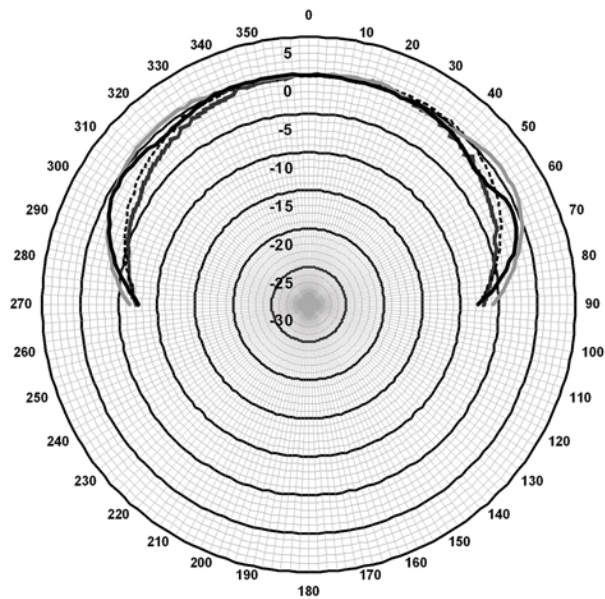
	Horizontal	Vertical
125 Hz	180	180
250 Hz	180	180
500 Hz	180	180
1000 Hz	172	172
2000 Hz	88	88
4000 Hz	55	55
8000 Hz	38	38

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dB SPL).



LC1-UM12E8 Frequency response



LC1-UM12E8 Polar diagrams

Octave band sensitivity LC1-UM12E8

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	90.8	-	-
250 Hz	89.1	-	-
500 Hz	88.1	-	-
1000 Hz	89.6	-	-
2000 Hz	92.6	-	-
4000 Hz	94.0	-	-
8000 Hz	92.2	-	-

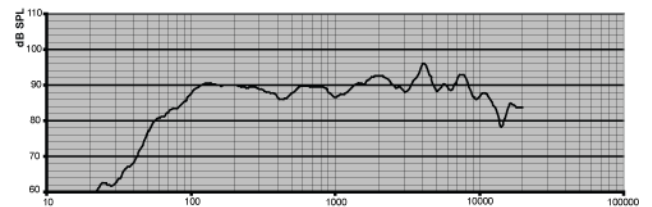
A-weighted	-	89.3	98.8
Lin-weighted	-	90.4	98.8

Octave band opening angles LC1-UM12E8

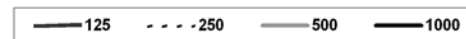
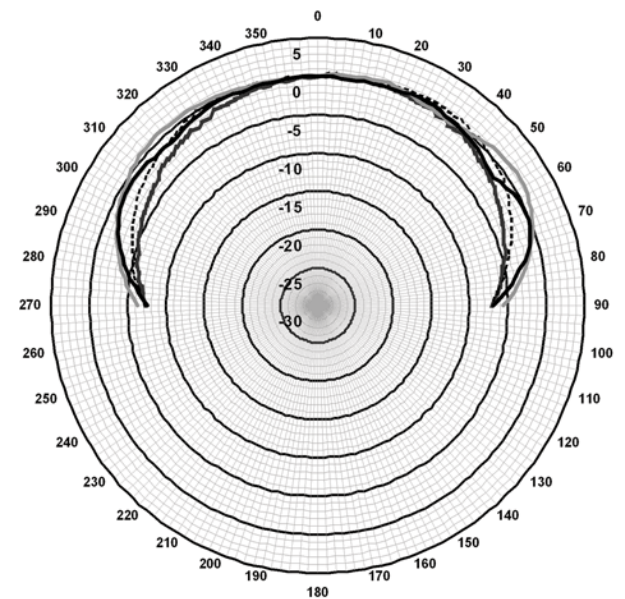
	Horizontal	Vertical
125 Hz	180	180
250 Hz	180	180
500 Hz	180	180
1000 Hz	170	170
2000 Hz	96	96
4000 Hz	55	55
8000 Hz	46	46

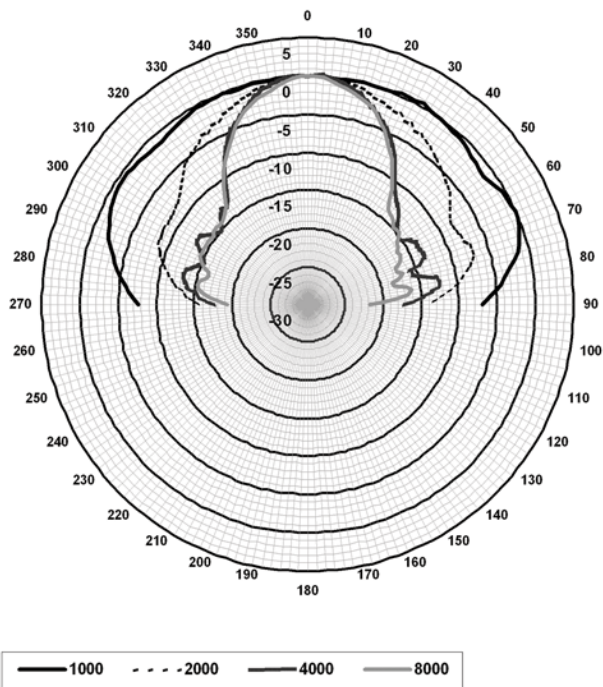
Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dBSPL).



LC1-UM24E8 Frequency response





LC1-UM24E8 Polar diagrams

Octave band sensitivity LC1-UM24E8

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/m
125 Hz	89.8	-	-
250 Hz	89.5	-	-
500 Hz	88.5	-	-
1000 Hz	89.0	-	-
2000 Hz	91.7	-	-
4000 Hz	92.6	-	-
8000 Hz	90.6	-	-
A-weighted	-	88.2	100.8
Lin-weighted	-	89.2	101.0

Octave band opening angles LC1-UM24E8

	Horizontal	Vertical
125 Hz	180	180
250 Hz	180	180
500 Hz	180	180
1000 Hz	171	171
2000 Hz	93	93
4000 Hz	53	53
8000 Hz	48	48

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dBSPL).

Parts Included

Quantity	Components
1	LC1-xMxxE8 Ceiling Loudspeaker
1	Cut-out template
1	Installation instruction

Technical Specifications

Electrical*

	LC1-WM06E8	LC1-UM06E8
Description	Ceiling loudspeaker	Ceiling loudspeaker
Maximum power	6 W	6 W
Rated power	6 W (6 / 3 / 1.5 / 0.75 W)	6 W (6 / 3 / 1.5 / 0.75 W)
Sound Pressure Level at rated power / 1 W (1 kHz, 1 m)	95 dB / 87 dB	98 dB / 90 dB
Opening angle at 1 kHz / 4 kHz (-6 dB)	180° / 124°	172° / 55°
Effective frequency range (-10 dB)	80 Hz to 20 kHz	80 Hz to 20 kHz
Rated voltage	70 V / 100 V	70 V / 100 V
Rated impedance	835 / 1667 Ohm	835 / 1667 Ohm
Connector	3-pole screw-terminal block	3-pole screw-terminal block
	LC1-UM12E8	LC1-UM24E8
Description	Ceiling loudspeaker	Ceiling loudspeaker
Maximum power	12 W	24 W
Rated power	12W(12/6/3/1.5W)	24W(24/12/6/3W)
Sound Pressure Level at rated power / 1 W (1 kHz, 1 m)	100 dB / 89 dB	103 dB / 89 dB
Opening angle at 1 kHz / 4 kHz (-6 dB)	170° / 55°	171° / 53°
Effective frequency range (-10 dB)	50 Hz to 20 kHz	50 Hz to 20 kHz
Rated voltage	70 V / 100 V	70 V / 100 V
Rated impedance	418 / 833 Ohm	208 / 417 Ohm
Connector	3-pole screw-terminal block	3-pole screw-terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

	LC1-WM06E8	LC1-UM06E8
Description	Ceiling loudspeaker	Ceiling loudspeaker
Diameter	220 mm (8.67 in)	220 mm (8.67 in)
Maximum depth	125 mm (4.92 in)	125 mm (4.92 in)
Mounting cut-out	190 mm (7.48 in)	190 mm (7.48 in)
Color	White (RAL 9010)	White (RAL 9010)
Material (frame / front grille)	Steel	Steel
Weight	1.18 kg (2.6 lb)	1.16 kg (2.56 lb)

	LC1-UM12E8	LC1-UM24E8
Description	Ceiling loudspeaker	Ceiling loudspeaker
Diameter	220 mm (8.67 in)	220 mm (8.67 in)
Maximum depth	125 mm (4.92 in)	125 mm (4.92 in)
Mounting cut-out	190 mm (7.48 in)	190 mm (7.48 in)
Color	White (RAL 9010)	White (RAL 9010)
Material (frame / front grille)	Steel	Steel
Weight	1.3 kg (2.86 lb)	1.75 kg (3.86 lb)

	LC1-MMSB	LC1-CMR
Description	Mounting Support Bracket	Ceiling Mounting Ring
Dimensions	215 x 125 x 56 mm (8.47 x 4.92 x 2.2 in)	215 x 7 mm (8.47 x 0.27 in)
Mounting cut-out	190 mm (7.48 in)	200 mm (7.88 in)
Material	Steel	ABS
Color	Zinc plated	White (RAL 9010)
Weight	390 g (0.70 lb)	210 g (0.46 lb)

	LC1-CBB	LC1-CSMB
Description	Back Box	Surface Mounting Box
Dimensions	196 x 7 mm (7.72 x 0.27 in)	220 x 25 mm (8.67 x 0.96 in)
Mounting cut-out	n.a.	n.a.
Material	ABS	ABS
Color	White (RAL 9010)	White (RAL 9010)
Weight	174 g (0.38 lb)	690 g (1.52 lb)

	LC1-MFB	LC1-PIB
Description	Metal Fire Dome	Pilot Tone indication Board
Dimensions	215 x 155 mm (8.47 x 6.1 in)	20 x 30 mm (0.78 x 1.18 in)
Mounting cut-out	190 mm (7.48 in)	n.a.
Material	Steel	n.a.
Color	Flame red (RAL 3000)	n.a.
Weight	1 kg (2.20 lb)	3 g (0.006 lb)

	LC1-TB	LC1-MSK
Description	Tile Bridge / C-Ring	Metal suspension kit
Dimensions		n.a.
Tile rails	643 x 34 mm (25.33 x 1.34 in)	n.a.
C-Ring	250 x 28 mm (9.85 x 1.10 in)	n.a.
Mounting cut-out	n.a.	n.a.
Material	Steel	Steel
Color	Zinc plated	Zinc plated
Weight	939 g (2.07 lb)	174 g (0.38 lb)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LC1-WM06E8 Ceiling Loudspeaker 6 W	LC1-WM06E8
LC1-UM06E8 Ceiling Loudspeaker 6 W	LC1-UM06E8
LC1-UM12E8 Ceiling Loudspeaker 12 W	LC1-UM12E8
LC1-UM24E8 Ceiling Loudspeaker 24 W	LC1-UM24E8

Accessories

LC1-MMSB Mounting Support Bracket has two ceiling clamps, which are secured with thumb screws in the ceiling hole.	LC1-MMSB
LC1-CMR Mounting Ring an alternative for the ceiling mounting support bracket.	LC1-CMR
LC1-CBB Back Box prevents sound traveling via the ceiling cavity to adjacent areas, and fully protects the loudspeaker from dust, falling objects.	LC1-CBB
LC1-MFD Metal Fire Dome steel Fire Dome including ceramic terminal connector with cable loop through facility.	LC1-MFD
LC1-CSMB Surface Mounting Box for securing the ceiling loudspeaker to walls or hard ceilings.	LC1-CSMB
LC1-MSK Metal Suspension Kit accessory for single point suspension of the assembly of ceiling loudspeaker of surface mounting box	LC1-MSK
LC1-PIB Pilot Tone Indication Board PCB for optional visualisation of the presence of the pilot tone (type number contains six pieces).	LC1-PIB
LM1-TB Tile Bridge / C-Ring used for reinforce the ceiling material and to spread out the pressure from the ceiling speaker clamps (type number contains two pieces).	LM1-TB

MCS 3500 Modular Ceiling Loudspeaker System



Features

- ▶ **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**
- ▶ **BS 5839-8 and EN 60849 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 metal or ABS 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 BS 5839-8 and EN 60849.

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.

Certifications and Approvals

All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 68-5 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 UL 94 V0.

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
EVAC		acc. to BS 5839-8

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 in) 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 3601/01 Circular Metal Grille

The LBC 3601/01 is a circular metal grille with a perforated pattern with quick bayonet fitting for securing to the loudspeaker frame.

LBC 3602/01 Circular ABS Grille

The LBC 3602/01 is made from self-extinguishing ABS material with an attractive perforation pattern with quick bayonet fitting for securing to the loudspeaker frame.

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.

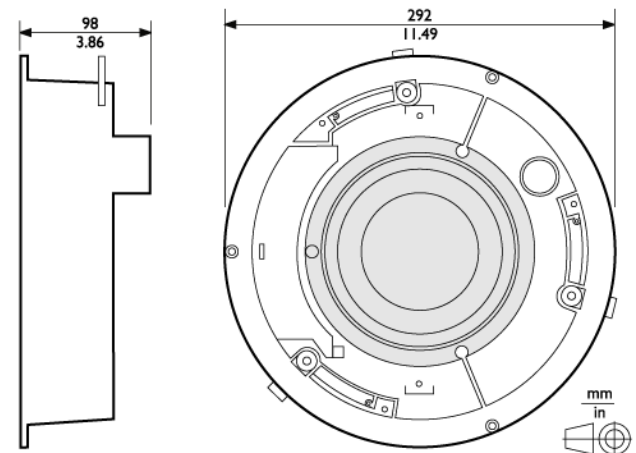
LBC 3660/01 Surface Mounting Box

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.

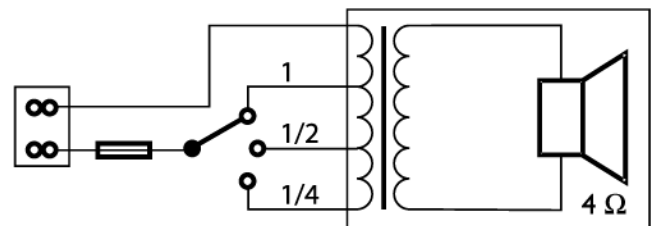
Type number overview

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 3601/01	Circular metal grille
LBC 3602/01	Circular ABS grille
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

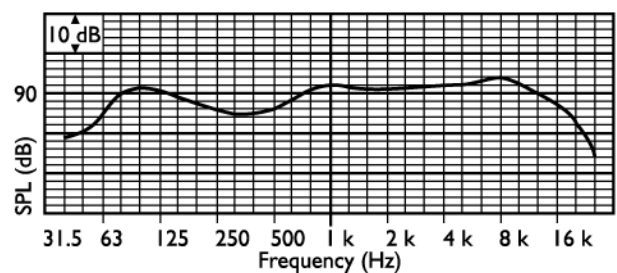
LBC 3510/40 Ceiling Loudspeaker



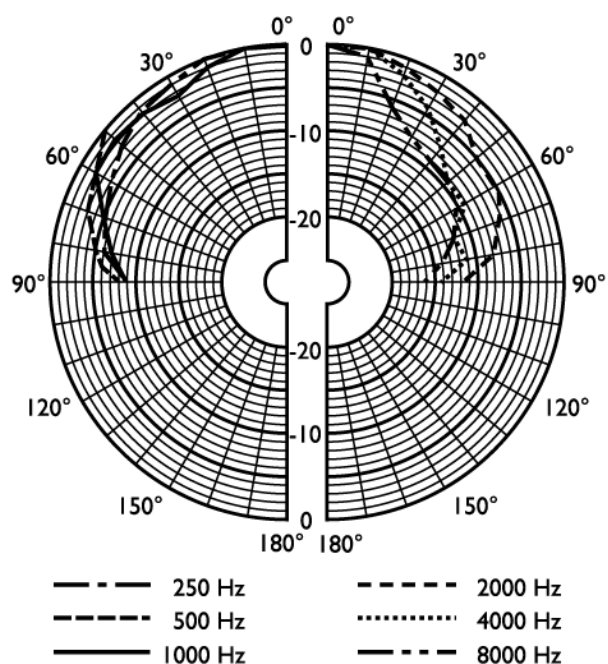
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	89	86	86	90	90	91	90
SPL max.	97	94	94	98	98	99	98
Q-factor	3.9	3.7	2.7	4	5.8	10.7	14.1
Efficiency	0.26	0.13	0.19	0.32	0.22	0.15	0.09
H. angle	160	160	170	155	135	70	40
V. angle	160	160	170	155	135	70	40

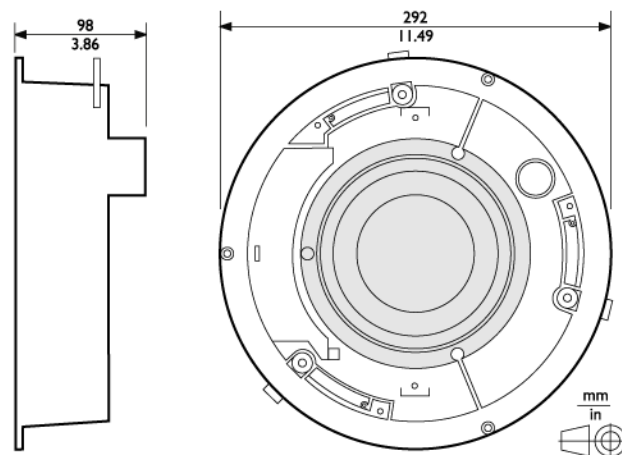
LBC 3510/40 with LBC 3601/01 or LBC 3602/01

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
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

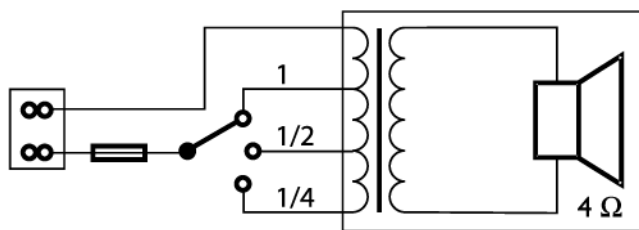
LBC 3510/40 with LBC 3603/01

Acoustical performance specified per octave

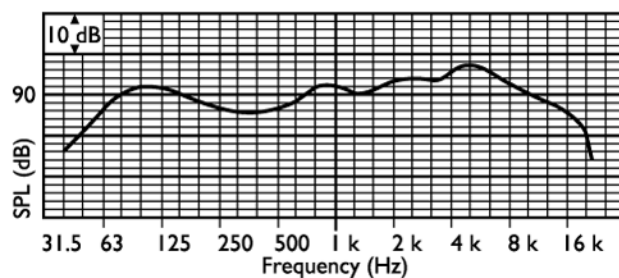
LBC 3520/40 Ceiling Loudspeaker



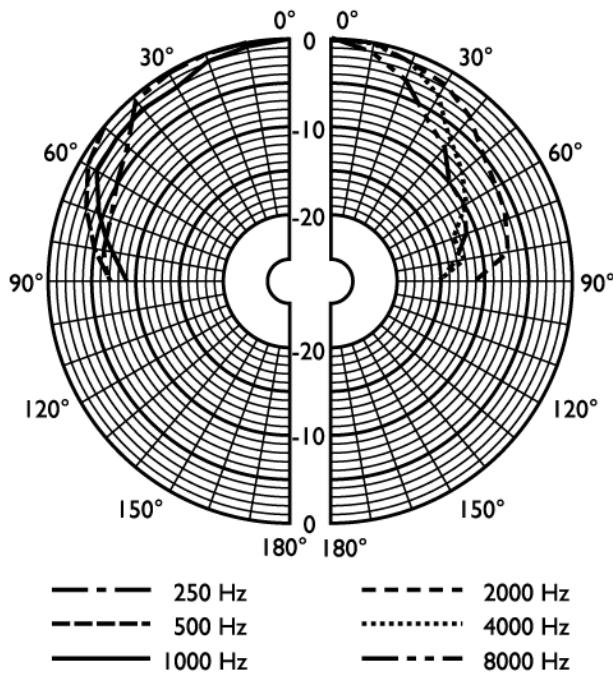
Dimensions in mm (in)



Circuit Diagram



Frequency response



Polar diagram

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	90	87	87	90	92	94	91
SPL max.	101	98	98	101	103	105	102
Q-factor	3.6	3.6	2.6	3.8	5.8	11.7	14.1
Efficiency	0.35	0.17	0.25	0.33	0.35	0.27	0.11
H. angle	160	160	170	150	135	75	60
V. angle	160	160	170	150	135	75	60

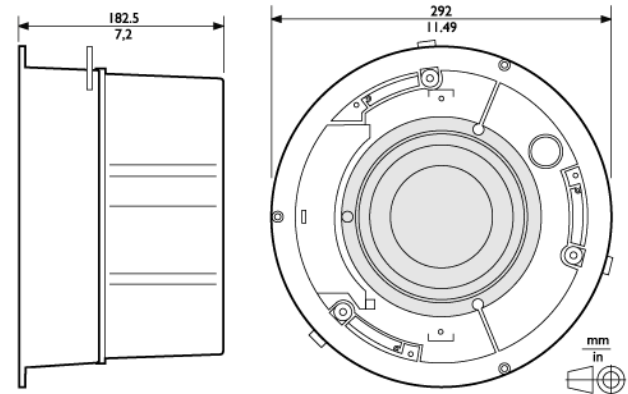
LBC 3520/40 with LBC 3601/01 or LBC 3602/01

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
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

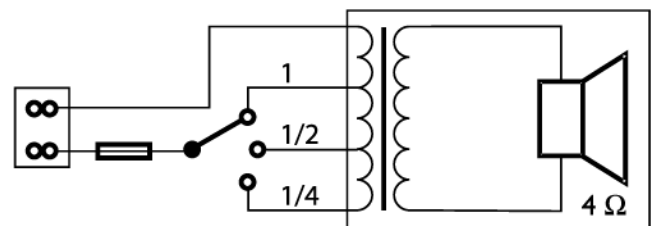
LBC 3520/40 with LBC 3603/01

Acoustical performance specified per octave

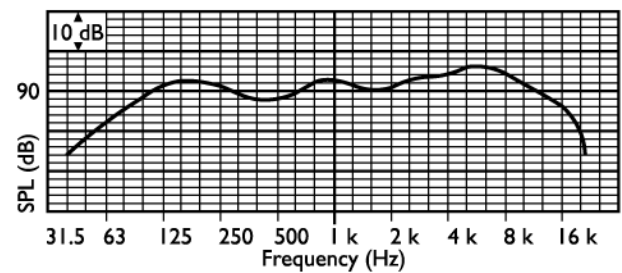
LBC 3530/40 Ceiling Loudspeaker



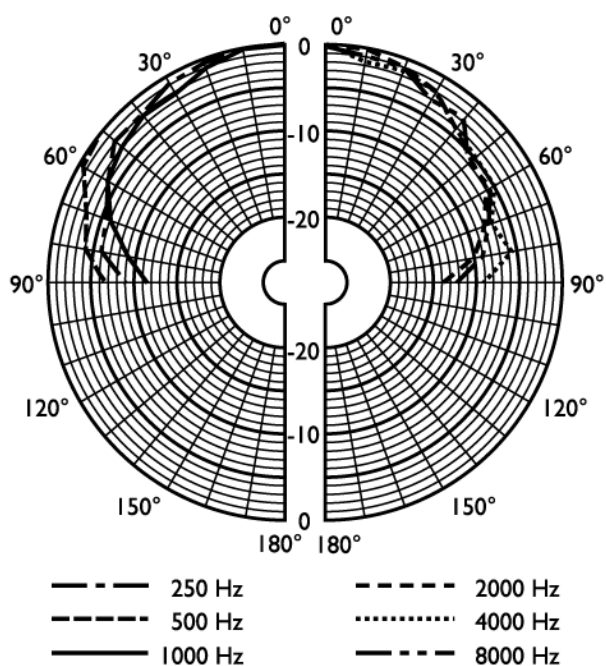
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram

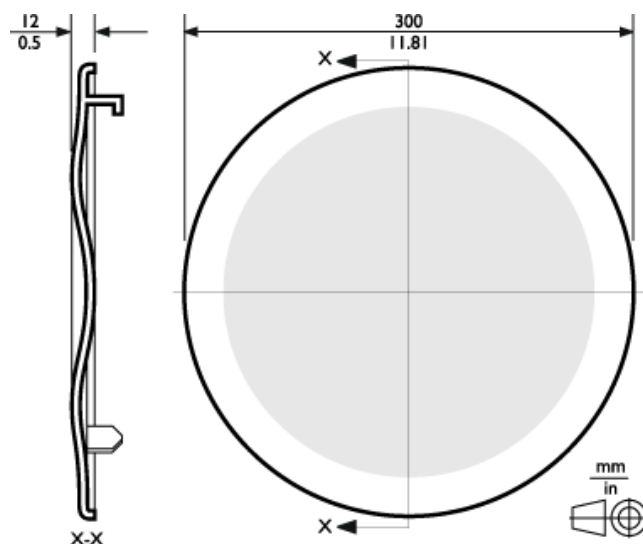
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	90	90	87	91	91	94	92
SPL max.	104	104	101	105	105	108	106
Q-factor	4.2	4.2	3	4.2	5.8	11.5	14.1
Efficiency	0.3	0.3	0.21	0.38	0.28	0.22	0.14
H. angle	160	160	170	150	135	70	55
V. angle	160	160	170	150	135	70	55

LBC 3530/40 with LBC 3601/01 or LBC 3602/01

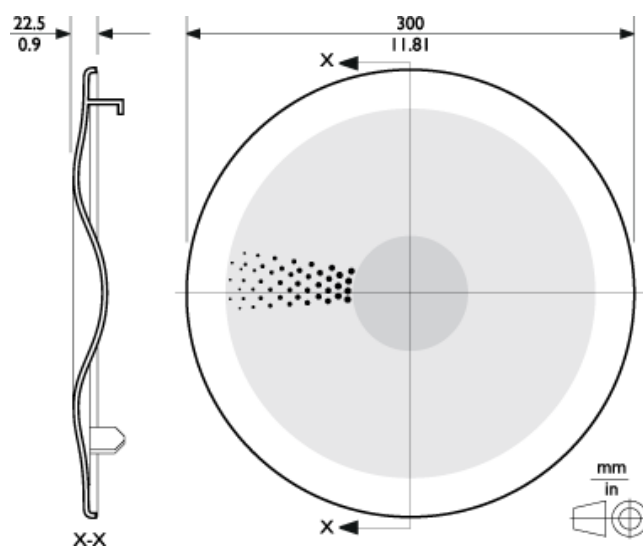
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	90	90	87	91	93	90	87
SPL max.	104	104	101	105	107	104	101
Q-factor	4.3	4.3	3	4.5	7.2	6.3	6.3
Efficiency	0.3	0.3	0.21	0.35	0.35	0.2	0.1
H. angle	160	160	170	145	130	130	130
V. angle	160	160	170	145	130	130	130

LBC 3530/40 with LBC 3603/01

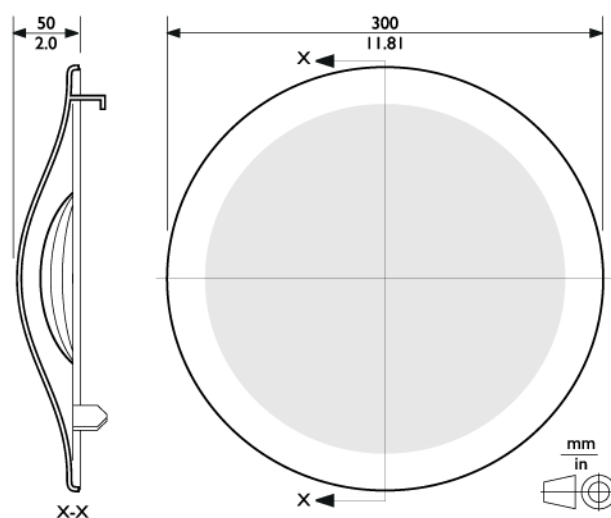
Acoustical performance specified per octave



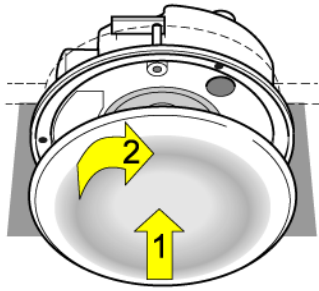
LBC 3601/01 metal grille Dimensions in mm (in)



LBC 3602/01 ABS grille Dimensions in mm (in)



LBC 3603/01 metal grille(incl. Wave guide). Dimensions in mm (in)



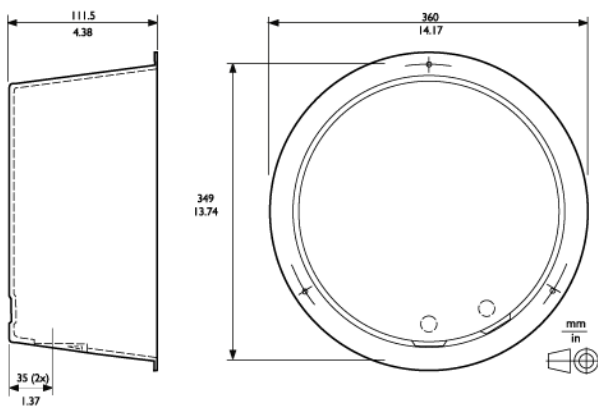
Bayonet grille fitting



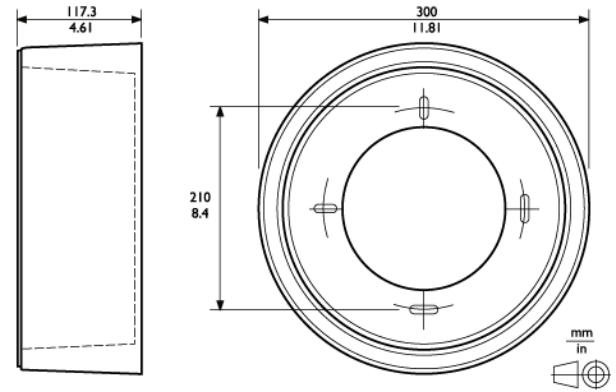
Loudspeaker unit without wave guide



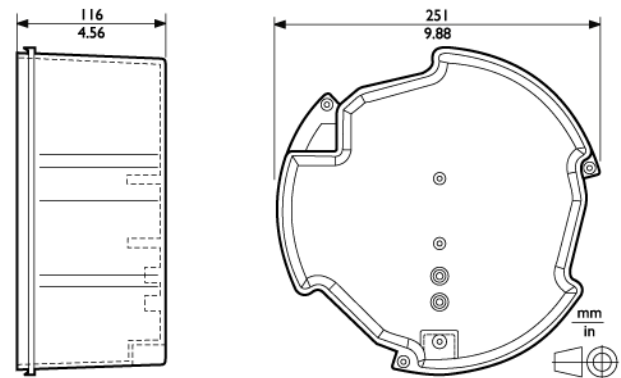
Loudspeaker unit with wave guide



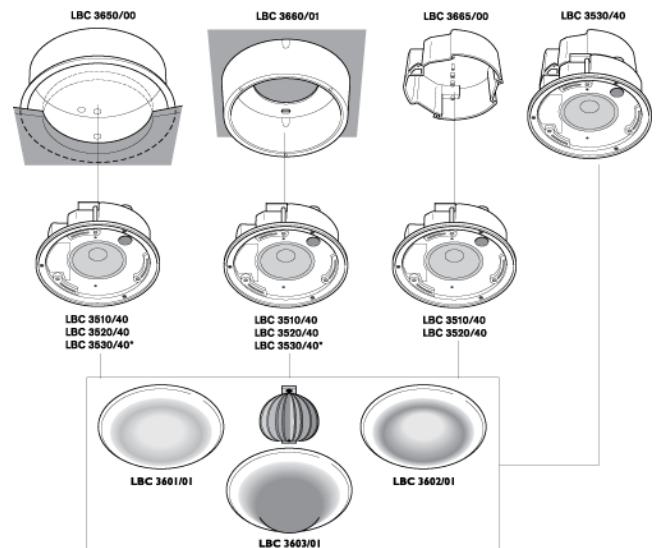
LBC 3650/00 fire dome. Dimension in mm (in)



LBC 3660/01 surface mounting box. Dimensions in mm (in)



LBC 3665/00 back box. Dimensions in mm (in)



* Without back box

Parts Included

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

Technical Specifications

Electrical*

Product	LBC 3510/40	LBC 3520/40	LBC 3530/40
Max power	9 W	18 W	36 W
Rated power	6 / 3 / 1.5 W	12 / 6 / 3 W	24 / 12 / 6 W
SPL at RP / 1 W (1 kHz, 1 m)	98 / 90 dB (SPL)	101 / 90 dB (SPL)	105 / 91 dB (SPL)
Effective frequency range (-10 dB)	60 Hz to 20 kHz	60 Hz to 20 kHz	60 Hz to 20 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	155° / 70°	150° / 75°	150° / 70°
Opening angle at 1 kHz/4 kHz (-6 dB)	150° / 120° with wave guide	150° / 120° with wave guide	145° / 130° with wave guide
Rated voltage	100 V	100 V	100 V
Impedance	1666 ohm	833 ohm	416 ohm
Connector	Screw-terminal	Screw-terminal	Screw-terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Product	LBC 3510/40	LBC 3520/40	LBC 3530/40
Diameter	292 mm (11.5 in)	292 mm (11.5 in)	292 mm (11.5 in)
Max depth	98 mm (3.9 in)	98 mm (3.9 in)	182.5 mm (7.2 in)
Mounting cut-out	255 mm (10.03 in)	255 mm (10.03 in)	255 mm (10.03 in)
Speaker diameter	152.4 mm (6 in)	152.4 mm (6 in)	152.4 mm (6 in)
Magnet weight	117 g (4.14 oz)	245 g (8.6 oz)	450 g (15.9 oz)
Max ceiling thickness	50 mm (1.97 in)	50 mm (1.97 in)	50 mm (1.97 in)
Weight	1.2 kg (2.64 lb)	1.6 kg (3.52 lb)	2.6 kg (5.72 lb)
Color	Black	Black	Black

Product	LBC 3601/01	LBC 3602/01	LBC 3603/01
Description	Circular metal grille	Circular ABS grille	Circular wave guide (metal)
Diameter	300 mm (11.8 in)	300 mm (11.8 in)	300 mm (11.8 in)
Max depth	12 mm (0.5 in)	22.5 mm (0.9 in)	50 mm (2.0 in)
Weight	310 g (0.68 lb)	165 g (0.36 lb)	440 g (0.96 lb)
Color	White (RAL 9010)	White (RAL 9010)	White (RAL 9010)

Product	LBC 3650/00*	LBC 3660/01	LBC 3665/00
Description	Steel fire dome	Surface-mounting box	Back box
Diameter	360 mm (14.2 in)	300 mm (11.8 in)	251 mm (9.9 in)
Max depth	112 mm (4.4 in)	117.3 mm (4.6 in)	116 mm (4.5 in)
Weight	2 kg (4.4 lb)	830 g (1.93 lb)	550 g (1.21 lb)
Color	Black	White (RAL 9010)	Black

* F30 certified according to DIN 4102

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3510/40 Ceiling Loudspeaker unit 9/6 W	LBC351040
LBC 3520/40 Ceiling Loudspeaker unit 18/12 W	LBC3520/40
LBC 3530/40 Ceiling Loudspeaker unit 36/24 W	LBC3530/40

Accessories

LBC 3601/01 Circular Metal Grille	LBC 3601/01
LBC 3602/01 Circular ABS Grille	LBC 3602/01
LBC 3603/01 Circular Wave Guide Grille ensures a wide and equal spread of the important frequency octaves for speech intelligibility and music	LBC3603/01
LBC 3650/00 Metal Fire Dome highly fireresistant thermosetting material used for the loudspeaker frame.	LBC3650/00
LBC 3660/01 Surface-Mounting Box for securing the loudspeakers to walls or hard ceilings.	LBC3660/01
LBC 3665/00 Back Box secured onto the back of the loudspeaker frame. Prevents sound traveling via the ceiling cavity to adjacent areas, fully protects the loudspeaker from dust.	LBC3665/00

LBC 3941/11 Sound Projector



Features

- ▶ Excellent speech and music reproduction
- ▶ Very wide opening angle
- ▶ Modern unobtrusive styling
- ▶ Simple power setting
- ▶ Splash – waterproof
- ▶ Compact yet powerful
- ▶ Complies with international installation and safety regulations

The LBC 3941/11 is a 6 W cost-effective sound projector. It features a very wide opening angle and unobtrusive styling. Water and dust protection to IP 65 make it suitable for indoor and outdoor use.

Functions

The sound projector features a very wide opening angle (90 degrees) which means fewer units are required to cover a given area. Its wide frequency range also results in better speech and music reproduction, while the directivity ensures that the sound is accurately projected to where it is needed most.

The LBC 3941/11 sound projector is finished in an attractive off-white color, and its unobtrusive appearance complements today's interior lighting. The color and styling of the front grille matches an existing Bosch ceiling loudspeaker (LBC 3951/11).

Certifications and Approvals

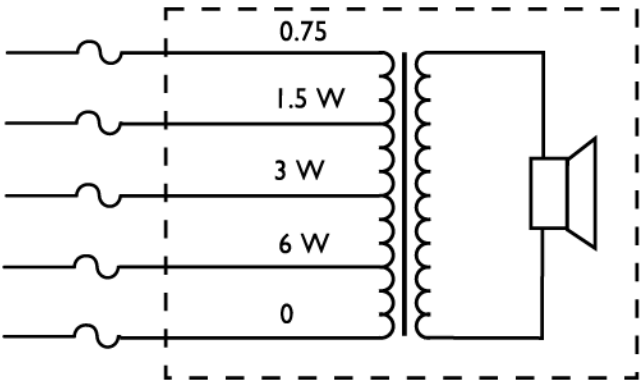
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

The enclosures are made from high-impact self-extinguishing ABS (according to class UL 94 V0).

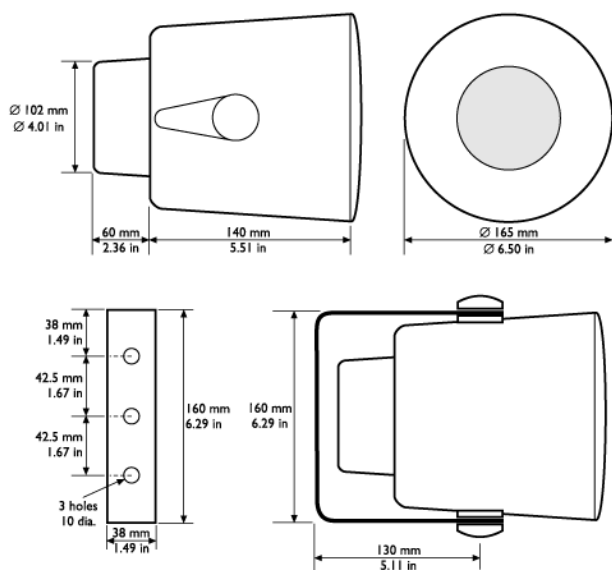
Region	Certification
Europe	CE
Safety	acc. to EN 60065
Water protected	acc. to EN 60529, IP 65
Self-Extinguishing	acc. to UL 94 V0

Installation/Configuration Notes

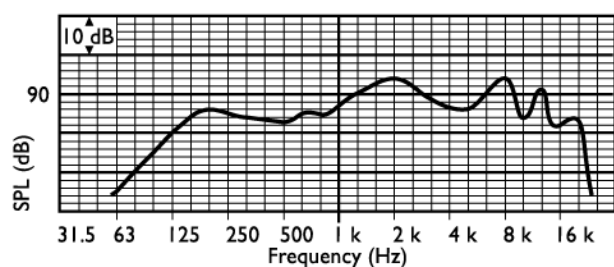
The sound projector is supplied with a steel mounting bracket painted in white. The bracket has three 10 mm holes, which can be used to easily mount the projector to walls and ceilings. The direction of the projector can be adjusted by means of two screws covered with white plastic covers. The unit is supplied with a 2 m color-coded five-core cable, with each color connected to a different primary tap on the matching transformer. This makes it easy to select full-power, half-power, quarter-power and eighth-power radiation without opening the unit during installation.



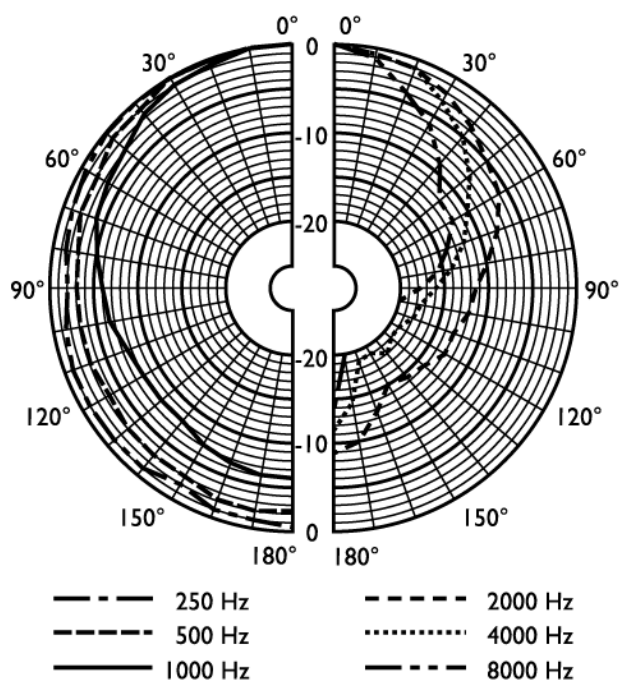
Circuit diagram



Dimensions in mm (in)



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	82	84	83	88	92	88	88
SPL max.	90	92	91	96	100	96	96
Q-factor	1.2	1.2	1.6	2.9	5.1	8.5	18
Efficiency	0.17	0.26	0.16	0.28	0.39	0.09	0.04
H. angle	360	360	360	180	120	90	60
V. angle	360	360	360	180	120	90	60

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	9 W
Rated power	6 / 3 / 1.5 / 0.75 W
Sound pressure level at 6 W / 1 W (1 kHz, 1 m)	96 dB / 88 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	180° / 90°
Effective frequency range (-10 dB)	130 Hz to 18 kHz
Rated voltage	100 V
Rated impedance	1667 ohm
Connection	2 m 5-wire cable

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	165 x 200 mm (6.50 x 7.87 in)
Speaker diameter	100 mm (4 in)
Weight	1.5 kg (3.3 lb)
Color	White (RAL 9010)
Magnet weight	101 g (3.57 oz)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3941/11 Sound Projector
6 W, white ABS

LBC3941/11

LBC 3094/15 Sound Projector



Features

- Suitable for speech and music reproduction
- Simple power setting
- 2 m fixed connection cable
- Splash-waterproof
- Robust self-extinguishing ABS enclosure to UL 94 V0
- Complies with international installation and safety regulations

The LBC 3094/15 is a sound projector for speech and music reproduction in indoor or outdoor applications such as shopping centers, factory grounds and sports fields.

Functions

Sound projectors are intended for applications where directing the sound beam is desirable. Similar in concept to a spotlight, a sound projector can be used to provide localized sound reproduction. Typical examples include restaurants, exhibitions, factory grounds and shopping centers.

The sound projectors are splash waterproof and suitable for outdoor use and in environments with high humidity levels such as swimming pools.

The enclosures are made from high-impact self-extinguishing ABS (acc. to class UL 94 V0). The sound projector enclosures are colored off-white and supplied with steel mounting brackets painted in off-white. They are suitable for mounting onto walls or ceilings.

Certifications and Approvals

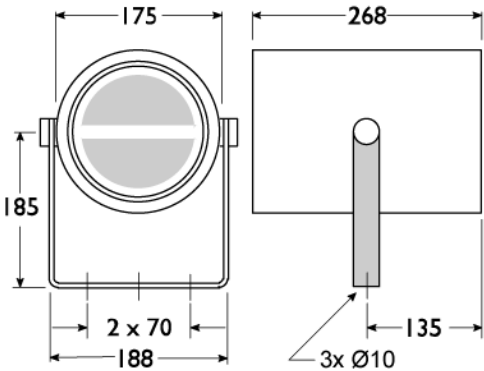
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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 manufactured from self-extinguishing high-impact ABS material (according to UL 94 V0). In common with all Bosch products, care is taken to meet high safety standards. These sound projectors comply with all the relevant safety and installation regulations of EN 60065.

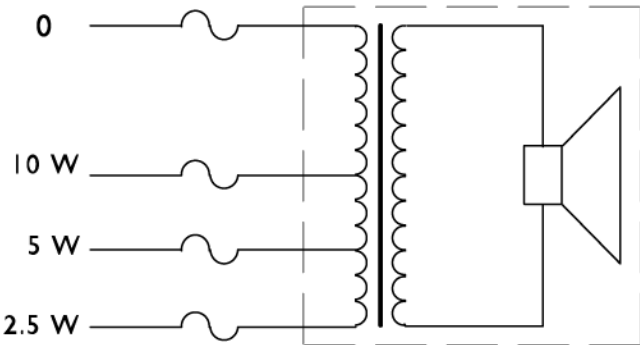
Region	Certification
Europe	CE
Water protection	acc. to EN 60529, IP 63

Installation/Configuration Notes

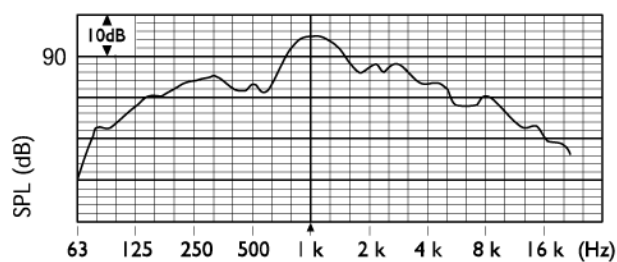
All units are supplied with a color-coded four-core connecting cable with each color connected to a different primary tap on the 100 V matching transformer. This allows nominal full-power, half-power or quarter-power radiation to be selected (in 3 dB steps).



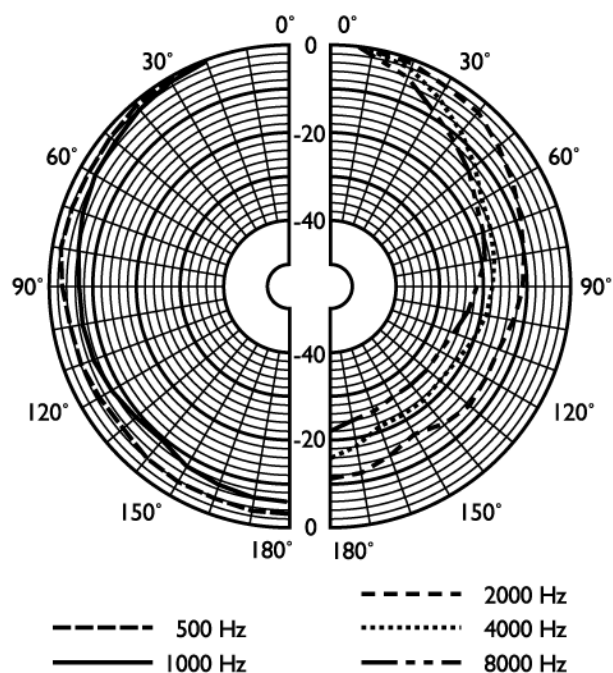
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	81	82	85	92	89	87	79
SPL max.	91	92	95	102	99	97	89
Q-factor	1.2	1.3	1.8	3.1	5.9	20	32
Efficiency	0.1	0.1	0.2	0.6	0.2	0.03	0.01
H. angle	360	360	360	160	105	70	40
V. angle	360	360	360	160	105	70	40

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	15 W
Rated power	10 / 5 / 2.5 W
Sound pressure level at 10 W / 1 W (1 kHz, 1 m)	102 dB / 92 dB (SPL)
Effective frequency range (-10 dB)	140 Hz to 13 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	160° / 70°

Rated voltage	100 V
Rated impedance	1000 ohm
Connection	2 m 4-wire cable

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	175 x 268 mm (6.9 x 10.5 in)
Weight	2.5 kg (7.3 lb)
Color	Off white (RAL 9001)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3094/15 Sound Projector 10 W, off white ABS	LBC3094/15
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Accessories

LBC 1256/00 EVAC Connection Adapter 3-pole screw connector, 100 pieces	LBC1256/00
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LBC 3095/15 Pendant Sphere Loudspeaker



Features

- ▶ Suitable for speech and music reproduction
- ▶ Simple power setting
- ▶ 5 m fixed connection cable
- ▶ Splash-waterproof type
- ▶ Robust self-extinguishing ABS enclosure to UL 94 V0
- ▶ Complies with international installation and safety regulations

The LBC 3095/15 is a pendant sphere designed to be suspended from the ceiling via its connecting cable. The pleasing shape and neutral color make the pendant sphere models interesting architectural features in their own right.

Functions

The pendant sphere is splash waterproof and suitable for outdoor use and in environments with high humidity levels such as swimming pools.

Their excellent sound spread makes them ideal for use in buildings with high ceilings such as hypermarkets and superstores.

The enclosures are made from high-impact self-extinguishing ABS (according to class UL 94 V0) and are colored off-white. The pendant sphere is designed to be suspended from its color-matched connecting cable (easy to shorten for desired height). A cable clamp and ceiling cover are supplied.

They are not recommended for use in windy environments.

Certifications and Approvals

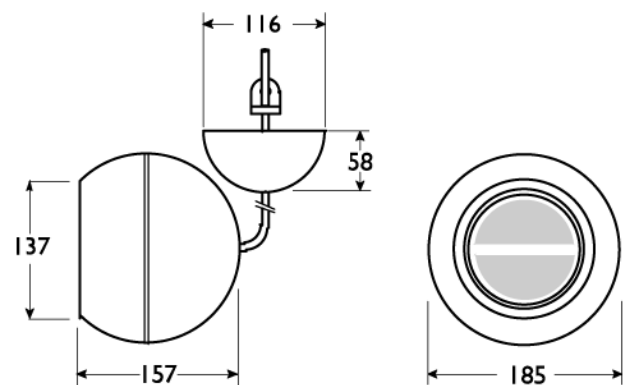
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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 manufactured from self-extinguishing high-impact ABS material (according to UL 94 V0). In common with all Bosch products, care is taken to meet high safety standards. These sound projectors comply with all the relevant safety and installation regulations of EN 60065.

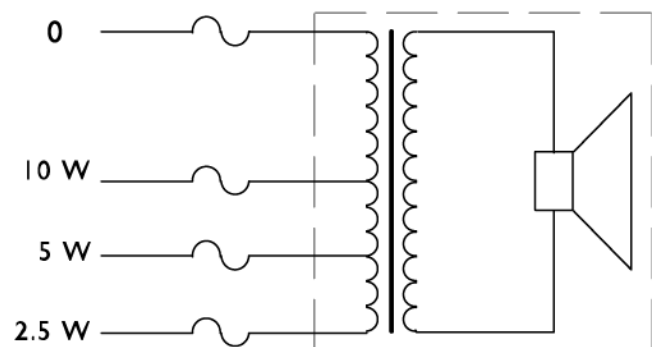
Region	Certification
Europe	CE
Water protected	acc. to EN 60529, IP x3

Installation/Configuration Notes

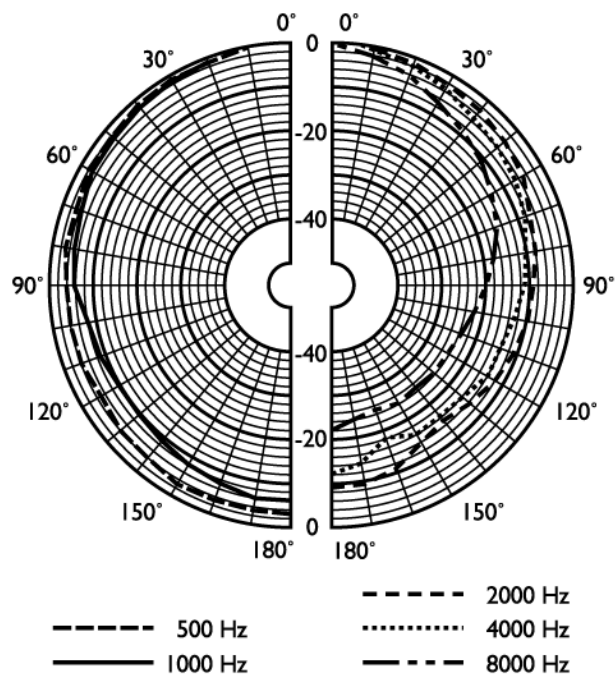
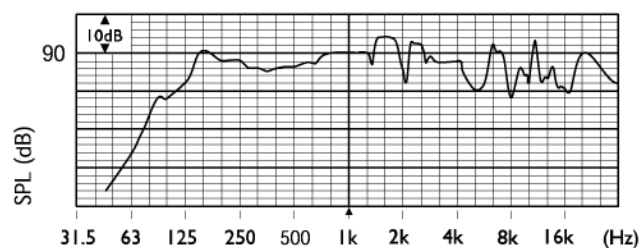
All units are supplied with a color-coded four-core connecting cable with each color connected to a different primary tap on the 100 V matching transformer. This allows nominal full-power, half-power or quarter-power radiation to be selected (in 3 dB steps).



Dimensions (in mm)



Circuit diagram



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	80	85	84	89	89	85	85
SPL max.	90	95	94	99	99	95	95
Q-factor	1.2	1.3	1.8	3.1	5.2	8.5	18
Efficiency	0.1	0.3	0.2	0.3	0.2	0.05	0.02
H. angle	360	360	360	180	125	90	55
V. angle	360	360	360	180	125	90	55

Acoustical performance specified per octave

Technical Specifications

Electrical*

Maximum power	15 W
Rated power	10 / 5 / 2.5 W
Sound pressure level at 10 W / 1 W (1 kHz, 1 m)	99 dB / 89 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	180° / 90°
Effective frequency range (-10 dB)	130 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	1000 ohm
Connection	5 m 4-wire cable

Mechanical

Dimensions (D x L)	185 x 157 mm (7.3 x 6.2 in)
Weight	2.5 kg (5.5 lb)
Color	Off-white (RAL 9001)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3095/15 Pendant Sphere Loudspeaker	LBC3095/15
10 W, off-white ABS	

Accessories

LBC 1256/00 EVAC Connection Adapter	LBC1256/00
3-pole screw connector, 100 pieces	

Parts Included

Quantity Components

1	LS1-UC20E Pendant Sphere
1	Cable clamp
1	Ceiling cover

LP1-BC10E Bidirectional Sound Projector



Features

- ▶ **Superb speech and music reproduction**
- ▶ **Ease of installation**
- ▶ **Modern unobtrusive styling**
- ▶ **Integrated connection cable**
- ▶ **Suitable for loop-through cabling**
- ▶ **Ceiling and/or wall mounting**
- ▶ **Tough, impact-resistant enclosure**
- ▶ **Water and dust protected to IP 65**
- ▶ **BS 5839-8 compliant**

The LP1-BC10E is a powerful 10 W bidirectional sound projector intended for high quality speech and music reproduction in indoor and outdoor applications. The two loudspeakers facing in opposite directions are ideally suited to applications such as tunnels, long corridors and shopping arcades. The state-of-the-art design is matched to both modern and traditional style environments. The sound projector is suitable for use in voice alarm systems.

Functions

Superb sound quality

The use of high quality drivers in combination with advanced filtering, has resulted in a very natural sound reproduction.

Voice alarm loudspeaker

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LP1-BC10E is designed for use in voice alarm systems and is compliant with British Standard BS 5839-8. The sound projector is prewired for use with an optional line/

loudspeaker supervision board externally mounted. The loudspeaker has built-in protection to secure 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.

The sound projector is made from high-impact self-extinguishing ABS according to class UL 94 V 0, finished in off-white.

Certifications and Approvals

Quality assurance

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.

Safety aspects

In common with all Bosch products, care is taken to meet high safety standards. This sound projector complies with the relevant safety and installation regulations of EN 60065 and BS 5839-8. All ABS parts are self-extinguishing (according to UL 94 V 0)

Region	Certification	
Europe	CE	Declaration of Conformity
Water-and dust protected		acc. to IEC 60529, IP 65

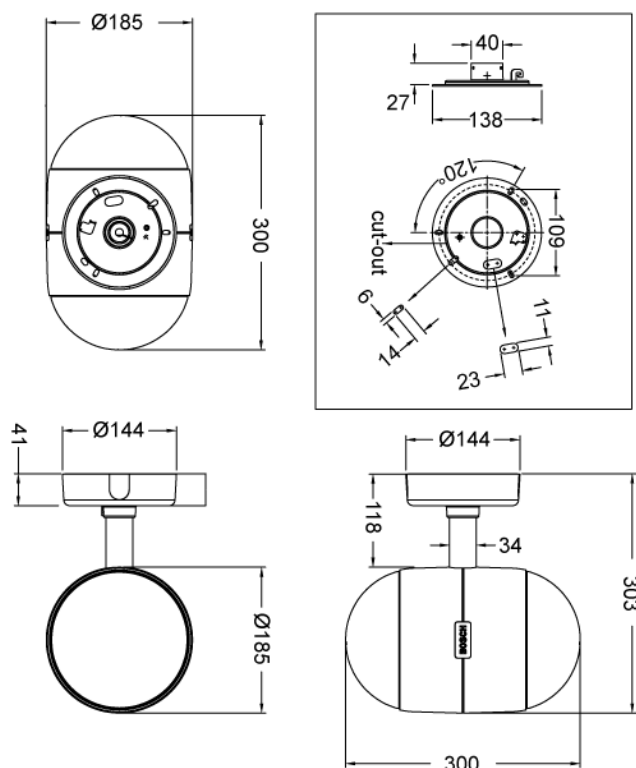
Installation/Configuration Notes

Mounting

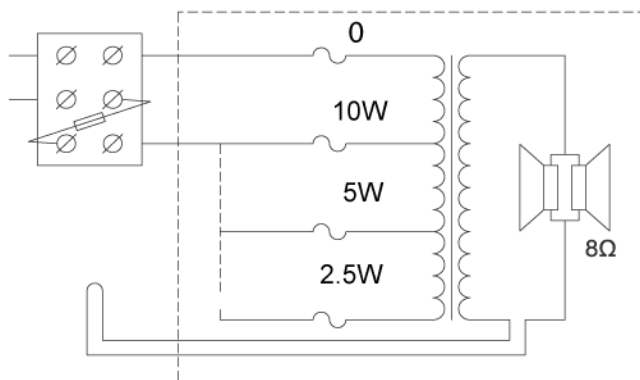
Ease of installation is realized in the way of mounting: first the mounting plate is fixed to the wall or ceiling, secondly a safety cord is attached to the mounting plate, allowing the installer temporarily hang the loudspeaker during installation. After making the connections, the sound projector can be fixed to the mounting plate and the horizontal direction can be fixed. A cover plate covers screws and electrical wiring. The versatile mounting bracket allows the sound projector to be horizontal directed. The cover plate is provided with 2 cable – or 16 mm conduit entries (covered as standard supplied) in opposite position, suitable for loop- through cabling.

Power setting

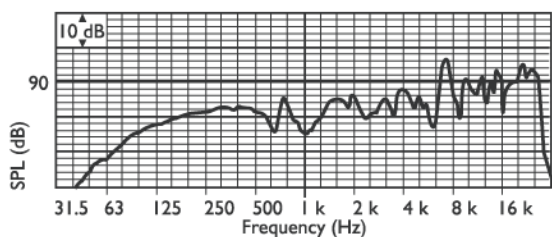
A ceramic terminal for electrical connection is provided. The loudspeaker is standard connected to full power. Half-power or quarter power can be selected by connecting the appropriate color coded wire to the terminal block.



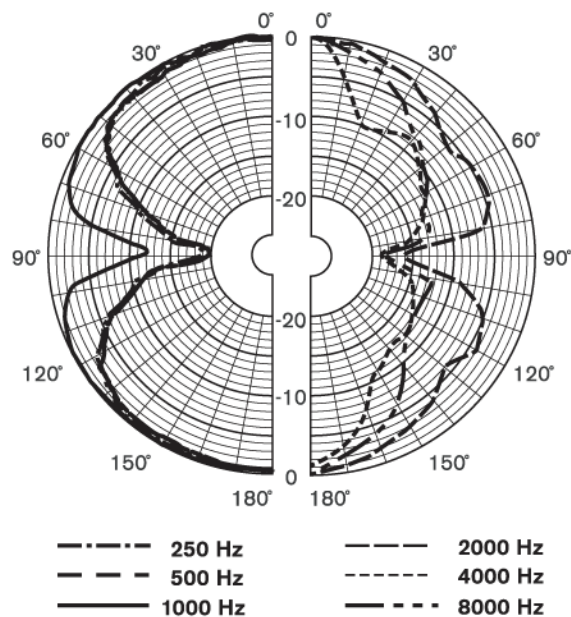
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	15 W
Rated power	10 / 5 / 2.5 W
Sound pressure level at 10 W / 1 W (1 kHz, 1 m)	90 dB / 80 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	165° / 60°
Effective frequency range (-10 dB)	75 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	1000 ohm
Connector	3-pole screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	185 x 297 mm (7.3 x 11.7 in)
Weight	3 kg (6.6 lb)
Color	White (RAL 9010)
Material	ABS

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LP1-BC10E Bidirectional Sound Projector	LP1-BC10E
10 W, white ABS	

LP1-UC10E Unidirectional Sound Projector



Features

- ▶ **Superb speech and music reproduction**
- ▶ **Ease of installation**
- ▶ **Modern unobtrusive styling**
- ▶ **Integrated connection cable**
- ▶ **Suitable for loop-through cabling**
- ▶ **Ceiling and/or wall mounting**
- ▶ **Tough, impact-resistant enclosure**
- ▶ **Water and dust protected to IP 65**
- ▶ **BS 5839-8 compliant**

The LP1-UC10E is a powerful, 10 W sound projector intended for high quality speech and music reproduction in indoor and outdoor applications. The state-of-the-art design is matched to both modern and traditional style environments. The sound projector is suitable for use in voice alarm systems.

Functions

Superb sound quality

The use of a high quality driver in combination with advanced filtering, has resulted in a very natural sound reproduction with excellent bass response.

Voice alarm loudspeaker

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LP1-UC10E is designed for use in voice alarm systems and is compliant with British Standard BS 5839-8. The sound projector is prewired for use with an optional line/loudspeaker supervision board external mounted. The loudspeaker has built-in protection to secure 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.

The sound projector is made from high-impact self-extinguishing ABS according to class UL 94 V0, finished in off-white.

Certifications and Approvals

Quality assurance

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.

Safety aspects

In common with all Bosch products, care is taken to meet high safety standards. All ABS parts are self-extinguishing (according to UL 94 V0) This sound projector complies with the relevant safety and installation regulations of EN 60065 and BS 5839 part 8.

Region	Certification	
Europe	CE	Declaration of Conformity
Water-and dust protected		acc. to IEC 60529, IP 65

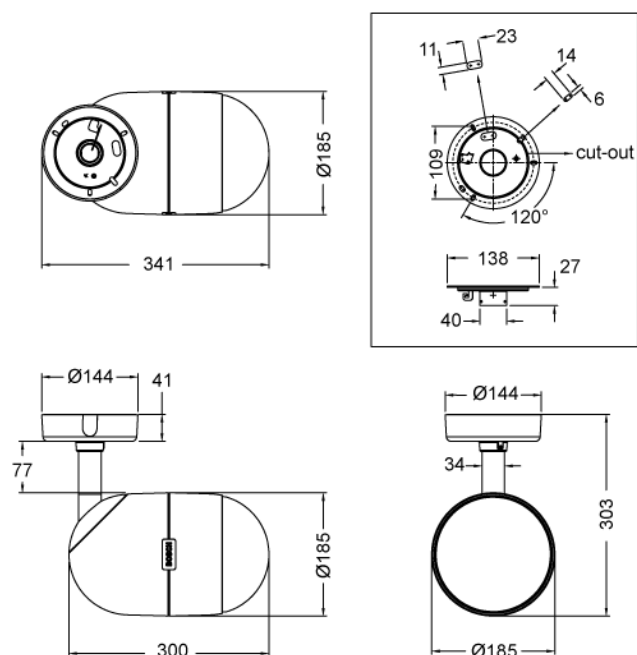
Installation/Configuration Notes

Mounting

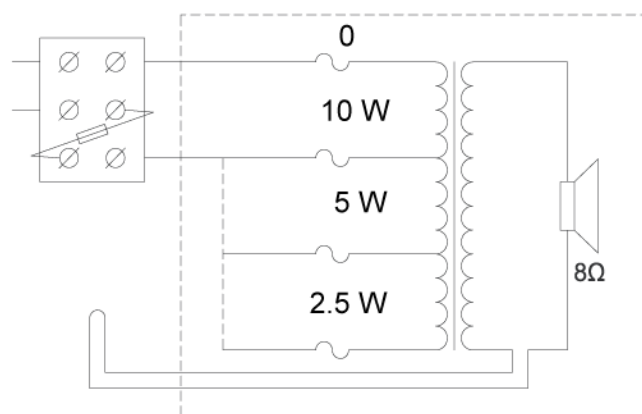
Ease of installation is realized in the way of mounting: first the mounting plate is fixed to the wall or ceiling, secondly a safety cord is attached to the mounting plate, allowing the installer temporarily hang the loudspeaker during installation. After making the connections, the sound projector can be fixed to the mounting plate and the horizontal direction can be fixed. A cover plate covers screws and electrical wiring. The versatile mounting bracket allows the sound projector to be horizontal and vertical directed. The cover plate is provided with 2 cable – or 16 mm conduit entries (covered as standard supplied) in opposite position, suitable for loop-through cabling.

Power setting

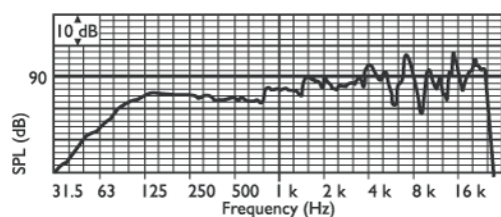
A ceramic terminal for electrical connection is provided. The loudspeaker is standard connected to full power. Half-power or quarter power can be selected by connecting the appropriate color-coded wire to the terminal block.



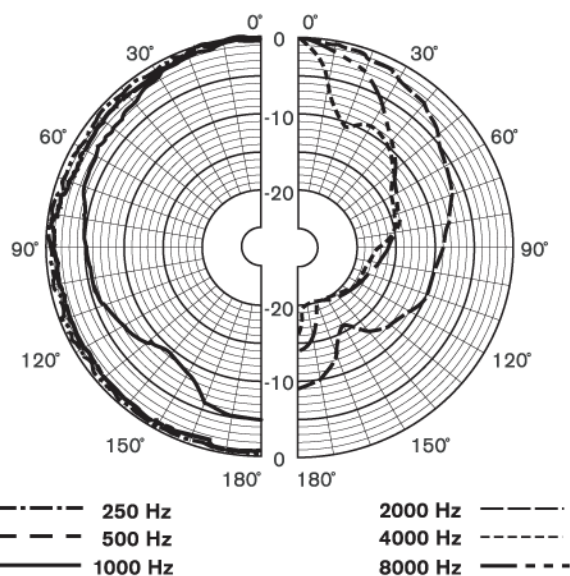
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured in pink noise)

Technical Specifications

Electrical*

Maximum power	15 W
Rated power	10 / 5 / 2.5 W
Sound pressure level at 10 W / 1 W (1 kHz, 1 m)	96 dB / 86 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	220° / 65°
Effective frequency range (-10 dB)	75 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	1000 ohm
Connector	3-pole screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	185 x 300 mm (7.3 x 11.8 in)
Weight	3 kg (6.6 lb)
Color	White (RAL 9010)
Material	ABS

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LP1-UC10E Unidirectional Sound Projector **LP1-UC10E**
10 W, white ABS

LP1-UC20E Unidirectional Sound Projector



Features

- ▶ **Superb speech and music reproduction**
- ▶ **Ease of installation**
- ▶ **Modern unobtrusive styling**
- ▶ **Integrated connection cable**
- ▶ **Suitable for loop-through cabling**
- ▶ **Ceiling and/or wall mounting**
- ▶ **Tough, impact-resistant enclosure**
- ▶ **Water and dust protected to IP 65**
- ▶ **BS 5839-8 compliant**

The LP1-UC20E is a powerful 20 W sound projector intended for high quality speech and music reproduction in indoor and outdoor applications. The state-of-the-art design is matched to both modern and traditional style environments. The sound projector is suitable for use in voice alarm systems.

Functions

Superb sound quality

The use of a high quality driver in combination with advanced filtering has resulted in a very natural sound reproduction with excellent bass response.

Voice alarm loudspeaker

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LP1-UC20E is designed for use in voice alarm systems and is compliant with British Standard BS 5839-8. The sound projector is prewired for use with an optional line/loudspeaker supervision board external mounted. The

loudspeaker has built-in protection to secure 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.

The sound projector is made from high-impact self-extinguishing ABS according to class UL 94 V0, finished in off-white.

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.

Safety aspects

In common with all Bosch products, care is taken to meet high safety standards.

All ABS parts are self-extinguishing (according to UL 94 V0). This sound projector complies with the relevant safety and installation regulations of EN 60065 and BS 5839-8.

Region	Certification	
Europe	CE	Declaration of Conformity
Water-and dust protected	acc. to IEC 60529, IP 65	

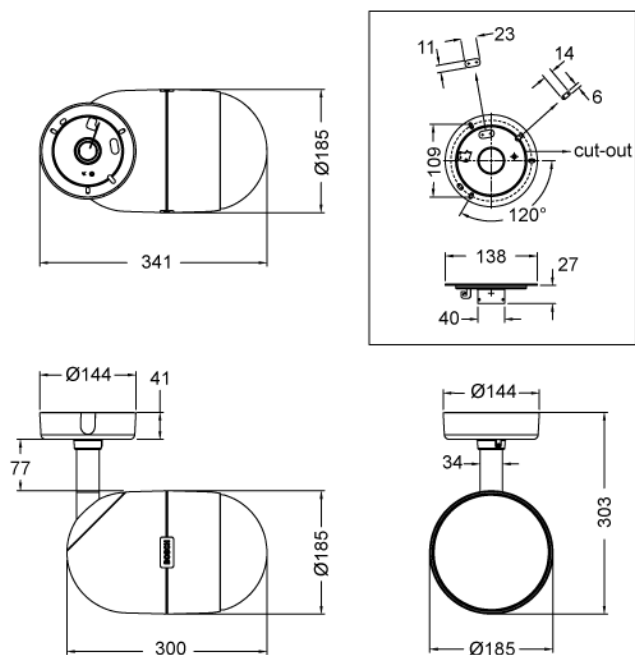
Installation/Configuration Notes

Mounting

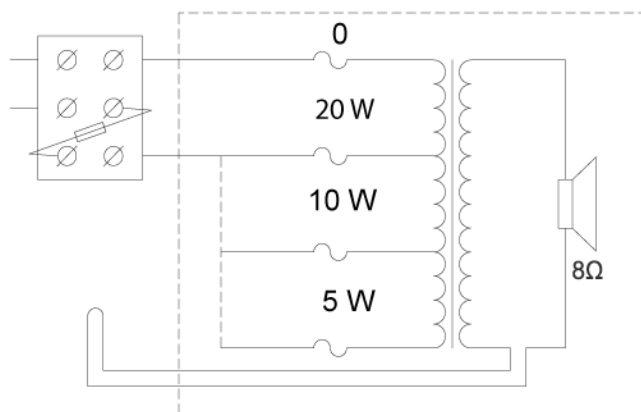
Ease of installation is realized in the way of mounting: first the mounting plate is fixed to the wall or ceiling, secondly a safety cord is attached to the mounting plate, allowing the installer temporarily hang the loudspeaker during installation. After making the connections, the sound projector can be fixed to the mounting plate and the horizontal direction can be fixed. A cover plate covers screws and wiring. The versatile mounting bracket allows the sound projector to be horizontal and vertical directed. The cover plate is provided with 2 cable – or 16 mm conduit entries (covered as standard supplied) in opposite position, suitable for loop- through cabling.

Power setting

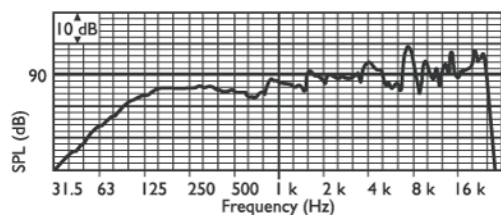
A ceramic terminal for electrical connection is provided. The loudspeaker is standard connected to full power. Half-power or quarter power can be selected by connecting the appropriate color-coded wire to the terminal block.



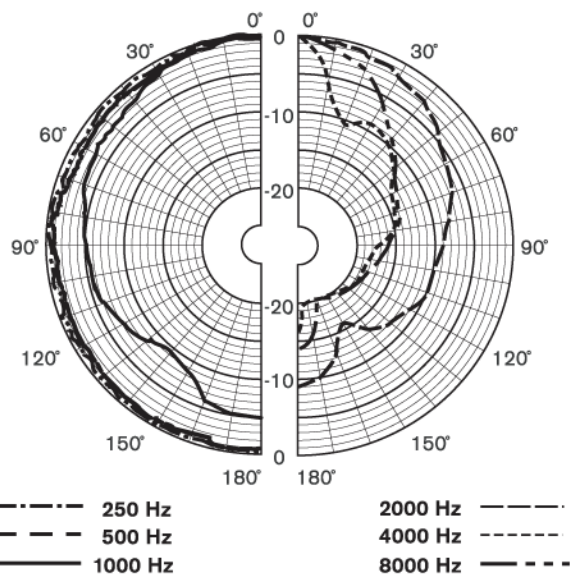
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	30 W
Rated power	20 / 10 / 5 W
Sound pressure level at 20 W / 1 W (1 kHz, 1 m)	100 dB / 87 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	220° / 65°
Effective frequency range (-10 dB)	75 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	500 ohm
Connector	3-pole screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	185 x 300 mm (7.3 x 11.8 in)
Weight	3 kg (6.6 lb)
Color	White (RAL 9010)
Material	ABS

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LP1-UC20E Unidirectional Sound Projector	LP1-UC20E
20 W, white ABS	

LS1-UC20E Pendant Sphere Loudspeaker



Features

- ▶ **Superb speech and music reproduction**
- ▶ **Wide sound spread**
- ▶ **Ease of installation**
- ▶ **Modern unobtrusive styling**
- ▶ **Tough, impact-resistant enclosure**
- ▶ **5 m connection cable**
- ▶ **Provision for optional safety cord**
- ▶ **Water and dust protected to IP 65**
- ▶ **BS 5839-8 compliant**

Sound spheres are pendant sound projectors designed to be suspended from the ceiling by their connecting cables. Their excellent sound spread makes them ideal for use in buildings with high ceilings, such as hypermarkets and superstores.

The LS1-UC20E is a powerful 20 W pendant sphere loudspeaker, intended for high quality speech and music reproduction. The state-of-the-art design is matched to both modern and traditional style environments. The loudspeaker is suitable for use in voice evacuation systems.

Functions

Voice Alarm Loudspeaker

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LS1-UC20E is designed for use in voice alarm systems and is compliant with British standard BS 5839-8.

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 is supplied with a ceramic terminal block and thermal fuse.

Superb Sound Quality

The use of a high quality driver in combination with advanced filtering, have resulted in a very natural sound reproduction with excellent bass response.

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.

Safety Aspects

In common with all Bosch products, care is taken to meet high safety standards. All ABS parts are self-extinguishing (according to UL 94 V0) This sound projector complies with the relevant safety and installation regulations of EN 60065.

Region	Certification	
Europe	CE	Declaration of Conformity
Water and dust protected		acc. to IEC 60529, IP 65

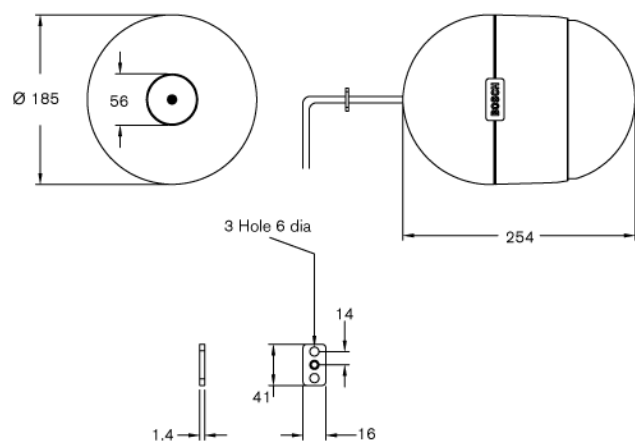
Installation/Configuration Notes

Mounting

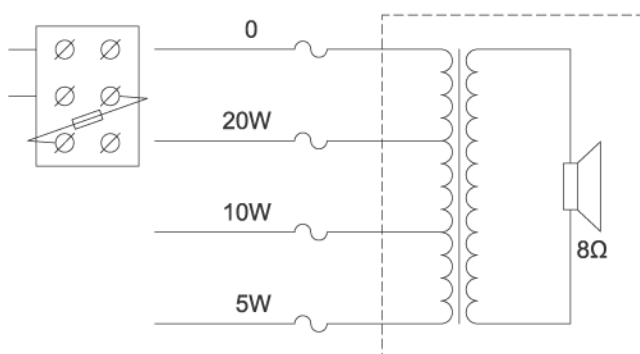
The loudspeaker is suspended from the ceiling via its 5 m, 4-core connecting cable, which is easy to shorten for the desired height. For optional safety, a steel safety cord can be attached.

Power Setting

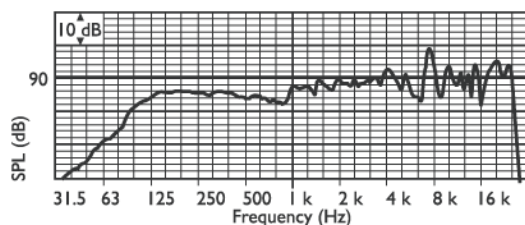
The loudspeaker is supplied with a 5 m color-coded, four-core connecting cable with each color connected to a different primary tap on the 100 V matching transformer. This allows nominal full-power, half-power or quarter-power radiation to be selected (in 3 dB steps).



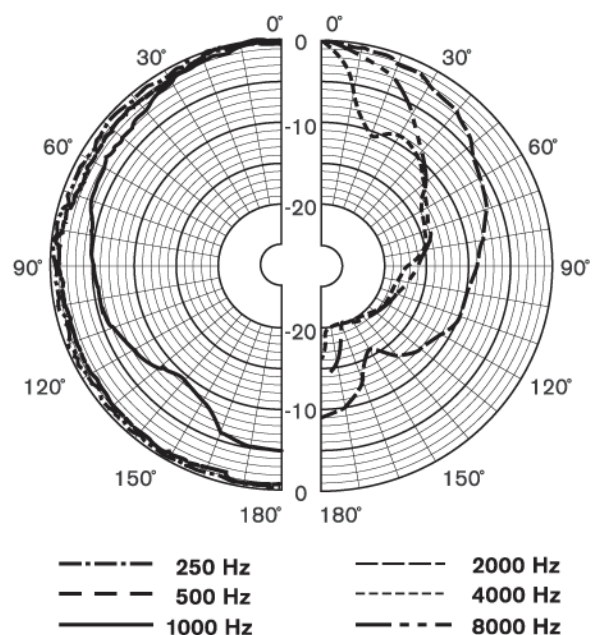
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

Parts Included

Quantity	Components
1	LS1-UC20E Pendant Sphere Loudspeaker
1	Cable clamp

Technical Specifications

Electrical*

Maximum power	30 W
Rated power	20 / 10 / 5 W
Sound pressure level at 20 W / 1 W (1 kHz, 1 m)	99 dB / 86 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	220° / 65°
Effective frequency range (-10 dB)	80 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	500 ohm
Connector	3-pole screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	185 x 254 mm (7.3 x 10 in)
Weight	3 kg (6.6 lb)
Color	White (RAL 9010)
Material	ABS

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LS1-UC20E Pendant Sphere Loudspeaker	LS1-UC20E
20 W, white ABS	

LBC 3430/01 Bidirectional Sound Projector



Features

- ▶ **Bidirectional type**
- ▶ **Excellent speech and music reproduction**
- ▶ **Simple power setting**
- ▶ **Ceiling and/or wall mounting**
- ▶ **Robust aluminum extrusion enclosure**
- ▶ **Water and dust protected to IP 55**
- ▶ **BS 5839-8 compliant**

The LBC 3430/01 is a 12 W bidirectional sound projector intended for speech and music reproduction in indoor and outdoor applications. The two loudspeakers facing in opposite directions are ideally suited to applications such as subway tunnels, long corridors and shopping arcades. The sturdy, aluminum enclosure is finished in the color off-white. The sound projector is suitable for use in voice alarm systems.

Functions

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LBC 3430/01 is designed for use in voice alarm systems and is compliant with British Standard BS 5839 part 8.

The loudspeaker has built-in protection to secure 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.

The sound projector is constructed from extruded aluminum and finished in off-white. The front-grills and bracket are made from aluminum to increase corrosion resistance.

Certifications and Approvals

Quality assurance

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.

Region	Certification
Europe	CE Declaration of Conformity
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
Water and dust protected	acc. to IEC 60529, IP 55

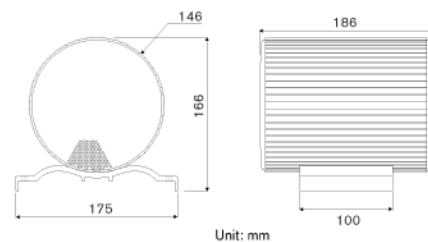
Installation/Configuration Notes

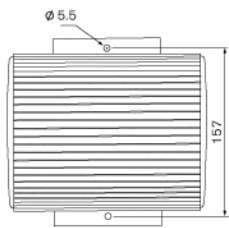
Mounting

The sound projector mounts to the ceiling or to the wall in such a way, that the connection cable is not visual which is important in areas where vandalism is a potential hazard.

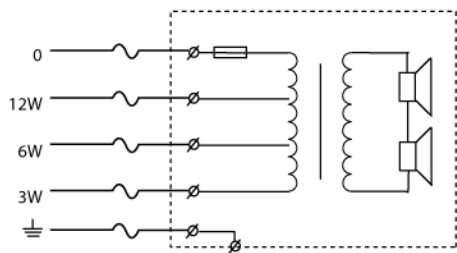
Power setting

A one-meter long fire-resistant five-core connection cable is standard fitted to the loudspeaker. Each core is a different color, and is connected to one of the primary taps on the transformer.

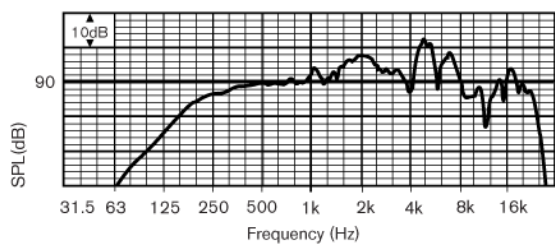




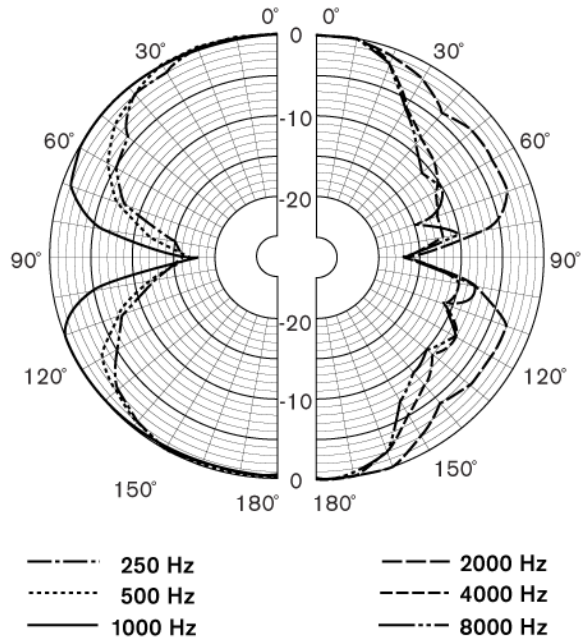
Dimensions in mm



Circuit diagram



Frequency response



Polar diagram

Technical Specifications

Electrical*

Maximum power	18 W
Rated power	12 / 6 / 3 W
Sound pressure level at 12 W / 1 W (1kHz, 1 m)	102 dB / 91 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	160 ° / 60 °
Effective frequency range (-10 dB)	180 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	833 ohm
Connector	1 m fire-resistant cable

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	146 x 186 mm (5.7 x 7.3 in)
Weight	3.3 kg (7.3 lb)
Color	White (RAL 9010)
Material	Aluminum

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC3430/01 Bidirectional Sound Projector **LBC3430/01**
12 W, white (RAL 9010)

LBC 3432/01 Unidirectional Sound Projector



Features

- ▶ **Excellent speech and music reproduction**
- ▶ **Simple power setting**
- ▶ **Provision for supervision board mounting**
- ▶ **Suitable for loop-through cabling**
- ▶ **(Suspended) ceiling and/or wall mounting**
- ▶ **Robust aluminum extrusion enclosure**
- ▶ **Water and dust protected to IP 66**
- ▶ **BS 5839-8 compliant**

The LBC 3432/01 is a powerful 20 W sound projector intended for speech and music reproduction in indoor and outdoor applications. The sturdy, aluminum enclosure is finished in the color off-white. It has provisions for cable loop through connection and mounting of a line or loudspeaker supervision board. The sound projector is suitable for use in voice alarm systems.

Functions

Voice alarm loudspeakers are specifically designed for use in buildings where performance of systems for verbal communication announcements is governed by regulations. The LBC 3432/01 is designed for use in voice alarm systems and is compliant with British Standard BS 5839-8.

The sound projector has provision inside for mounting an optional line/loudspeaker supervision board.

The loudspeaker has built-in protection to secure 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.

The sound projector is constructed from extruded aluminum and finished in off-white. The front-grill and bracket are made from aluminum to increase corrosion resistance.

Certifications and Approvals

Quality assurance

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.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8
Water and dust protected	acc. to IEC 60529, IP 66

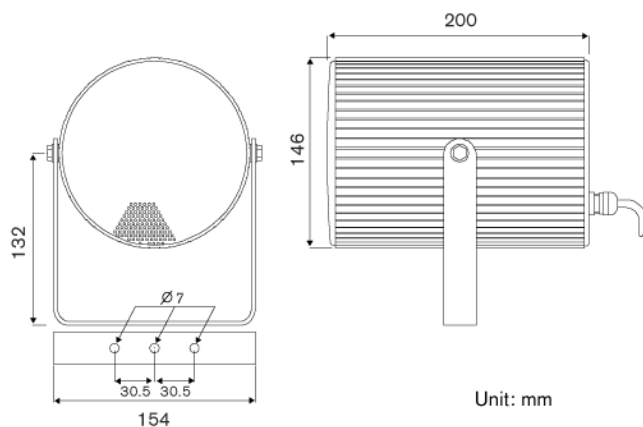
Installation/Configuration Notes

Mounting

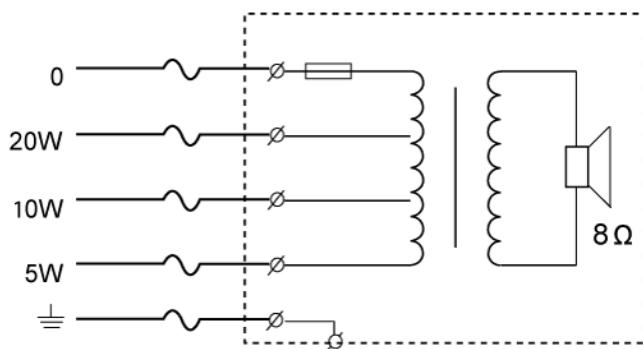
A sturdy aluminum mounting bracket is supplied to allow easy mounting and directing in virtually any position. The sound projector may also be suspended using the bracket.

Power Setting

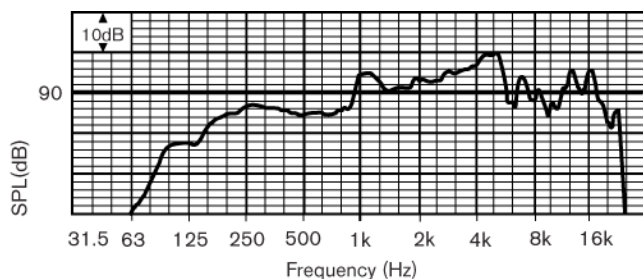
A one meter long fire-resistant five-core cable is standard fitted to the loudspeaker. Each core is a different color, and is connected to one of the primary taps on the transformer. For loop-through connection, the rear cover is fitted with a second entry hole. (covered as standard supplied)



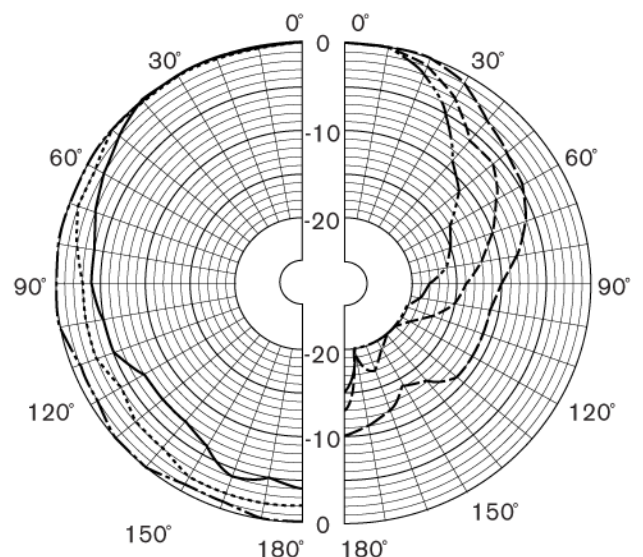
Dimensions



Circuit diagram



Frequency response



Polar diagram

Technical Specifications

Electrical*

Maximum power	30 W
Rated power	20 / 10 / 5 W
Sound pressure level at 20 W / 1 W (1kHz, 1 m)	105 / 92 dB (SPL)
Opening angle at 1 kHz / 4 kHz (-6 dB)	180° / 70°
Effective frequency range (-10 dB)	150 Hz to 20 kHz
Rated voltage	100 V
Rated impedance	500 ohm
Connector	1 m fire-resistant cable

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (D x L)	146 x 200 mm (5.7 x 7.9 in)
Weight	2.6 kg (5.7 lb)
Color	White (RAL 9010)
Material	Aluminum

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

**LBC 3432/01 Unidirectional Sound
Projector**
20 W, white (RAL 9010)

LBC3432/01

LS1-OC100E Hemi-directional Loudspeaker

4



Features

- ▶ **For large area, high-ceiling applications**
- ▶ **Architecturally and acoustically innovative**
- ▶ **Hemi-directional pattern**
- ▶ **Optional bracket for fixed mounting**
- ▶ **Provision for internal mounting of the optional line/loudspeaker supervision board**
- ▶ **Complies with EVAC**
- ▶ **Complies with international and safety regulations**

The Bosch Hemi-directional Loudspeaker is an easy to install, innovative loudspeaker which projects consistent and high quality sound, ensuring superb reproduction of background music and high speech intelligibility for paging or emergency calls. The speaker's opening angle and high sound pressure level allows it to cover at least 600 m², making it extremely suitable for indoor high-ceiling areas like warehouses, transport and exhibition halls, mega stores and swimming pools.

Functions

Voice alarm loudspeaker

The LS1-OC100E is used in voice alarm systems and is compliant with EVAC standards. The loudspeaker has built-in protection to ensure that a fire-damaged loudspeaker does not cause failure of the connected circuit. This ensures system integrity, meaning loudspeakers in other areas can still be used to inform people of the fire. The loudspeaker has ceramic terminal blocks, a thermal fuse and heat-resistant, high-temperature wiring.

Materials

The loudspeaker is made of high-impact ABS TSG, self-extinguishing according to class UL 94 V 0 and with the highest flame retardant rating (UL 94 5VA). The loudspeaker has a white and silver finish; the metal grille has a silver finish.

Drivers

This acoustically innovative loudspeaker accommodates 14 drivers in combination with advanced positioning and filtering. *

* *patent pending*

Certifications and Approvals

Safety	acc. to EN 60065
EVAC compliant	acc. to BS 5839 part 8 and EN 60849
Self-extinguishing	acc. to UL 94 V 0
Flame retardant	acc. to UL 94 5VA
Water and dust protected	acc. to EN 60529 IP 42
Chlorine resistant	acc. to IEC 600068/2-60
Mechanical impact	acc. to EN 50102 IK 07

Installation/Configuration Notes

The loudspeaker can be suspended from a steel wire or chain using Dee shackles (not supplied).

A separate accessory, LM1-MSB, is available for applications where fixed suspension is required to avoid any loudspeaker movement (such as rotation, wobbling).

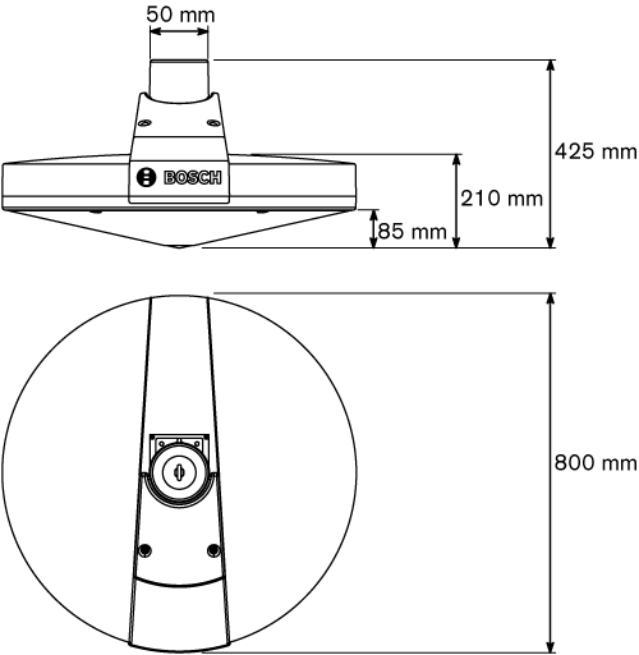
This accessory uses a set of stainless steel mounting plates:

- one plate for mounting centrally onto the loudspeaker (with fixing provisions)
- one plate for fixing onto the ceiling or roof construction
- four fixing pins and spring clips
- four fixing screws

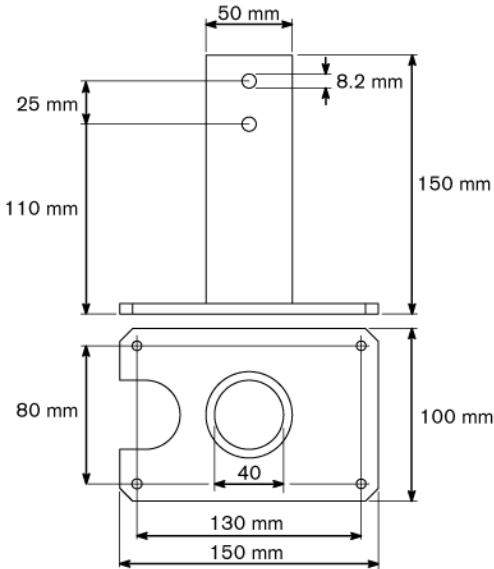
The mounting plates can be mechanically connected with a standard 39 mm dia. tube (not supplied by Bosch, but generally available in any required length).

For extra safety, the loudspeaker has an eye bolt with a maximum tensile strain of 1500 N for attaching an optional safety cord.

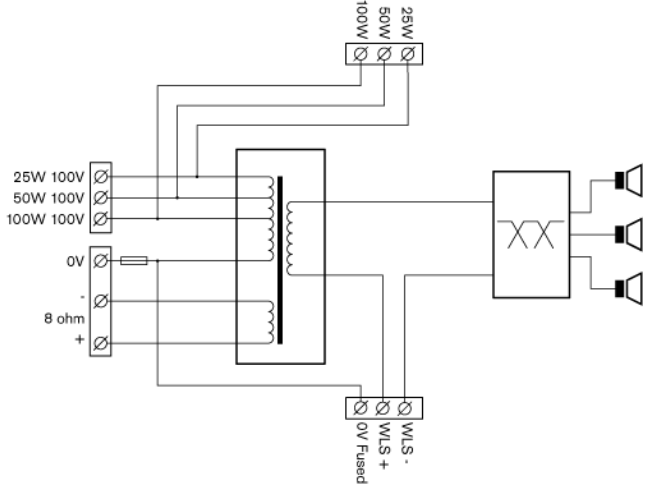
The electrical connection box, under the suspension cover, provides connection of the installation cable, allowing loop through and provision for internally mounting the optional line/loudspeaker supervision board.



Dimensions LS1-OC100E

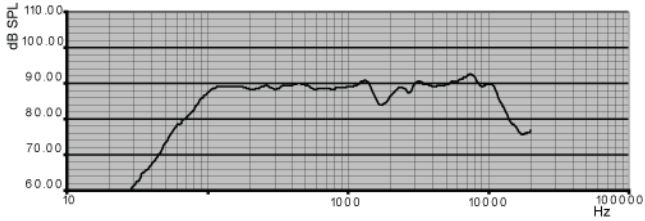


Dimensions LM1-MSB

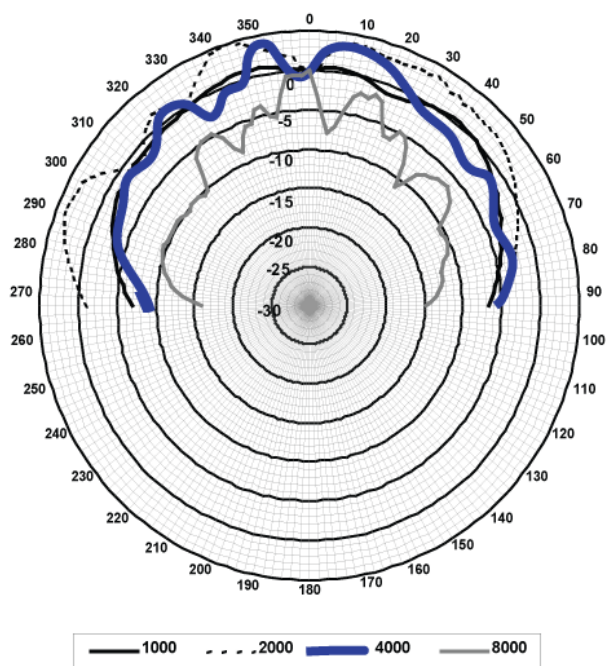
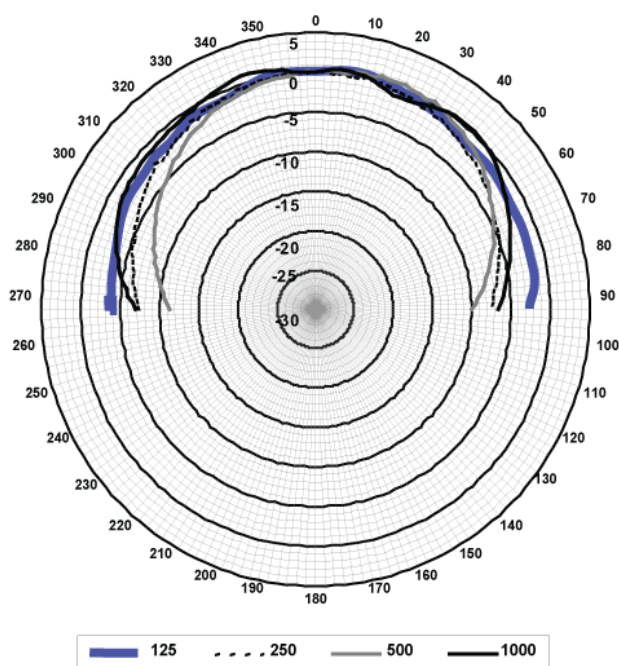


Circuit diagram

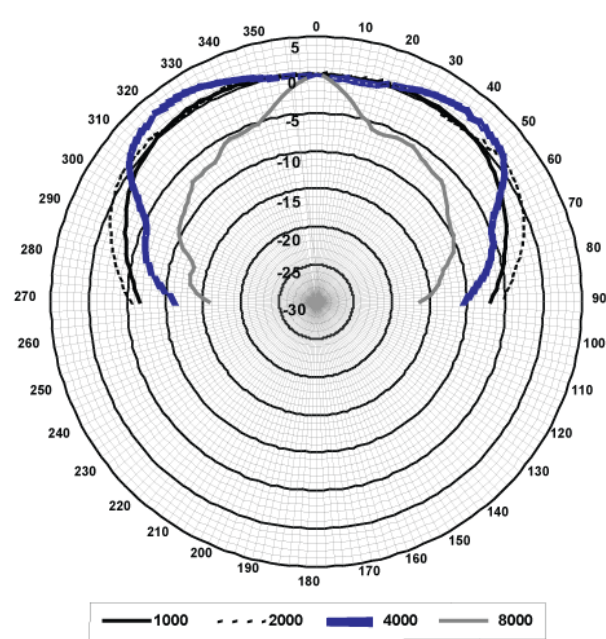
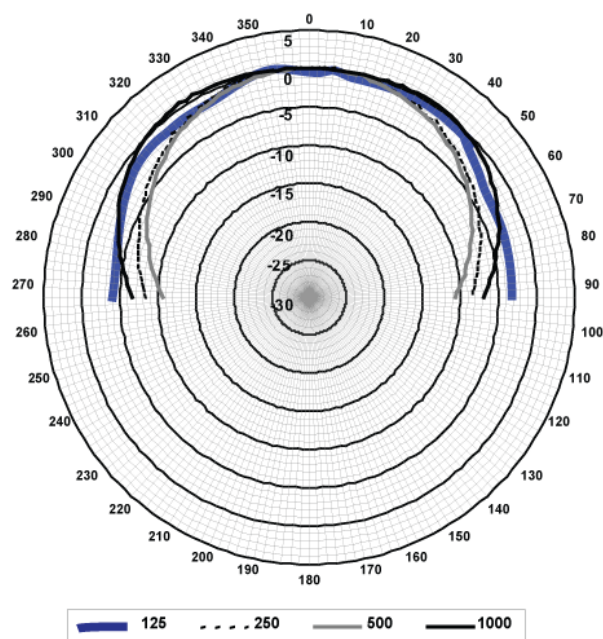
Hz	125	250	500	1000	2000	4000	8000
SPL 1.1	89	89	89	89	86	88	93
Hor.	>180	145	125	170	>180	145	65
Vert.	>180	155	135	170	>180	170	70



Frequency response



Vertical polar diagram of LS1-OC100E (pink noise octave, normalized at 0° axis)



Horizontal polar diagram of LS1-OC100E (pink noise octave, normalized at 0° axis)

Parts Included

Quantity	Components
1	LS1-OC100E
1	Installation Instructions

Technical Specifications

Electrical*

Maximum power	150 W
Rated power	100 W (100 – 50 – 25 W)
Sound pressure level at 100 W / 1 W (1 kHz, 1 m)	109 / 89 dB
Opening angle at 1 kHz / 4 kHz (-6 dB)	170° / 145° (horizontal) 170° / 170° (vertical)
Effective frequency range (-10 dB)	60 Hz to 17 kHz
Rated voltage	100 V and 28.3 V

Rated impedance	100 ohm and 8 ohm
Connector	Ceramic screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

LS1-OC100E	
Dimensions (dia. x H)	800 x 425 mm (31.50 x 16.74 in)
Weight	29 kg (63.93 lb)
Color baffle	White (RAL 9010)
Color top cover	Silver (RAL 9023)
Color grille	Silver (RAL 9006)
Material	ABS TSG

LM1-MSB	
Dimensions (H x W x D)	150 x 100 x 150 mm (5.90 x 3.94 x 5.90 in)
Weight	2.9 kg (6.39 lb)
Color	Silver (RAL 9023)
Material	Stainless steel (sandblasted)

Environmental

Operating temperature	-25 to +55 °C (-13 to 131 °F)
Storage temperature	-40 to +70 °C (-40 to +158 °F)
Relative humidity	<95%

Ordering Information

LS1-OC100E Hemi-directional Loudspeaker 100 W	LS1-OC100E
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Accessories

LM1-MSB Metal Suspension Bracket Adaptor Set	LM1-MSB
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LBC 34xx/12 Horn Loudspeakers



4

Features

- ▶ **High efficiency drivers**
- ▶ **Up to 45 W (max. power)**
- ▶ **Wide opening angle**
- ▶ **Excellent speech reproduction**
- ▶ **Simple power setting**
- ▶ **Water- and dust protected to IP 65**
- ▶ **Versatile mounting bracket**
- ▶ **Comply with international installation and safety regulations**

Bosch high-efficiency horn loudspeakers provide excellent speech reproduction and sound distribution for a wide scope of outdoor applications. They are ideal for sports grounds, parks, exhibitions, factories and swimming pools.

System Overview

The LBC 3481/12 is a circular horn loudspeaker, and the LBC 3491/12 is a rectangular model. Both are 10 W, and are made from ABS.

The LBC 3492/12 is a circular, 20 W horn loudspeaker with a large horn measuring 354 mm in diameter. It is made from a combination of aluminum with ABS for optimum strength and low weight. The edge of the horn is covered with a PVC profile for protection against impact damage.

The LBC 3493/12 is a circular, 30 W horn loudspeaker with a large horn measuring 400 mm in diameter. It is made from a combination of aluminum with ABS for optimum strength and low weight. The edge of the horn is covered with PVC for protection against impact damage.

Functions

All four models are for direct connection to a 100 V line output and are finished in light grey (RAL 7035). The horns are water and dust protected.

The horn loudspeakers include a 100 V transformer with taps on the primary winding to allow different power settings. Nominal full-power, half-power or quarter-power radiation (in 3 dB steps) can easily be selected by connecting the amplifier output to the appropriate tap. A 2 m four-core cable is fitted to the horns. Each core is a different color, and is connected to one of the primary taps on the transformer.

The horn loudspeakers are supplied complete with sturdy adjustable mounting brackets, allowing the sound beam to be accurately directed.

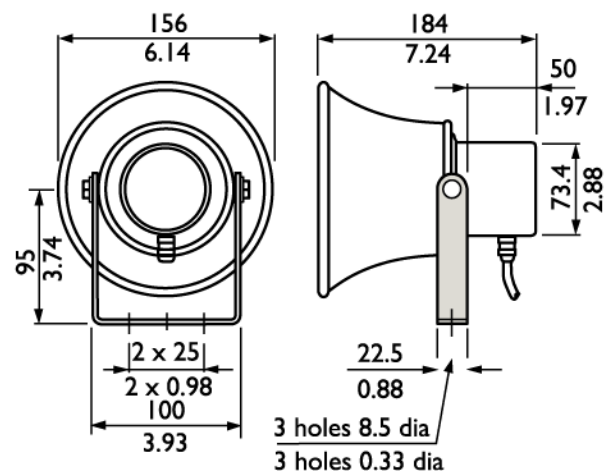
Certifications and Approvals

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.

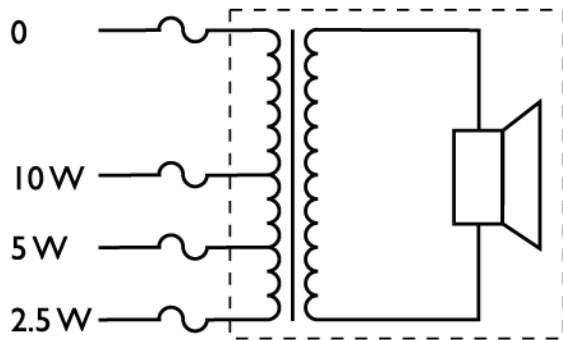
Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Self-extinguishing		acc. to UL 94 V0

Installation/Configuration Notes

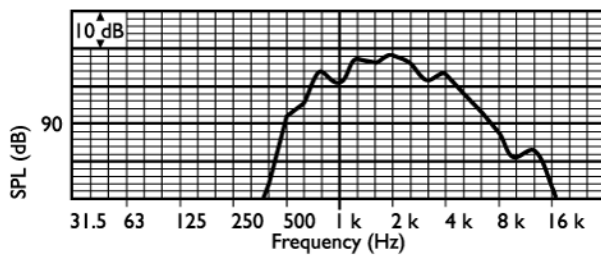
LBC 3481/12



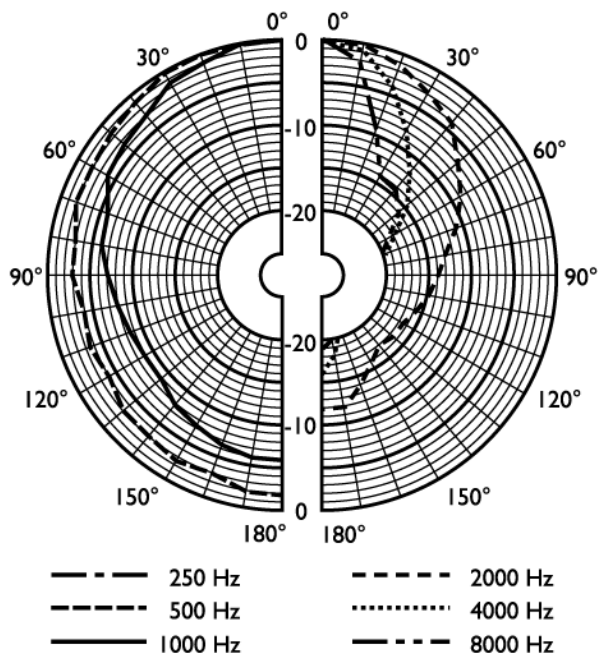
Dimensions in mm (in)



Circuit diagram



Frequency response

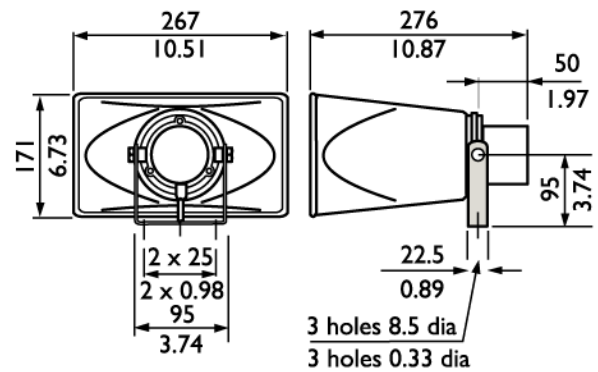


Polar diagram (measured with pink noise)

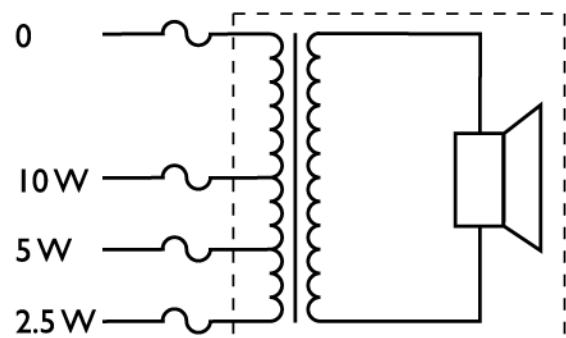
	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	-	-	94	103	105	98	86
SPL max.	-	-	104	113	115	108	96
Q-factor	-	-	1.7	3.5	7.8	25.7	52.5
Efficiency	-	-	1.82	7.08	5.13	0.31	0.01
H. angle	-	-	180	160	95	50	30
V. angle	-	-	180	160	95	50	30

Acoustical performance specified per octave

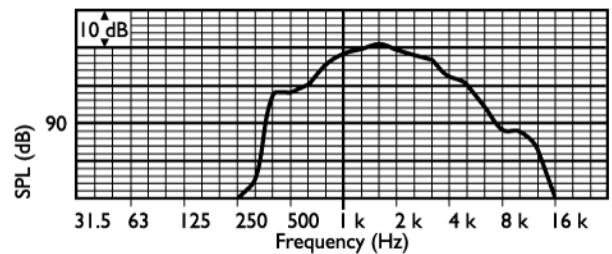
LBC 3491/12



Dimensions in mm (in)



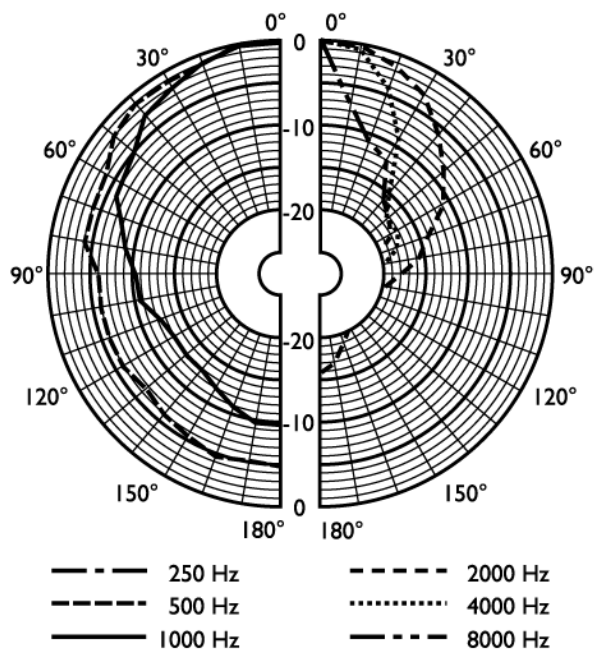
Circuit diagram



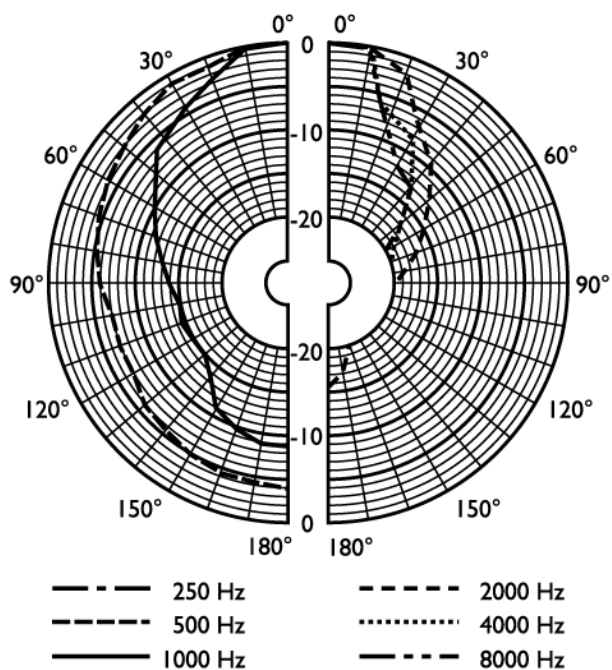
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	-	-	99	108	111	106	97
SPL max.	-	-	109	118	121	116	107
Q-factor	-	-	2.7	6.5	15.8	40.7	75.9
Efficiency	-	-	3.72	12.3	10	1.23	0.08
H. angle	-	-	180	90	55	40	30
V. angle	-	-	180	130	80	45	15

Acoustical performance specified per octave

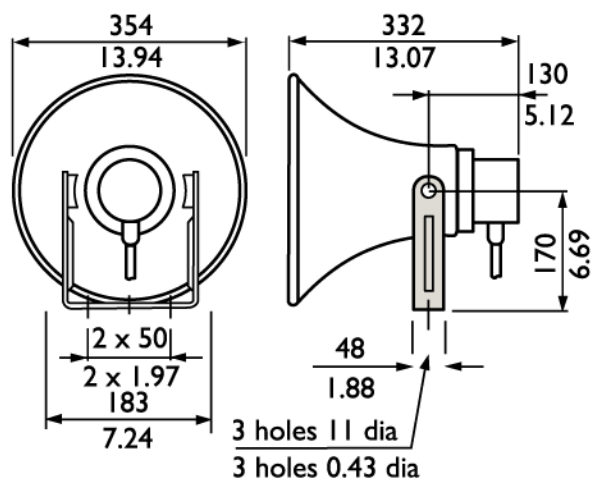


Polar diagram vertical (measured with pink noise)

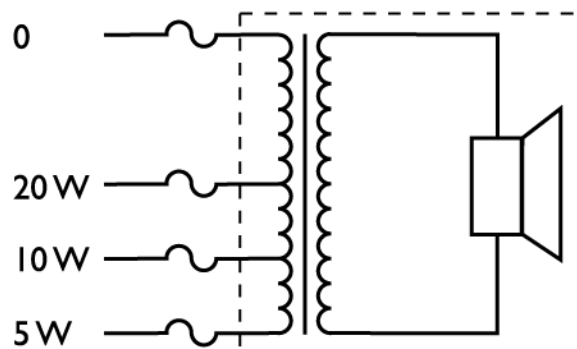


Polar diagram horizontal (measured with pink noise)

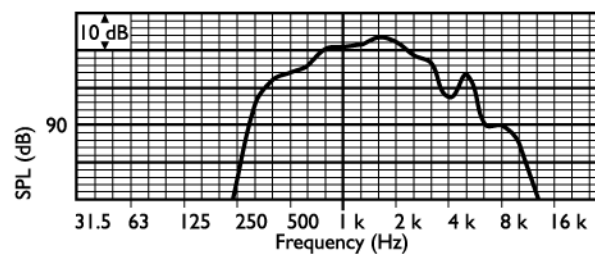
LBC 3492/12



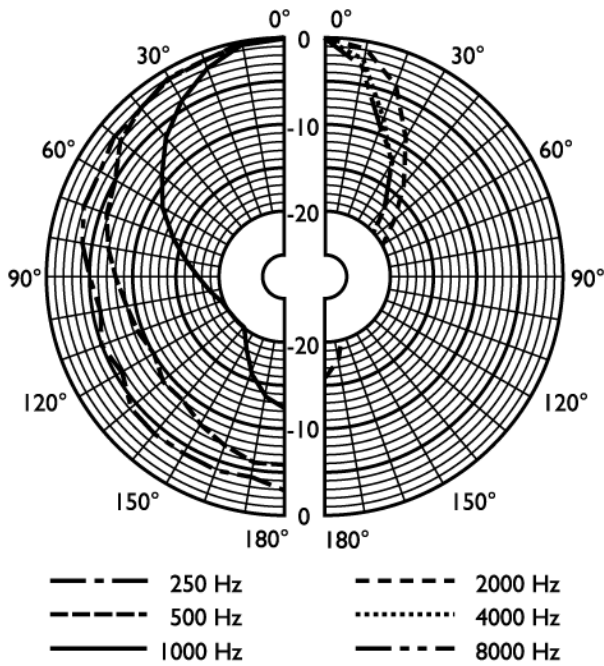
Dimensions in mm (in)



Circuit diagram



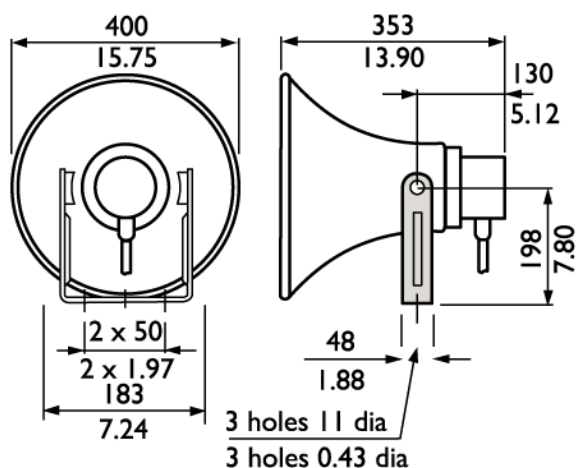
Frequency response



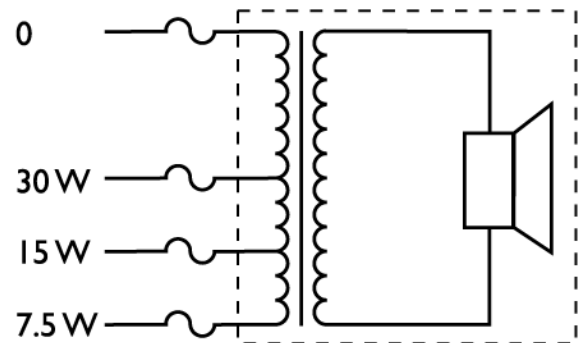
Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	-	93	105	110	112	104	90
SPL max.	-	106	118	123	125	117	103
Q-factor	-	2.2	3.5	10.7	30.9	57.5	75.9
Efficiency	-	1.15	11.22	11.75	6.46	0.55	0.02
H. angle	-	180	145	80	45	35	30
V. angle	-	180	145	80	45	35	30

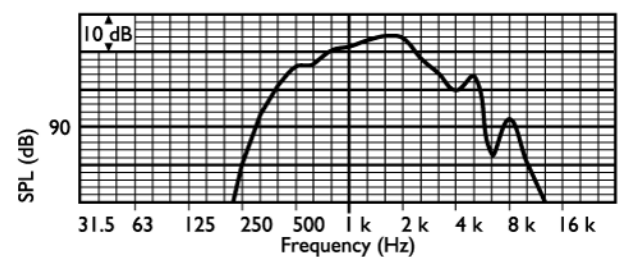
Acoustical performance specified per octave

LBC 3493/12

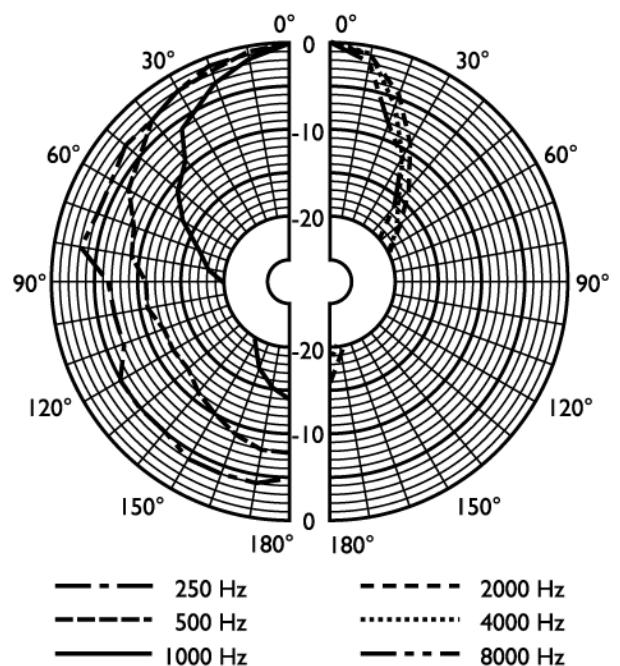
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	-	92	105	111	112	104	90
SPL max.	-	107	120	126	127	119	105
Q-factor	-	2.6	5.1	15.1	37.2	61.7	74.1
Efficiency	-	0.78	7.76	10.47	5.37	0.41	0.02

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
H. angle	-	180	120	70	45	40	30
V. angle	-	180	120	70	45	40	30

Acoustical performance specified per octave

Ordering Information

LBC 3481/12 Horn Loudspeaker, Circular, 10 W **LBC3481/12**
10 W, circular

LBC 3491/12 Horn Loudspeaker, Rectangular, 10 W **LBC3491/12**
10 W, rectangular

LBC 3492/12 Horn Loudspeaker, Circular, 20 W **LBC3492/12**
20 W, circular

LBC 3493/12 Horn Loudspeaker, Circular, 30 W **LBC3493/12**
30 W, circular

Accessories

LBC 1256/00 EVAC Connection Adapter **LBC1256/00**
3-pole screw connector, 100 pieces

Technical Specifications



LBC3481/12



LBC3491/12



LBC3492/12



LBC3493/12

Electrical				
Max power	15 W	15 W	30 W	45 W
Rated power (PHC)	10 / 5 / 2.5 W	10 / 5 / 2.5 W	20 / 10 / 5 W	30 / 15 / 7.5 W
Sound pressure level at rated power / 1 W (1 kHz, 1 m)	113 dB / 103 dB (SPL)	118 dB / 108 dB (SPL)	123 dB / 110 dB (SPL)	126 dB / 111 dB (SPL)
Effective frequency range (-10 dB)	500Hz to 7kHz	480Hz to 5.5kHz	380Hz to 5.5kHz	380Hz to 5kHz
Opening angle horizontal	1 kHz / 4 kHz (-6 dB) 160° / 50°	1 kHz / 4 kHz (-6 dB) 90° / 40°	1 kHz / 4 kHz (-6 dB) 80° / 35°	1 kHz / 4 kHz (-6 dB) 70° / 40°
Opening angle vertical	160° / 50°	130° / 45°	80° / 35°	70° / 40°
Rated voltage	100 V	100 V	100 V	100 V
Rated impedance	1000 ohm	1000 ohm	500 ohm	333 ohm
Connection	2 m, 4-wire cable	2 m, 4-wire cable	2 m, 4-wire cable	2 m, 4-wire cable
Mechanical				
Dimensions (L x W)	-	267 x 171 mm 10.51 x 6.73 in	-	-
Aperture (L x W)	-	-	-	-
Aperture diameter	156 mm (6.14 in)	171 x 267 mm (6.73 x 10.51 in)	354 mm (13.94 in)	400 mm (15.75 in)
Overall length	184 mm (7.24 in)	276 mm (10.87 in)	332 mm (13.07 in)	353 mm (13.90 in)
Color	Light grey (RAL 7035)	Light grey (RAL 7035)	Light grey (RAL 7035)	Light grey (RAL 7035)
Weight	1.25 kg (2.75 lb)	1.4 kg (3.08 lb)	2.65 kg (5.83 lb)	3 kg (6.6 lb)
Environmental				
Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)	-25 °C to +55 °C (-13 °F to +131 °F)	-25 °C to +55 °C (-13 °F to +131 °F)	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)	-40 °C to +70 °C (-40 °F to +158 °F)	-40 °C to +70 °C (-40 °F to +158 °F)	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%	<95%	<95%	<95%

LH1-10M10E Horn Loudspeaker



Features

- ▶ **High efficiency driver**
- ▶ **Excellent speech reproduction**
- ▶ **Provision for inside mounting of the optional line / loudspeaker supervision board**
- ▶ **Water-and dust protected to IP 65**
- ▶ **Compliant with EVAC standards**

The LH1-10M10E high-efficiency horn loudspeaker, provide excellent speech reproduction and sound distribution for a wide scope of indoor and outdoor applications. It is ideal for sports grounds, parks, exhibitions, factories and swimming pools.

The LH1-10M10E is a rectangular shaped 10 W horn loudspeaker, made from aluminum. The edge of the horn is covered with a PVC profile for protection against impact damage. The rear cover of the horn is made from self-extinguishing ABS (acc. to class UL 94 V0).

The housing color is light grey (RAL 7035), and is water and dust protected.

Functions

Voice Alarm

Voice alarm loudspeakers are specifically designed for use in buildings, where the performance of PA systems is subject to official regulations. The LH1-10M10E is designed for voice alarm systems, and is compliant with British Standards BS 5839-8 and EN 60849.

Protection

The horn loudspeaker has built-in protection to ensure that in the event of a fire damage does not cause failure of the connected circuit. In this way, system integrity is maintained, ensuring loudspeakers in other areas can still be used to inform people of the situation.

Connections and Safety

The horn loudspeaker has a ceramic terminal block, thermal fuse, and heat-resistant, high-temperature wiring. Four primary taps are provided on the built-in matching transformer to allow selection of the output power.

The horn loudspeaker has a provision for internally mounting the optional line/loudspeaker supervision board.

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 the speakers can withstand two times their rated power for short durations. This ensures extra reliability under extreme conditions, leading to greater customer satisfaction, longer operating life, and much less chance of failure or performance deterioration.

Safety	acc. to EN 60065
EVAC	acc. to BS 5839-8 / EN60849
Water and dust protected	acc. to IEC 60529, IP 65

Installation/Configuration Notes

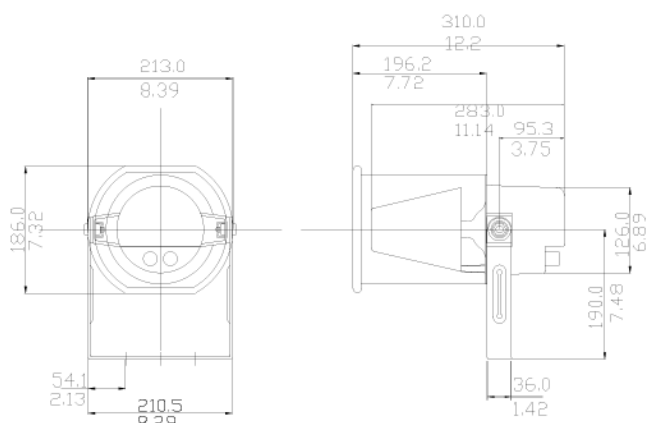
The connection cable could be fed through a cable gland (PG 13.5) in the rear cover. For loop- through connection, the rear cover is fitted with a second hole (covered as standard supplied).

Mounting

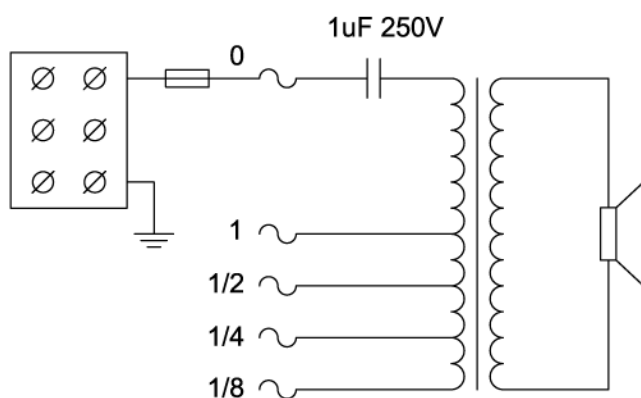
The horn loudspeaker is supplied, complete with sturdy adjustable steel U-shape bracket for mounting onto walls or ceilings, allowing the sound beam to be accurately directed.

Simple Power Setting

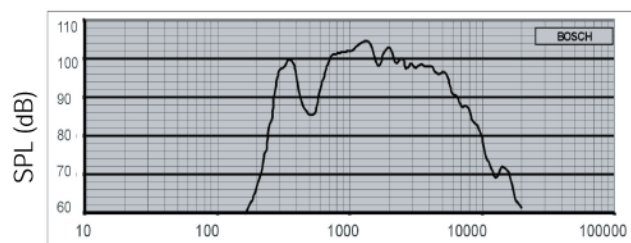
The horn has a three-way ceramic terminal block with screw connection (including earth). Four primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power and eighth-power radiation (in 3 dB steps).



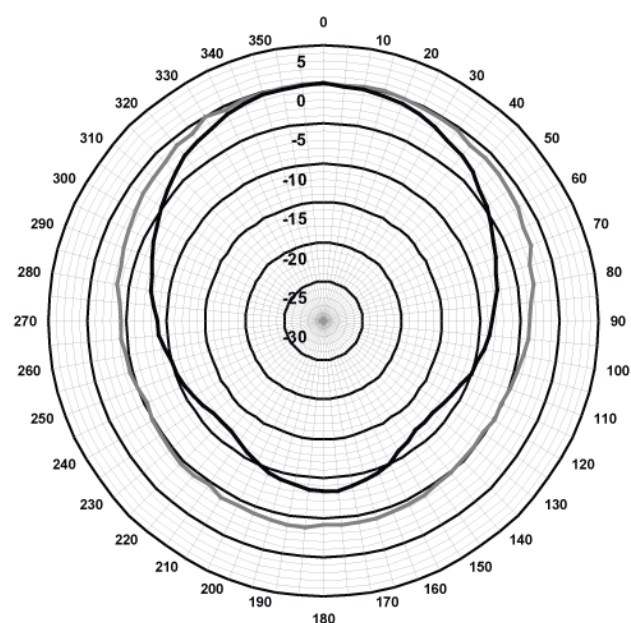
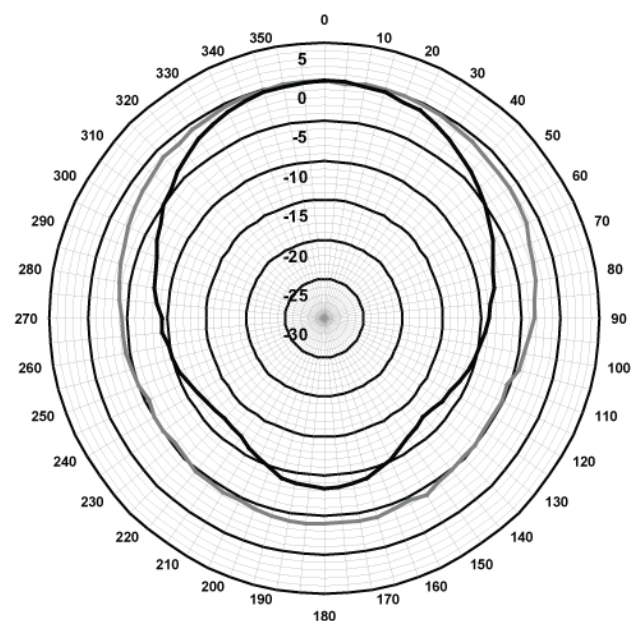
Dimensions in mm (in)



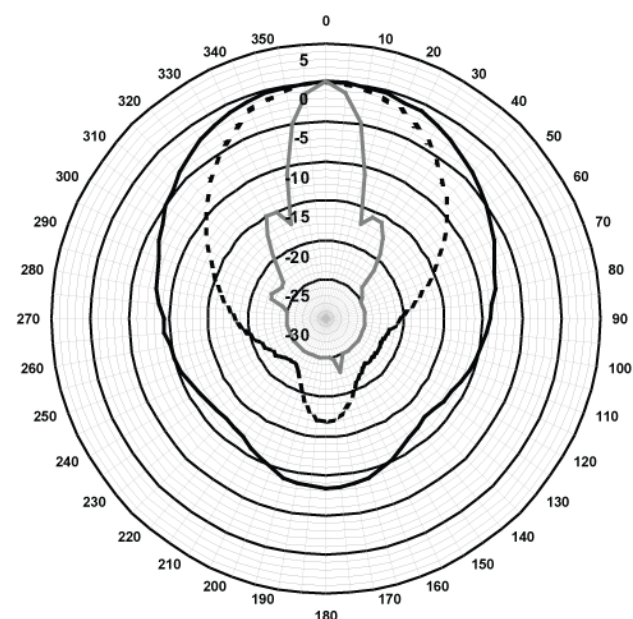
Circuit diagram



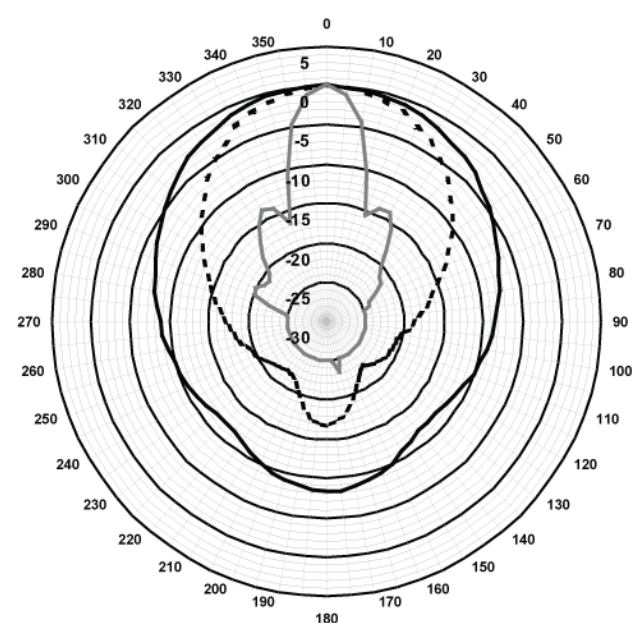
Frequency response



Polar diagrams (Horizontal and Vertical, measured with pink noise)



— 1000 - - - 2000 4000 - · - · 8000



— 1000 - - - 2000 4000 - · - · 8000

Polar diagrams (Horizontal and Vertical, measured with pink noise)

Octave band sensitivity *

	Octave SPL 1W/m	Total octave SPL 1W/m	Total octave SPL Pmax/1m
125 Hz	55.1	-	-
250 Hz	93.1	-	-
500 Hz	93.9	-	-
1000 Hz	102.0	-	-
2000 Hz	100.1	-	-

4000 Hz	97.2	-	-
8000 Hz	87.4	-	-
A-weighted	-	95.8	105.7
Lin-weighted	-	95.6	104.6

Octave band opening angles

	Horizontal	Vertical
125 Hz	-	-
250 Hz	360	360
500 Hz	360	360
1000 Hz	120	125
2000 Hz	72	76
4000 Hz	35	36
8000 Hz	22	24

Acoustical performance specified per octave

* (all measurements are done with a pink noise signal; the values are in dB SPL)

Parts Included

1	LH1-10M10E Horn Loudspeaker
1	Installation instruction

Technical Specifications

Electrical*

Maximum power	15 W
Rated power (PHC)	10 W
Power tapping	10 / 5 / 2.5 / 1.25 W
Sound pressure level at 10 W / 1 W (1 kHz, 1 m)	112 / 102 dB (SPL)
Effective frequency range (- 10 dB)	280 Hz to 5800 Hz
Opening angle at 1 kHz / 4 kHz (-6 dB)	
Horizontal	120° / 35°
Vertical	125° / 35°
Rated input voltage	100 V
Rated impedance	1000 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (W x D)	(213 x 186) x 310 mm (8.39 x 7.32) x 12.2 in)
Weight	3.6 kg (7.93 lb)
Color	Light grey (RAL 7035)
Material (horn / rear cover)	Aluminum / ABS
Cable diameter	6 mm to 12 mm (0.24 in to 0.47 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LH1-10M10E Horn Loudspeaker	LH1-10M10E
10 W, made from aluminum.	

LBC 3482/00 Horn Loudspeaker



4

Features

- ▶ **High efficiency driver**
- ▶ **Excellent speech reproduction**
- ▶ **Up to 37.5 W (max power)**
- ▶ **Provision for inside mounting of the optional line/loudspeaker supervision board**
- ▶ **Water and dust protected to IP 65**
- ▶ **Compliant with EVAC standards**

Bosch high-efficiency horn loudspeakers provide excellent speech reproduction and sound distribution for a wide scope of outdoor applications. They are ideal for sports grounds, parks, exhibitions, factories and swimming pools.

The LBC 3482/00 is a circular 25 W horn loudspeaker, measuring 355 mm (14 in) in diameter. They are made from aluminum. The edges of the horns are covered with a PVC profile for protection against impact damage. They are light grey (RAL 7035), and are water and dust protected.

Voice alarm loudspeaker

The LBC 3482/00 is designed for use in voice alarm systems and is compliant with EVAC standards.

The horn 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 horn loudspeaker has a ceramic terminal block, thermal fuse and heat resistant, high-temperature wiring.

They have provision for inside mounting the optional line/loudspeaker supervision boards.

Functions

The rear cover on the horn is made from self-extinguishing ABS (acc. to class UL 94 V0). The connection cable is fed out through a cable gland (PG 13.5) in rear cover. For loop through connection, the rear cover is fitted with a second hole (covered as standard supplied).

These integrated horns are also available as separate horn and driver, allowing installing any combination of horn and driver. See order information for the type numbers.

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 operation life, and much less chance of failure or performance deterioration.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Water and dust protected	acc. to IEC 60529, IP 65
EVAC	acc. to BS 5839-8

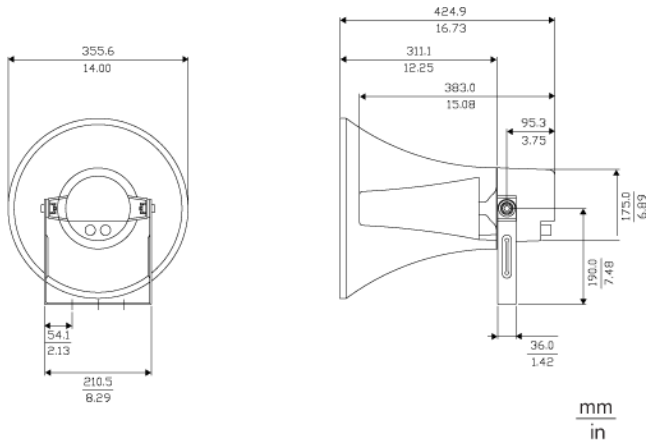
Installation/Configuration Notes

Simple Power Setting

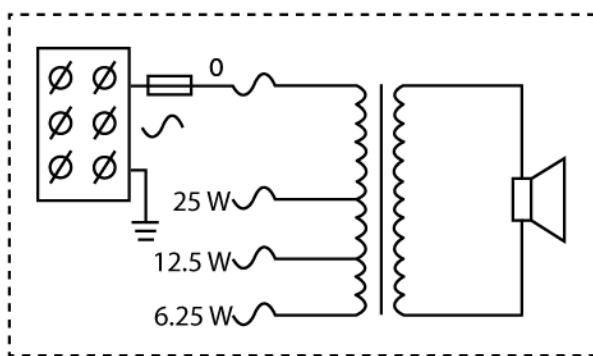
The horn has a three-way terminal block with screw connection (including earth). Three primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).

Mounting

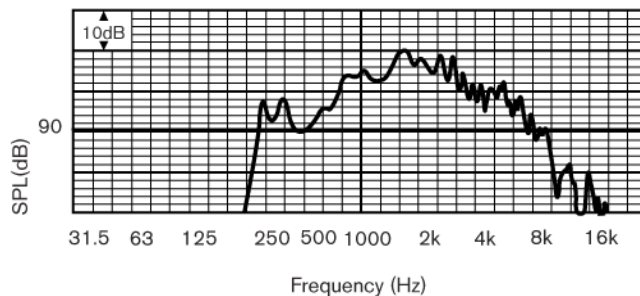
The horn loudspeakers are supplied, complete with sturdy adjustable steel mounting brackets, allowing the sound beam to be accurately directed.



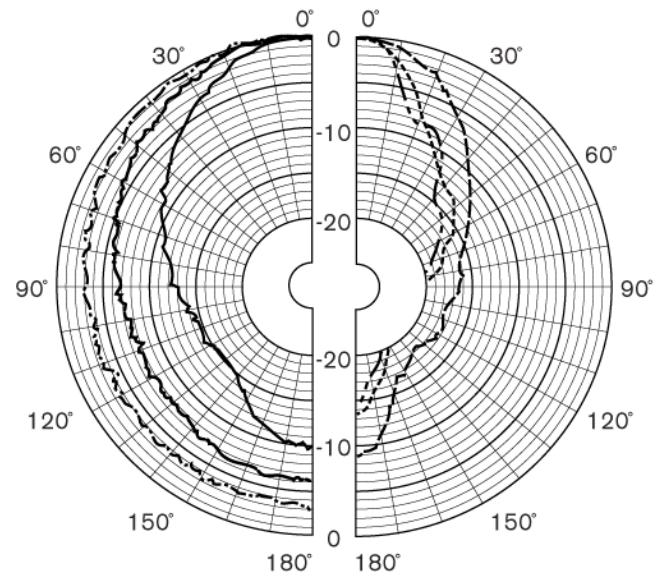
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured in pink noise)

Parts Included

Quantity Component

1	LBC 3482/00 Horn Loudspeaker
1	PG 13.5 cable gland (fitted)

Technical Specifications

Electrical*

Maximum power	37.5 W
Rated power	25 / 12.5 / 6.25 W
Sound pressure level at 25 W / 1 W (1 kHz, 1 m)	121 dB / 107 dB (SPL)
Effective frequency range (-10 dB)	550 Hz to 5 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	70° / 25°
Rated voltage	100 V
Rated impedance	400 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (L x Dmax)	425 x 355 mm (16.7 x 14 in)
Weight	3.6 kg (8 lb)
Color	Light grey (RAL 7035)
Cable diameter	6 mm to 12 mm (0.24 in to 0.47 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3482/00 Horn Loudspeaker 25 W, aluminum, circular	LBC3482/00
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Accessories

LBC 3472/00 Horn Driver 25 W, 100 V	LBC 3472/00
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LBC 3473/00 Horn Driver 35 W, 100 V	LBC 3473/00
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LBC 3478/00 Horn, 14" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3478/00
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LBC 3479/00 Horn, 20" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3479/00
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LBC 3483/00 Horn Loudspeaker



Features

- ▶ **High efficiency driver**
- ▶ **Excellent speech reproduction**
- ▶ **Up to 52.5 W (maximum power)**
- ▶ **Provision for inside mounting of the optional line/loudspeaker supervision board**
- ▶ **Water and dust protected to IP 65**
- ▶ **Compliant with EVAC standards**

Bosch high-efficiency horn loudspeakers provide excellent speech reproduction and sound distribution for a wide scope of outdoor applications. They are ideal for sports grounds, parks, exhibitions, factories and swimming pools.

The LBC 3483/00 is a circular, 35 W horn loudspeaker, measuring 490 mm (19.6 in) in diameter. They are made from aluminum. The edges of the horns are covered with a PVC profile for protection against impact damage. They are light grey (RAL 7035), and are water and dust protected.

Voice alarm loudspeaker

The LBC 3483/00 is designed for use in voice alarm systems and is compliant with EVAC standards.

The horn 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 Horn loudspeaker has a ceramic terminal block, thermal fuse and heat resistant, high-temperature wiring.

They have provision for inside mounting the optional line/loudspeaker supervision boards.

Functions

The rear cover on the horn is made from self-extinguishing ABS (acc. to class UL 94 V0). The connection cable is fed out through a cable gland (PG 13.5) in rear cover. For loop through connection, the rear cover is fitted with a second hole (covered as standard supplied).

These integrated horns are also available as separate horn and driver, allowing installing any combination of horn and driver. See order information for the type numbers.

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 operation life, and much less chance of failure or performance deterioration.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Water and dust protected	acc. to IEC 60529, IP 65
EVAC	acc. to BS 5839-8

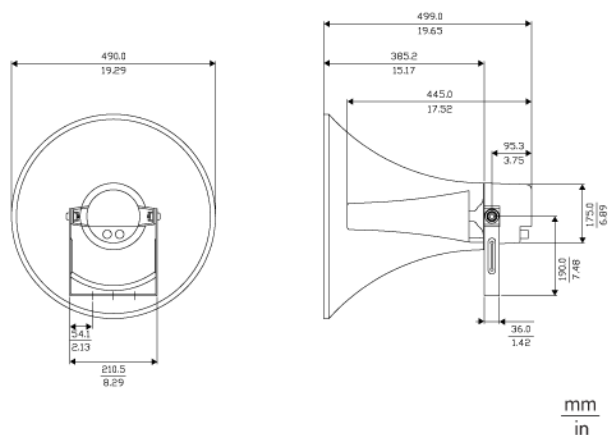
Installation/Configuration Notes

Simple Power Setting

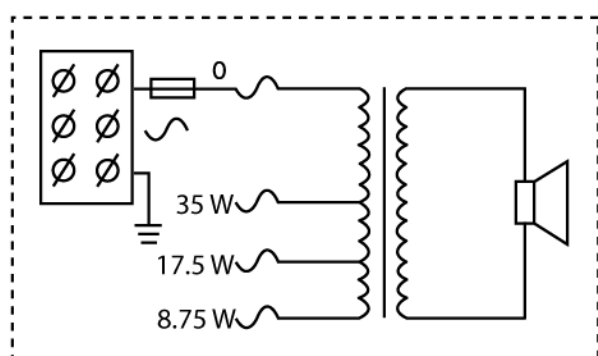
The horn has a three-way terminal block with screw connection (including earth). Three primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).

Mounting

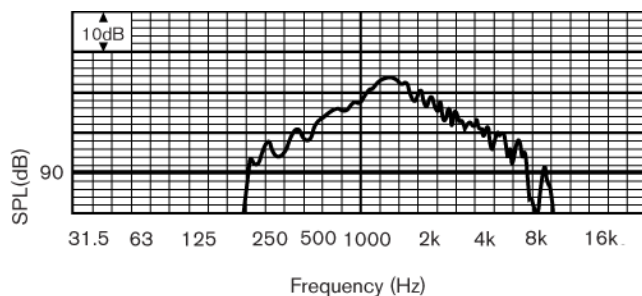
The horn loudspeakers are supplied complete with sturdy adjustable steel mounting brackets, allowing the sound beam to be accurately directed.



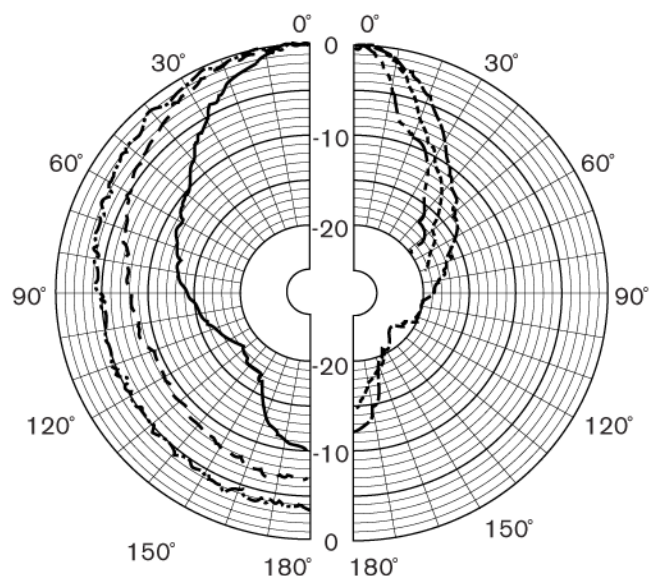
Dimensions in mm (in)



Circuit diagram



Frequency response



Polar diagram (measured in pink noise)

Parts Included

Quantity Component

1	LBC 3483/00 Horn Loudspeaker
1	PG 13.5 cable gland (fitted)

Technical Specifications

Electrical*

Maximum power	52.5 W
Rated power	35 / 17.5 / 8.75 W
Sound pressure level at 35 W / 1 W (1 kHz, 1 m)	127 dB / 112 dB (SPL)
Effective frequency range (-10 dB)	380 Hz to 5 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	50° / 25°
Rated voltage	100 V
Rated impedance	286 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (L x Dmax)	499 x 490 mm (20 x 19.6 in)
Weight	4.5 kg (9.9 lb)
Color	Light grey (RAL 7035)
Cable diameter	6 mm to 12 mm (0.24 in to 0.47 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3483/00 Horn Loudspeaker 35 W, aluminum, circular	LBC3483/00
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Accessories

LBC 3472/00 Horn Driver 25 W, 100 V	LBC 3472/00
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LBC 3473/00 Horn Driver 35 W, 100 V	LBC 3473/00
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LBC 3478/00 Horn, 14" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3478/00
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LBC 3479/00 Horn, 20" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3479/00
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LBC 3484/00 Horn Loudspeaker



4

Features

- ▶ **High efficiency driver**
- ▶ **Excellent speech reproduction**
- ▶ **Up to 75 W (max power)**
- ▶ **Provision for inside mounting of the optional line/loudspeaker supervision board**
- ▶ **Water and dust protected to IP 65**
- ▶ **Compliant with EVAC standards**

Bosch high-efficiency horn loudspeakers provide excellent speech reproduction and sound distribution for a wide scope of outdoor applications. They are ideal for sports grounds, parks, exhibitions, factories and swimming pools.

The LBC 3484/00 is a circular 50 W horn loudspeaker, measuring 490 mm (19.6 in) in diameter. They are made from aluminum. The edges of the horns are covered with a PVC profile for protection against impact damage. They are light grey (RAL 7035), and are water and dust protected.

Voice alarm loudspeaker

The LBC 3484/00 is designed for use in voice alarm systems and is compliant with EVAC standards.

The Horn 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 Horn loudspeaker has a ceramic terminal block, thermal fuse and heat resistant, high-temperature wiring.

They have provision for inside mounting the optional line/loudspeaker supervision boards.

Functions

The rear cover on the horn is made from self-extinguishing ABS (acc. to class UL 94 V0). The connection cable is fed out through a cable gland (PG 13.5) in rear cover. For loop through connection, the rear cover is fitted with a second hole (covered as standard supplied).

These integrated horns are also available as separate horn and driver, allowing installing any combination of horn and driver. See order information for the type numbers.

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 operation life, and much less chance of failure or performance deterioration.

Region	Certification
Europe	CE
Safety	acc. to EN 60065
Water and dust protected	acc. to IEC 60529, IP 65
EVAC	acc. to BS 5839-8

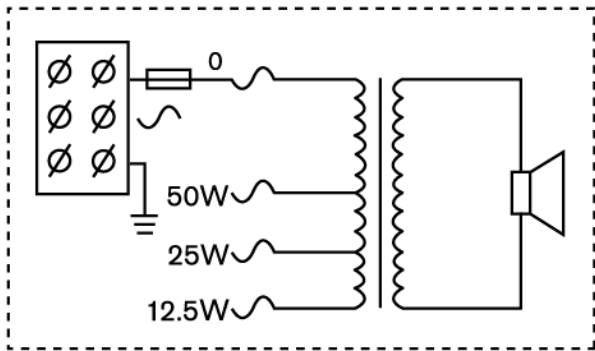
Installation/Configuration Notes

Simple Power Setting

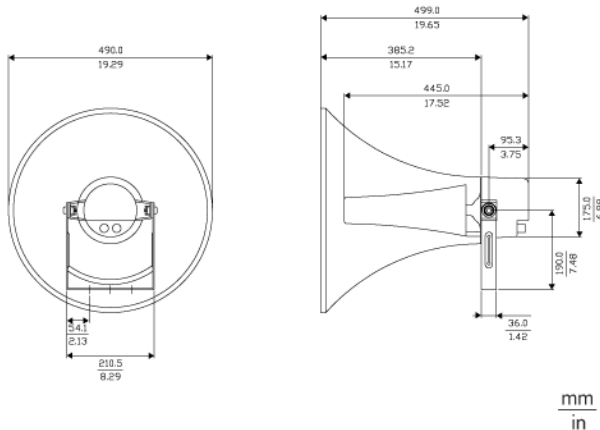
The horn has a three-way terminal block with screw connection (including earth). Three primary taps are provided on the matching transformer to allow selection of nominal full-power, half-power or quarter-power radiation (in 3 dB steps).

Mounting

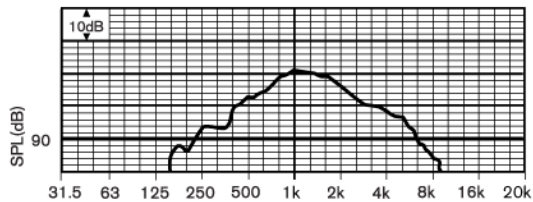
The horn loudspeakers are supplied complete with sturdy adjustable steel mounting brackets, allowing the sound beam to be accurately directed.



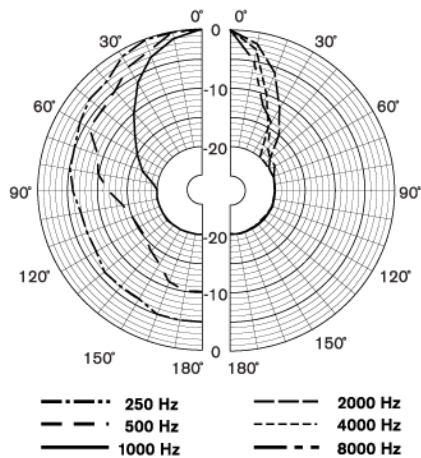
Circuit diagram



Dimensions in mm (in)



Frequency response



Polar diagram (measured in pink noise)

Parts Included

Quantity	Components
1	LBC 3484/00 Horn Loudspeaker
1	PG 13.5 cable gland (fitted)

Technical Specifications

Electrical*

Maximum power	75 W
Rated power	50 / 25 / 12.5 W
Sound pressure level at 50 W / 1 W (1 kHz, 1 m)	127 dB / 110 dB (SPL)
Effective frequency range (-10 dB)	350 Hz to 4 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	60° / 28°
Rated voltage	100 V
Rated impedance	200 ohm
Connector	Screw terminal block

Mechanical

Dimensions (L x Dmax)	499 x 490 mm (20 x 19.6 in)
Weight	6 kg (13.22 lb)
Color	Light grey (RAL 7035)
Cable diameter	6 mm to 12 mm (0.24 in to 0.47 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3484/00 Horn Loudspeaker 50 W, aluminum, circular	LBC3484/00
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Accessories

LBC 3472/00 Horn Driver 25 W, 100 V	LBC 3472/00
LBC 3473/00 Horn Driver 35 W, 100 V	LBC 3473/00
LBC 3478/00 Horn, 14" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3478/00
LBC 3479/00 Horn, 20" without Driver aluminum, suitable for use with driver units LBC 3472/00, LBC 3473/00, and LBC 3474/00	LBC 3479/00

LBC 340x/16 Horn Loudspeakers



4

Features

- ▶ **Excellent acoustic properties**
- ▶ **Choice of driver units**
- ▶ **Water and dust protected to IP 65**
- ▶ **Versatile mounting bracket**
- ▶ **UV light resistant**
- ▶ **Self-extinguishing to UL 94 V0**
- ▶ **Provision for inside mounting of the optional line/loudspeaker supervision board**

The Bosch professional horn loudspeaker system allows a range of different driver units to be installed into the various horns. The system includes four horns, three circular types with aperture diameters of 255, 380 and 510 mm and a rectangular model with an opening measuring 390 x 235 mm.

Functions

The drivers (ordered separately) are mounted inside the horn, and the connection cable is fed out through a cable gland in the cover plate. This makes the loudspeaker horn/driver unit splash-waterproof, and therefore ideal for outdoor sound reinforcement applications. Three driver units are available, a 15 W, 30 W and a 50 W type for 100 V lines only. See separate datasheet.

In the construction of the horns, maximum use has been made of standard parts in a modular concept. The screw thread for securing the driver units is a standard 1 3/8-inch thread (1 3/8" - 18 UNEF-2A). The shape of the cover plate gives the horns a distinctive and easily recognizable style.

The cover plates have provision on their inside face for mounting the optional line/loudspeaker supervision board (and for mounting the EVAC Connection Adapter).

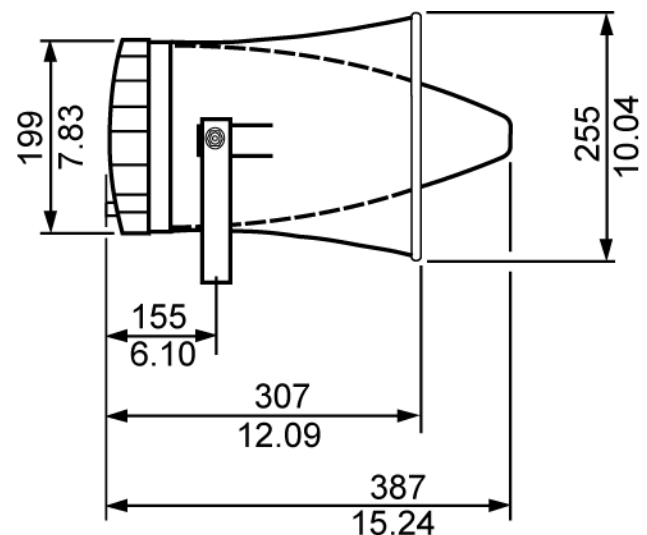
There is also an extra knock-out hole to enable loop-through cabling (if loop-through is used, an extra optional cable gland PG 13.5 must be fitted).

They are made from flame-retardant, high-impact plastic combining strength with low weight. This rugged material is resistant to ultraviolet light, aggressive environments and most industrial chemicals. The horns (incl. brackets) are finished in light grey. The sturdy steel mounting bracket (ST 37-2 DIN 1652) allows easy mounting and directing of the horn.

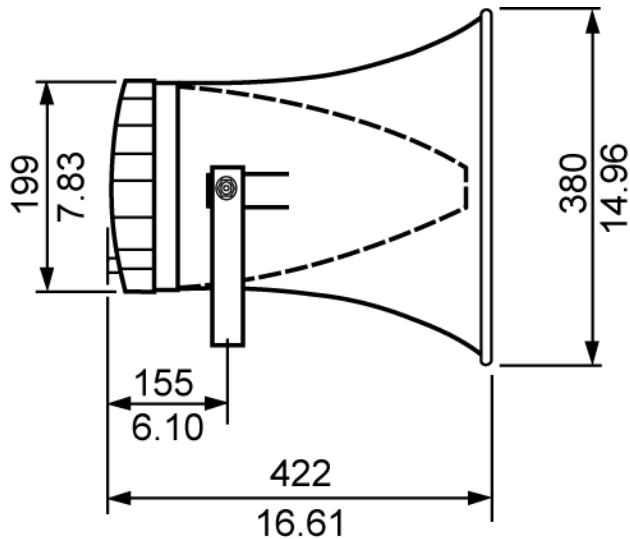
Certifications and Approvals

Water and dust protected	acc. to IEC 60529, IP 65 (all models)
Self-extinguishing	acc. to UL 94 V0

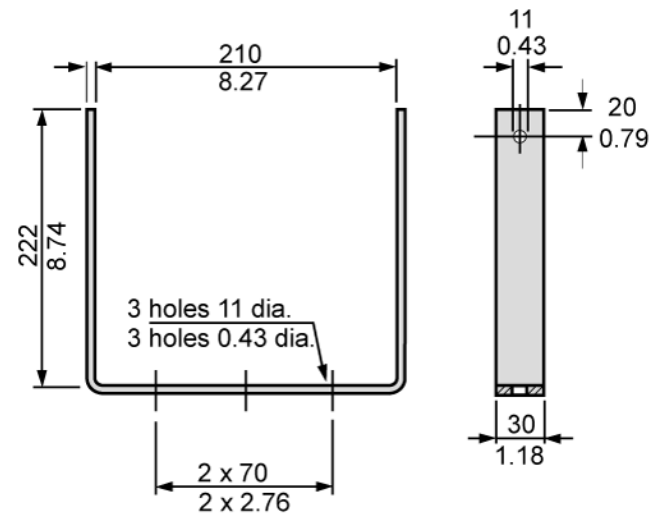
Installation/Configuration Notes



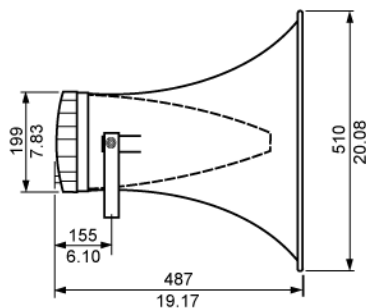
LBC 340x/16 Dimensions in mm (in)



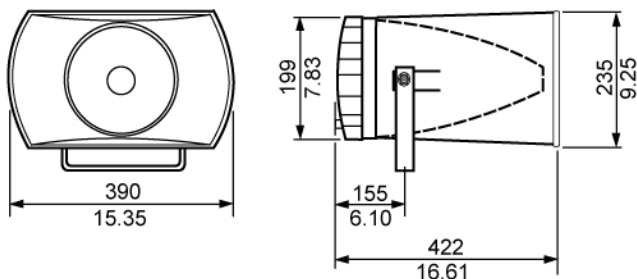
LBC 3404/16 Dimensions in mm (in)



All models mounting bracket dimensions in mm (in)



LBC 3405/16 Dimensions in mm (in)



LBC 3406/16 Dimensions in mm (in)

Ordering Information

LBC 3403/16 Horn, Circular, 10" without Driver diameter = 255 mm (10.04 in)	LBC3403/16
LBC 3404/16 Horn, Circular, 15" without Driver diameter = 380 mm (14.96 in)	LBC3404/16
LBC 3405/16 Horn, Circular, 20" without Driver diameter = 510 mm (20.08 in)	LBC3405/16
LBC 3406/16 Horn, Rectangular, 9 x 15" without Driver diameter = 235 x 390 mm (9.25 x 15.35 in)	LBC3406/16

Accessories

LBC 1256/00 EVAC Connection Adapter 3-pole screw connector, 100 pieces	LBC1256/00
LBN 9000/00 Driver Unit, 15 W 100 V, 22.5 / 15 W max / rated power (PHC)	LBN9000/00
LBN 9001/00 Driver Unit, 30 W 100 V, 45 / 30 W max / rated power (PHC)	LBN9001/00
LBN 9003/00 Driver Unit, 50 W 100 V, 75 / 50 W max / rated power (PHC)	LBN9003/00

LBC 340x/16 Horn Loudspeakers



LBC3403/16



LBC3404/16



LBC3405/16



LBC3406/16

Electrical

Sound pressure level at
rated power/1 W

(1 kHz, 1 m) with driver:

LBN 9000/00	121 / 109 dB (SPL)	124 / 112 dB (SPL)	125 / 113 dB (SPL)	122 / 110 dB (SPL)
LBN 9001/00	125 / 110 dB (SPL)	128 / 113 dB (SPL)	129 / 114 dB (SPL)	127 / 112 dB (SPL)
LBN 9003/00	127 / 110 dB (SPL)	130 / 113 dB (SPL)	132 / 115 dB (SPL)	129 / 112 dB (SPL)

Eff. frequency range

(-10 dB) with driver:

LBN 9000/00	400 Hz to 7 kHz	400 Hz to 9 kHz	400 Hz to 9 kHz	350 Hz to 6.5 kHz
LBN 9001/00	350 Hz to 6 kHz	300 Hz to 8.5 kHz	300 Hz to 8 kHz	300 Hz to 8 kHz
LBN 9003/00	380 Hz to 10 kHz	350 Hz to 10 kHz	350 Hz to 9 kHz	380 Hz to 10 kHz

Opening angle
at 1 kHz/4 kHz (-6 dB)

90° / 30°	70° / 25°	60° / 35°	100° / 35° horizontal 65° / 30° vertical
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Mechanical

Dimensions (L x D)	387 x 255 mm (15.25 x 10.47 in)	422 x 380 mm (16.63 x 14.97 in)	487 x 510 mm (19.19 x 20.09 in)	422 x (390 x 235) mm (16.63 x (15.37 x 9.26) in)
Weight (without driver)	2.94 kg (6.48 lb)	3.34 kg (7.36 lb)	3.54 kg (7.80 lb)	3.14 kg (6.92 lb)
Color	light grey (RAL 7035)	light grey (RAL 7035)	light grey (RAL 7035)	light grey (RAL 7035)
Cable diameter	6 to 10.5 mm (0.24 to 0.41 in)	6 to 10.5 mm (0.24 to 0.41 in)	6 to 10.5 mm (0.24 to 0.41 in)	6 to 10.5 mm (0.24 to 0.41 in)

Environmental

Operating temperature	-25° to +55°C (-13° to 131°F)	-25° to +55°C (-13° to 131°F)	-25° to +55°C (-13° to 131°F)	-25° to +55°C (-13° to 131°F)
Storage temperature	-40 to +70 °C (-40 to +158 °F)	-40 to +70 °C (-40 to +158 °F)	-40 to +70 °C (-40 to +158 °F)	-40 to +70 °C (-40 to +158 °F)
Relative humidity	<95%	<95%	<95%	<95%

LBN 900x/00 Driver Units



Features

- ▶ **High efficiency**
- ▶ **15 W, 30 W and 50 W versions**
- ▶ **1 3/8" screw thread**
- ▶ **Simple power setting**
- ▶ **Complies with international installation and safety regulations**

The Bosch professional horn loudspeaker system comprises a range of three high-efficiency driver units that can be installed into one of the compatible circular and rectangular horns (supplied separately without drivers). A standard 1 3/8" screw thread is used for mounting the drivers into horns. All models are treated against corrosion.

System Overview

The LBN 9000/00 is a 15 W driver unit and the LBN 9001/00 is a 30 W driver unit. Connections to 100 V lines are made using push-on spade terminals.

The LBN 9003/00 is a more powerful 50 W model. Connections to 100 V lines are made using screw terminals.

Functions

All driver units include a matching transformer to allow power tapping. See circuit diagram overleaf. This feature also allows impedance matching for different amplifier types.

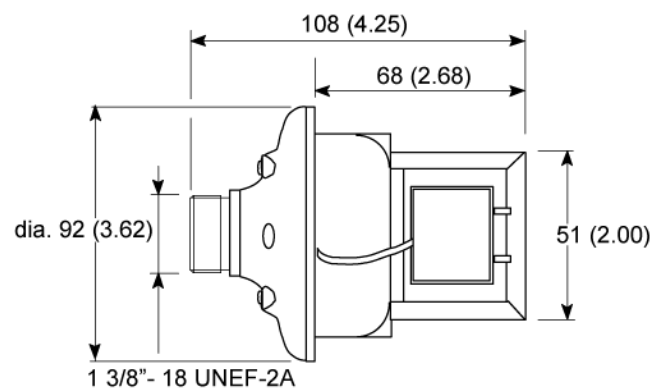
A range of horns is available for these driver units to allow tailor-made solutions for a variety of sound reinforcement applications. Three circular types (LBC 3403, LBC 3404 and LBC 3405 with diameters of 255, 380 and 510 mm respectively) and one rectangular type (LBC 3406, measuring 380 x 205 mm) are available. They are made from flame-retardant, high-impact plastic for high strength and low weight, and are finished in light grey. A sturdy steel mounted bracket is also supplied. See separate datasheet.

Certifications and Approvals

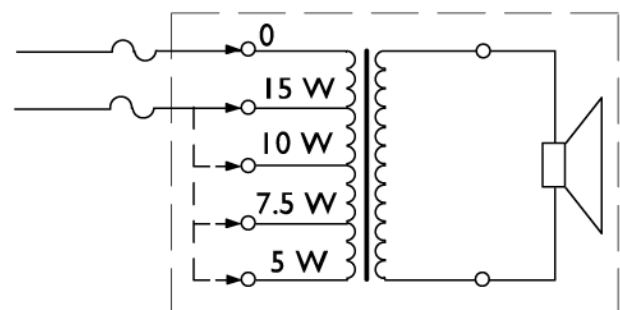
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

Installation/Configuration Notes

LBN 9000/00

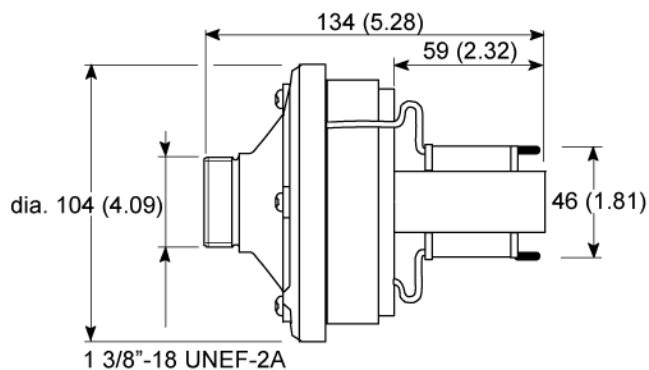


Dimensions in mm (in)

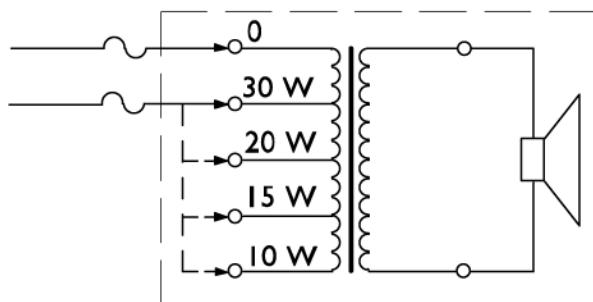


Circuit diagram

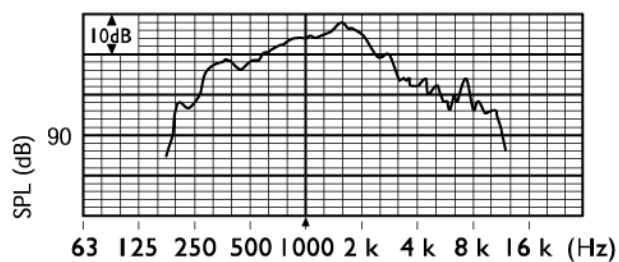
Frequency response

LBN 9001/00

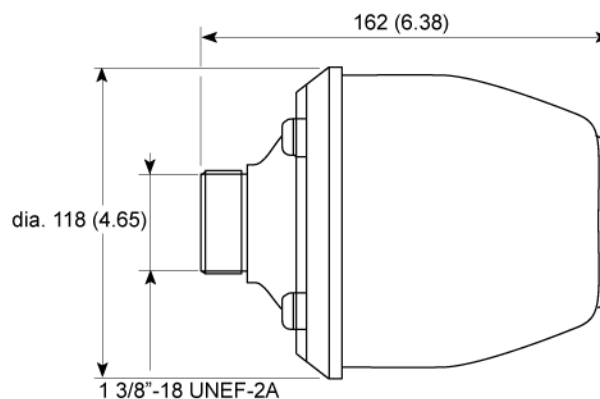
Dimensions in mm (in)



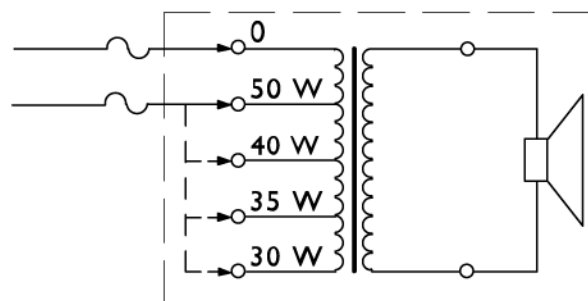
Circuit diagram



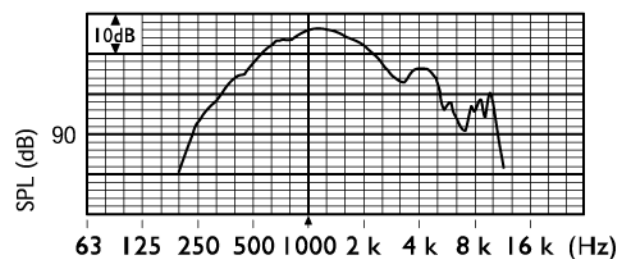
Frequency response

LBN 9003/00

Dimensions in mm (in)



Circuit diagram



Frequency response

Ordering Information

LBN 9000/00 Driver Unit, 15 W	LBN9000/00
100 V, 22.5 / 15 W max / rated power (PHC)	
LBN 9001/00 Driver Unit, 30 W	LBN9001/00
100 V, 45 / 30 W max / rated power (PHC)	
LBN 9003/00 Driver Unit, 50 W	LBN9003/00
100 V, 75 / 50 W max / rated power (PHC)	

LBN 900x/00 Driver Units



LBN9000/00



LBN9001/00



LBN9003/00

Electrical			
Max. power	22.5 W	45 W	75 W
Rated power (PHC)	15 / 10 / 7.5 / 5 W	30 / 20 / 15 / 10 W	50 / 40 / 35 / 30 W
Sound pressure level at rated power / 1 W (1 kHz, 1 m)*	125 / 113 dB (SPL)	129 / 114 dB (SPL)	131 / 114 dB (SPL)
Effective frequency range (-10 dB)*	400 Hz to 9 kHz	300 Hz to 8 kHz	400 Hz to 5 kHz
Rated voltage	100 V	100 V	100 V
Rated impedance	670 ohm	330 ohm	200 ohm
Voice coil impedance	8 ohm	16 ohm	16 ohm
Mechanical			
Dimensions (L x Dmax)	108 x 92 mm (4.25 x 3.62 in)	134 x 104 mm (5.28 x 4.09 in)	162 x 118 mm (6.38 x 4.65 in)
Weight (without horn)	1.3 kg (2.9 lb)	2.1 kg (4.6 lb)	3.2 kg (7.0 lb)
Screw thread	exterior thread, 1 3/8" 18 turns per inch	exterior thread, 1 3/8" 18 turns per inch	exterior thread, 1 3/8" 18 turns per inch
Environmental			
Operating temperature	-25 to +55 °C (-13 °F to +131 °F)	-25 to +55 °C (-13 °F to +131 °F)	-25 to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 to +70 °C (-40 °F to +158 °F)	-40 to +70 °C (-40 °F to +158 °F)	-40 to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%	<95%	<95%

* Measured with horn type LBC 3405

LBC 3700/00 Horn Loudspeaker



Features

- ▶ **High quality music horn for excellent speech and music reproduction**
- ▶ **Two-way system**
- ▶ **High sensitivity**
- ▶ **Wide opening angle**
- ▶ **Simple power setting**
- ▶ **Water and dust protected to IP 65**
- ▶ **Attractive ABS housing**
- ▶ **Complies with international installation and safety regulations**

The Bosch LBC 3700/00 Horn Loudspeaker features an extended frequency range and high sensitivity which makes it ideal for high quality speech and music reproduction. The wide opening angle ensures even sound distribution, so fewer horns are needed to cover a given area.

Functions

The rectangular horn features a unique combination of a re-entrant horn with two transducers, one for low- and the other for high frequencies, resulting in breathtaking sound clarity.

The horn is weather protected and can be used in areas with high humidity. It is therefore suitable for outdoor applications such as swimming pools, sports stadiums, leisure parks, cruise ships, schools and train stations, as well as for indoor public address. Finished in light grey RAL 7035 color, the ABS horn is both stylish and lightweight.

Certifications and Approvals

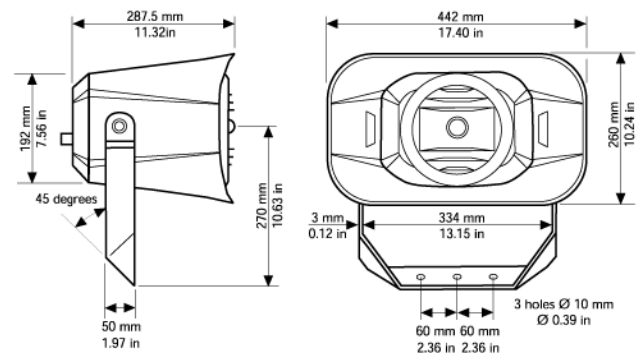
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated 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.

Region	Certification
Europe	CE Declaration of Conformity
Safety	acc. to EN 60065
Water and dust protected	acc. to IEC 60529, IP 65
Self-extinguishing ABS	acc. to UL 94 V0

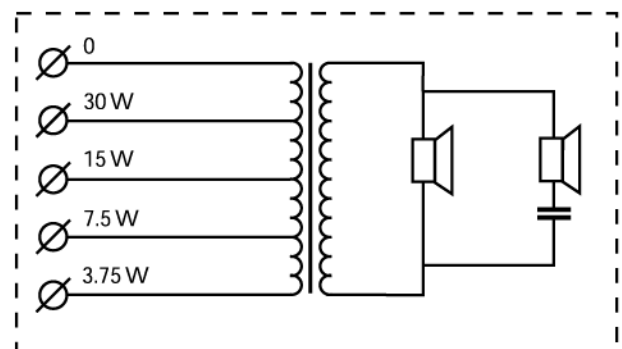
Installation/Configuration Notes

The 100 V horn loudspeaker includes a transformer with taps on the primary winding for different power settings. Nominal full-power, half-power, quarter-power or eight-power radiation (i.e. in 3 dB steps) can easily be selected by connected the 100 V line to the appropriate tap.

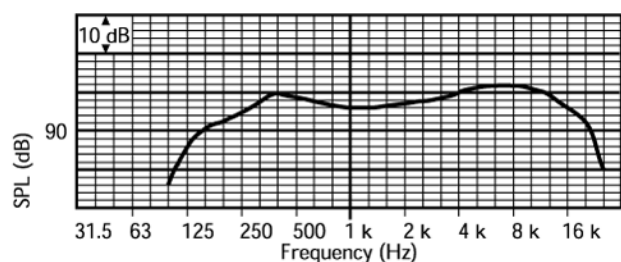
The horn loudspeaker is supplied with a sturdy aluminum (corrosion resistant) mounting bracket allowing the sound beam to be accurately directed.



Dimensions in mm (in)



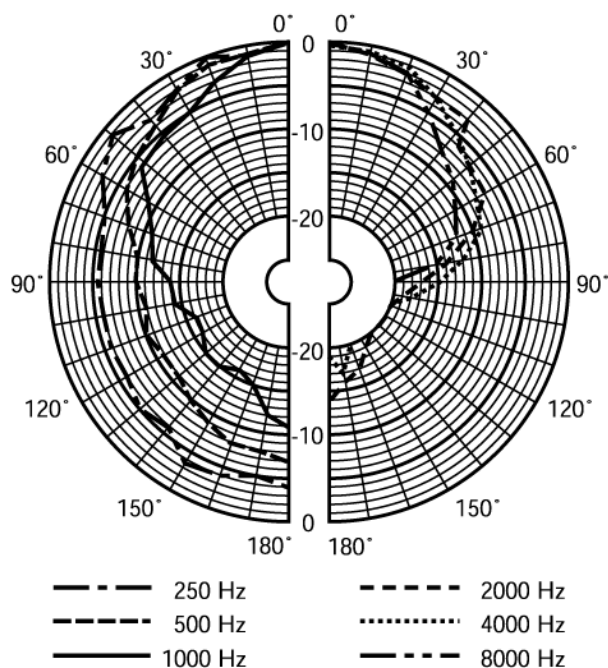
Circuit diagram



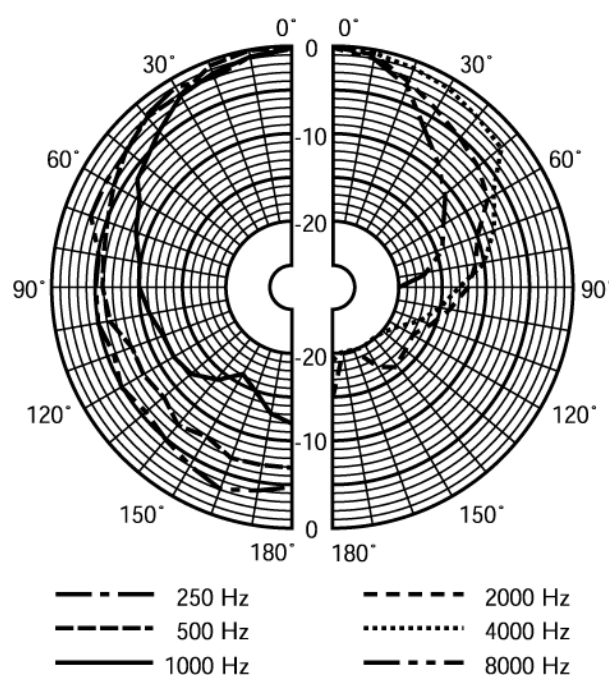
Frequency response

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	88	97	97	97	98	100	102
SPL max.	103	112	112	112	113	115	117
Q-factor	1.4	2.2	3.7	7.1	8.5	7.4	16.2
Efficiency	0.6	2.8	1.7	0.9	0.9	1.7	1.2
H. angle	360	360	120	105	85	90	65
V. angle	360	360	200	110	100	125	55

Acoustical performance specified per octave



Polar diagram horizontal (measured with pink noise)



Polar diagram vertical (measured with pink noise)

Technical Specifications

Electrical*

Maximum power	45 W
Rated power	30 / 15 / 7.5 / 3.75 W
Sound pressure level at 30 W / 1 W (1 kHz, 1 m)	112 dB / 97 dB (SPL)
Effective frequency range (-10 dB)	125 Hz to 20 kHz
Opening angle	1 kHz / 4 kHz (-6 dB)
horizontal	105° / 90°
vertical	110° / 125°
Rated voltage	100 V
Rated impedance	333 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (H x W x D)	260 x 442 x 287.5 mm (10.2 x 17.4 x 11.3 in)
Weight	5 kg (11 lb)
Color	Light grey (RAL 7035)
Cable diameter	6 mm to 8 mm (0.24 in to 0.31 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3700/00 Horn Loudspeaker	LBC3700/00
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Accessories

LBC 1256/00 EVAC Connection Adapter 3-pole screw connector, 100 pieces	LBC1256/00
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LBC 3428/00 Horn Loudspeaker



Features

- Suitable for marine and industrial applications
- Glass reinforced polyester with strong, fire-retardant qualities
- Reduced maintenance costs
- Corrosion and chemical resistant
- Water-and dust-protected to class IP 66 and IP 67
- Complies with international installation and safety regulations

The Bosch LBC 3428/00 horn loudspeaker is specifically designed for excellent sound reproduction in marine applications and other industrial environments. It is rugged, water- and dust-protected, and resistant to the corrosive effects of seawater and most industrial atmospheres. Suitable for both stationary and mobile systems, its strength and good acoustic performance also makes it ideal for general commercial and industrial applications.

Functions

The horn loudspeaker is made from a UV-stable, glass-reinforced polyester (GRP). This strong, fire-resistant and corrosion-resistant material is very reliable and reduces maintenance costs. GRP is also chemical resistant and thermally stable, making it ideal for even the harshest environments. The horns are weather-proof, and incorporate stainless steel mounting brackets with cover screws to increase corrosion resistance. They are fitted with dual 20 mm gland entries (one gland is supplied as standard) to facilitate loop-through connection.

Certifications and Approvals

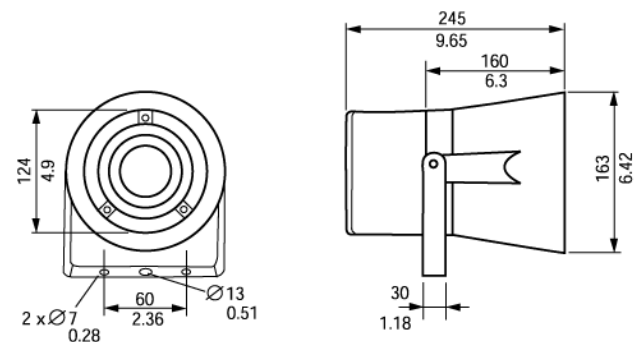
All Bosch loudspeakers are designed to withstand operating at their rated power for 100 hours in accordance with IEC 268-5 Power Handling Capacity (PHC) standards. Bosch has also developed the Simulated Acoustical Feedback Exposure (SAFE) test to demonstrate that they can withstand two times their rated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

Region	Certification	
Europe	CE	Declaration of Conformity
Safety		acc. to EN 60065
Water and dust-protected		acc. to IEC 60529, IP 66 and IP 67

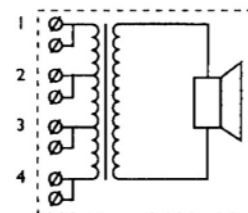
Installation/Configuration Notes

The horn loudspeakers include a built-in transformer with taps on the primary winding for different power settings.

The horn loudspeakers are supplied with a sturdy mounting bracket allowing the sound beam to be accurately directed. The bracket has a ratchet facility to ensure it remains correctly positioned.



Dimensions in mm (in)

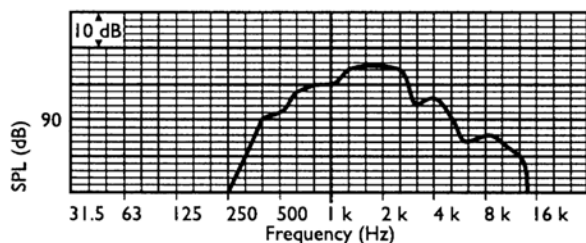


Transformer tapings		Power
Common	Phase	15 W
1	2	15.0
2	3	7.5
3	4	5.0
1	3	4.0

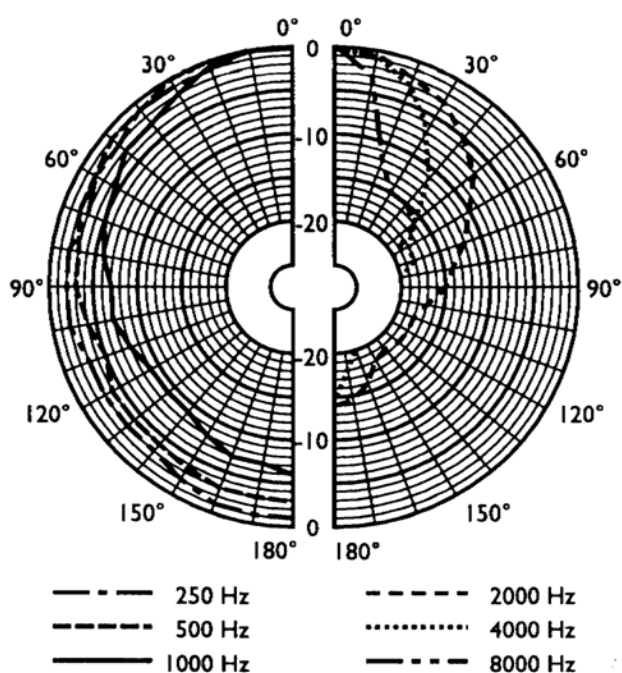
Transformer tapings Power

2	4	2.0
1	4	0.8

Circuit diagram



Frequency response



Polar diagram (measured with pink noise)

	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
SPL 1.1	-	79	96	102	105	98	87
SPL max.	-	91	108	114	117	110	99
Q-factor	-	1.5	1.9	3.2	6.8	15.8	51.3
Efficiency	-	0.07	2.7	6.2	5.9	0.5	0.1
H. angle	-	360	360	160	90	55	25
V. angle	-	360	360	160	90	55	25

Acoustical performance specified per octave

Parts Included**Quantity Component**

1	LBC 3428/00 Horn Loudspeaker
1	Cable gland

Technical Specifications**Electrical***

Maximum power	22.5 W
Rated power	15 / 7.5 / 5 / 4 / 2 / 0.8 W
Sound pressure level at 15 W / 1 W (1 kHz, 1 m)	114 dB / 102 dB (SPL)
Effective frequency range (-10 dB)	380 Hz to 5.5 kHz
Opening angle at 1 kHz/4 kHz (-6 dB)	160° / 55°
Rated voltage	100 V
Rated impedance	667 ohm
Connector	Screw terminal block

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (L x Dmax)	245 x 163 mm (9.6 x 6.4 in)
Weight	2.6 kg (5.72 lb)
Color	Light grey (RAL 7035)
Cable diameter	8 mm to 12 mm (0.31 in to 0.47 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3428/00 Horn Loudspeaker for harsh environments, circular, 15 W	LBC3428/00
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Accessories

LBC 1256/00 EVAC Connection Adapter 3-pole screw connector, 100 pieces	LBC1256/00
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LBC 343x/00 Horn Loudspeakers



Features

- ▶ **ATEX approved**
- ▶ **BASEEFA-certified**
- ▶ **CENELEC-approved**
- ▶ **Glass reinforced polyester with strong, fire retardant properties**
- ▶ **Reduced maintenance costs**
- ▶ **Corrosion and chemical resistance**
- ▶ **Water- and dust protected to class IP 66 and IP 67**
- ▶ **Complies with international installation and safety regulations**

The Bosch LBC 3437/00 and LBC 3438/00 Horn Loudspeakers are specifically designed and approved for installations where explosive gas-air mixtures are likely to be present. They are suitable for use in all gas groups including hydrogen.

System Overview

The LBC 3437/00 has a power rating of 15 W, the LBC 3438/00 has 25 W.

Functions

The flame paths, flare and body of both loudspeakers are constructed from a UV stable glass reinforced polyester (GRP). This strong, fire and corrosion resistant material offers greater reliability and reduced maintenance costs. GRP is also chemical resistant and thermally stable, making it ideal for even the harshest environments. The horns are

weather proof, and incorporate stainless steel mounting brackets and captive cover screws, and a stainless steel sinter, to increase their resistance to corrosion. They are supplied with an EExdIIC gland as standard.

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.

Region	Certification
Europe	CE Declaration of Conformity Supplementary Examination Certificate
Safety	acc. to EN 60065
Self-Extinguishing	acc. to class UL 94 V1
Water and dust protected	acc. to IEC 60529, IP 66 and IP 67
ATEX	Ex II 2 GD
BASEEFA *	EExd II C T5, zones 1 and 2 Cert. No. BAS00ATEX2097X
CENELEC **	acc. to EN 50014 acc. to EN 50018 acc. to EN 50019

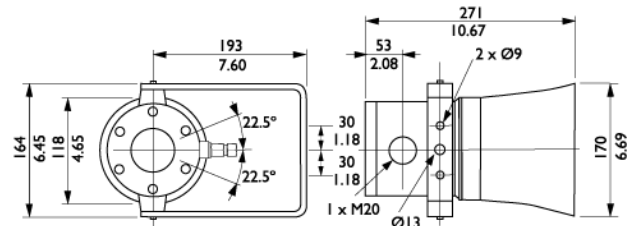
* BASEEFA = British Approved Service for Electrical Equipment in Flammable Atmospheres

** CENELEC = European Committee for Electrotechnical Standardization

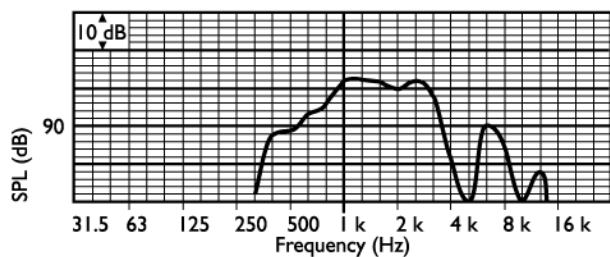
Installation/Configuration Notes

The horn loudspeakers include a built-in transformer with taps on the primary winding for different power settings.

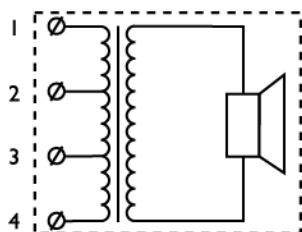
The horn loudspeakers are supplied with a sturdy mounting bracket allowing the sound beam to be accurately directed. The bracket has a ratchet facility to ensure it stays correctly positioned.



Dimensions in mm (in)

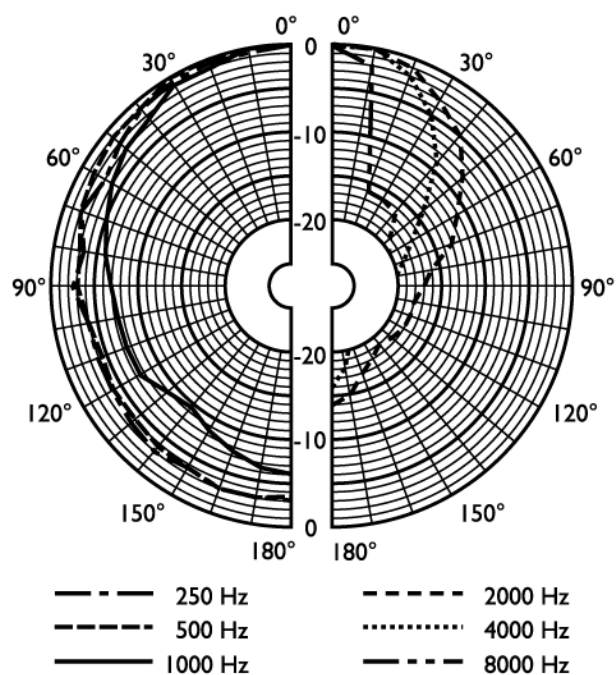


Frequency response



Transformer tappings		Rated power	
Com- mon	Phase	15 W	25 W
1	2	15.0	25.0
2	3	7.5	12.5
3	4	5.0	6.0
1	3	4.0	4.0
2	4	2.0	2.0
1	4	0.8	1.0

Circuit diagram



Polar diagram (measured with pink noise)

Parts Included

Quantity Component

1	LBC 343x/00 Horn Loudspeaker
1	EExd II C gland

Technical Specifications

Electrical*

Product	LBC 3437/00	LBC 3438/00
Maximum power	22.5 W	37.5 W
Rated power	15 / 7.5 / 5 / 4 / 2 / 0.8 W	25 / 12.5 / 6 / 4 / 2 / 1 W
SPL at RP / 1 W (1 kHz, 1 m)	112 / 100 dB (SPL)	114 / 100 dB (SPL)
Effective frequency range (-10 dB)	420 Hz to 3.5 kHz	420 Hz to 3.5 kHz
Opening angle at 1 kHz / 4 kHz (-6 dB)	160° / 60°	160° / 60°
Rated voltage	100 V	100 V
Rated impedance	667 ohm	400 ohm
Connector	Screw terminal	Screw terminal

* Technical performance data acc. to IEC 60268-5

Mechanical

Dimensions (L x Dmax)	271 x 170 mm (10.7 x 6.7 in)	271 x 170 mm (10.7 x 6.7 in)
Weight	5 kg (11 lbs)	5 kg (11 lbs)
Color	Natural black	Natural black
Cable diameter	7.5 mm to 11.9 mm (0.3 in to 0.5 in)	7.5 mm to 11.9 mm (0.3 in to 0.5 in)

Environmental

Operating temperature	-25 °C to +55 °C (-13 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 3437/00 Horn Loudspeaker 15 W, flameproof	LBC3437/00
LBC 3438/00 Horn Loudspeaker 25 W, flameproof	LBC3438/00

LBC 1252/00 Wall Mounting Bracket



The LBC 1252/00 wall mounting bracket is for mounting loudspeakers directly onto a surface, such as a wall or ceiling. It is made from die-cast aluminum, and includes two lockable swivel joints to allow movement in two perpendicular planes for precise positioning.

Technical Specifications

Mechanical

Approx. dimensions (H x W x D)	55 x 85 x 168 mm (2.2 x 3.3 x 6.6 in)
Weight	395 g (0.87 lb)
Max. load	10 kg (22 lb)
Material	Die-cast aluminum
Finish	Glass-blast matt
Mounting hole pitch	65 mm (2.6 in)
Mounting hole dia.	6 mm (0.24 in)

Ordering Information

LBC 1252/00 Wall Mounting Bracket

for mounting loudspeakers directly onto a surface, such as a wall or ceiling.

LBC1252/00

LBC 1256/00 EVAC Connection Adapter



The LBC 1256/00 is an EVAC connection adapter, to be installed in series with the 100 V primary connection of a loudspeaker unit, changing the loudspeaker into a BS 5839-8 compliant unit. This additional connection adapter ensures 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. The connection adapter consists of a 3-pole ceramic screw terminal block with a pre-mounted thermal fuse. It can replace a connection terminal or be mounted in a standard connection box. The LBC 1256/00 consists of 100 pieces.

Technical Specifications

Mechanical

Approx. dimensions	19 x 37 x 22 mm (0.75 x 1.46 x 0.87 in)
Type	3-pole screw connector
Material	Ceramic
Thermal fuse	150 °C
Pack contents	100 pieces
Weight	40 g (1.4 oz)

Ordering Information

LBC 1256/00 EVAC Connection Adapter

3-pole screw connector, 100 pieces

LBC1256/00

LBC 1259/00 Universal Floorstand



Features

- ▶ **Multi-purpose, lightweight aluminum stand**
- ▶ **For mounting a loudspeaker, wireless access point or Integrus radiator**
- ▶ **Double-braced folding base**
- ▶ **Reducer flange for different mountings**
- ▶ **Hand-adjustable**
- ▶ **Carrier bag for two pieces as optional accessory**

This universal floorstand provides effective mounting solutions for loudspeaker installations, a Wireless Access Point of the DCN-Wireless system, or a radiator of the Integrus digital language distribution system. They are manufactured and finished to the same high standards as all Bosch products, assuring excellent quality and guaranteed compatibility throughout the range. The LBC 1259/00 is suited to a wide range of applications where a secure yet transportable mounting solution is required.

Functions

Adjustable and safe

The LBC 1259/00 floorstand is hand-adjustable using a spring-loaded locking screw for heights between 1.4 and 2.2 m (4.6 and 7.2 ft). An extra safety bolt on the support can be tightened to ensure the stand remains extended.

This lightweight stand has a double-braced folding base for extra strength, and a wide leg span to ensure stability.

Adaptable

The floorstand is standard supplied with a 36 mm (1.42 in) reducer flange with an M10 x 12 threaded pin to mount different sized equipment, and with an M10 knob to fix the Wireless Access Point mounting bracket.

Accessories

For storage and ease of transport, a carrier bag is available with two inside compartments with separate zippers for holding two universal floorstands (LBC 1259/00). The bag, with Bosch logo, is made from sturdy black weather-proof nylon. Two handles are fitted for carrying the bag by hand or over the shoulder.



LM1-CB Carrier Bag (optional)

Installation/Configuration Notes



LBC 1259/00 with DCN Wireless Access Point, LBB 451x/00 Infra-red Radiator and XLA 3200 Line Array Loudspeaker

Parts Included

Quantity	Component
1	LBC 1259/00 Universal Floorstand
1	36 mm (1.42 in) reducer flange with (M10 x 12) threaded pin
1	M10 securing knob for WAP mounting bracket

Technical Specifications

Mechanical

Length

standing	1.375 to 2.185 m (54 to 86 in)
folded	1.20 m (47 in)

Width

legs extended	980 mm (38.6 in)
legs folded	130 mm (5.1 in)
Weight	3.5 kg (7.7 lb)
Max. load	50 kg (110.2 lb)
Material	Aluminum
Tube diameter	36 mm (1.42 in)
Thread	1/2" Whitworth

Carrier bag accessory

Dimensions (L x D)	1.25 m x 27 mm (49 x 1.06 in)
Weight	750 g (1.65 lb)
Color	Black with light grey handles
Material	Nylon

Ordering Information

LBC 1259/00 Universal Floorstand	LBC1259/00
Lightweight aluminum construction, foldable, M10 x 12 reducer flange.	

LBC 1085/00 Loudspeaker Cable

Technical Specifications

Mechanical

Length	100 m (328 ft) reels
Type	Twin-core (2 x 0.75 mm ²)
Color	Black

Ordering Information

LBC 1085/00 Loudspeaker Cable	LBC1085/00
100 m (328 ft) reels	

LBC 14x0/x0 MK Volume Controls and LBC 1430/10 Program Selector



Features

- ▶ 12 W, 36 W and 100 W versions
- ▶ Available in power-save or failsafe versions
- ▶ Built-in 24 VDC override relay
- ▶ Continuous rotating system
- ▶ Suitable for 3-wire and 4-wire systems
- ▶ Program selector with up to five channels
- ▶ Optional surface mounting box
- ▶ Complies with international installation and safety regulations

Bosch introduces a full range of volume controls and program selectors to provide a complete public address solution.

Functions

Operation

Public address systems are often used for both announcements and background music distribution. Volume controls can be used to adjust the level locally. In addition to volume control, program selectors can also be installed to select five different programs locally. In the event of an (emergency) announcement, the built-in relay ensures that the message is broadcast at a preset level, independent of the local volume setting.

The volume controls come in three versions according to power rating: 12 W, 36 W, and 100 W. The total load of the loudspeakers connected to a volume control may not exceed the rated power.

Each of the three versions is also available in two versions. One is a power-saving, 4-wire volume override (/10 models), where the override relay is activated during an emergency call. The other is a failsafe, 4-wire volume override (/20 models), where the override relay is deactivated during an emergency call.

The design and color are unobtrusive in any interior. Ease of installation, operation and reliability is optimized in the design.

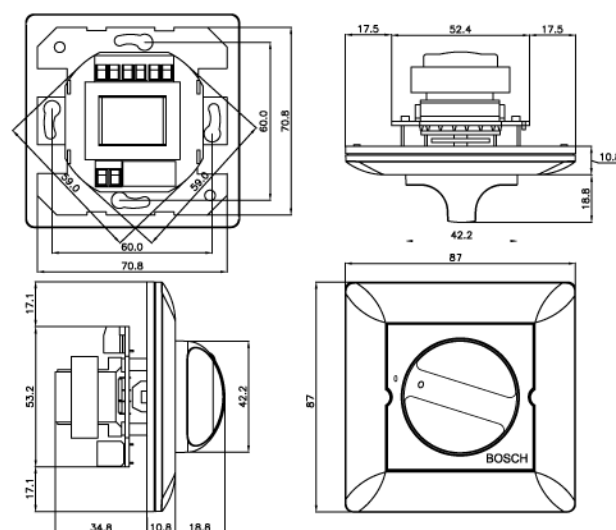
Interconnections

Screw connections

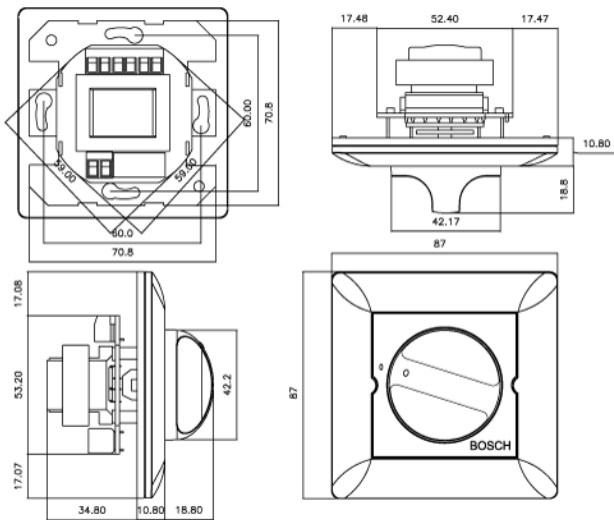
Certifications and Approvals

Region	Certification	
Europe	CE	LBC 14xx/10
		LBC 14xx/20
Safety	acc. to EN 60065	
Self-extinguishing	acc. to UL 94 V0	

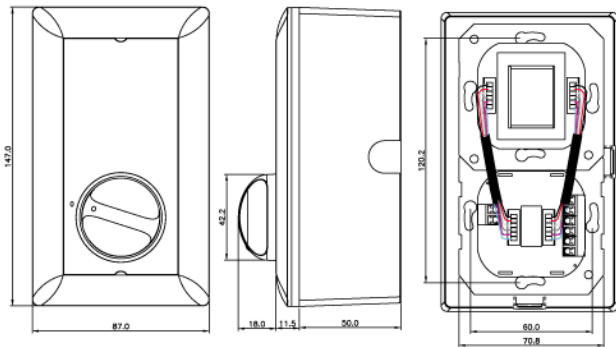
Installation/Configuration Notes



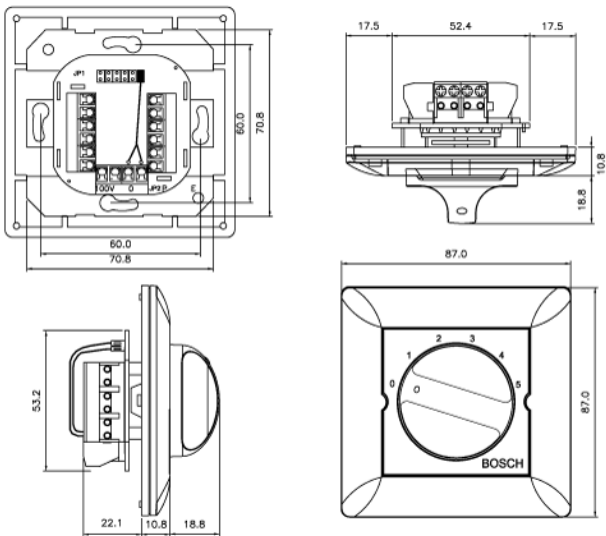
LBC 1400/10 and LBC 1400/20 dimensions in mm



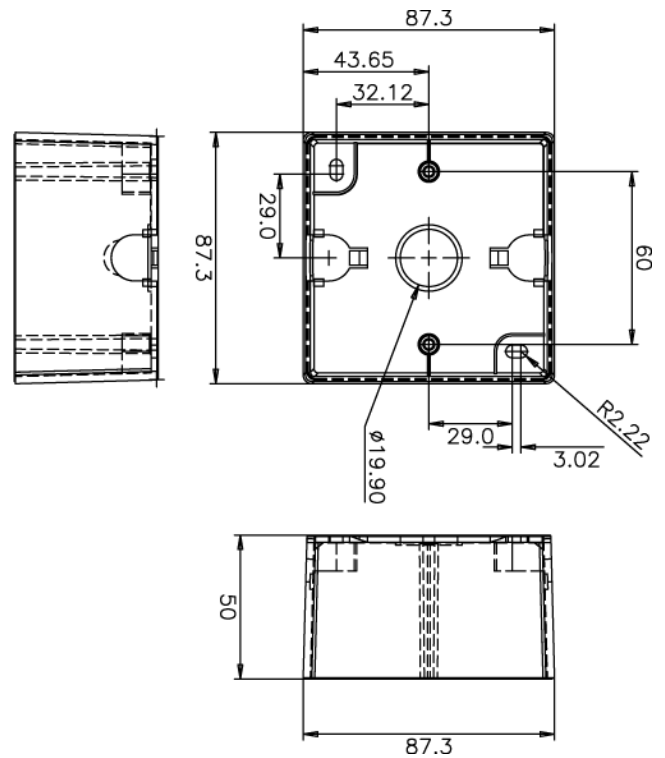
LBC 1410/10 and LBC 1410/20 dimensions in mm



LBC 1420/10 and LBC 1420/20 dimensions in mm



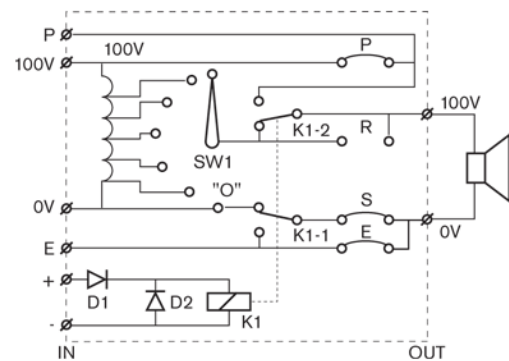
LBC 1430/10 dimensions in mm



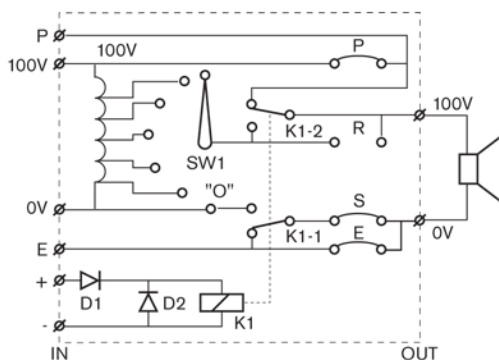
LM1-SMB-MK dimensions in mm



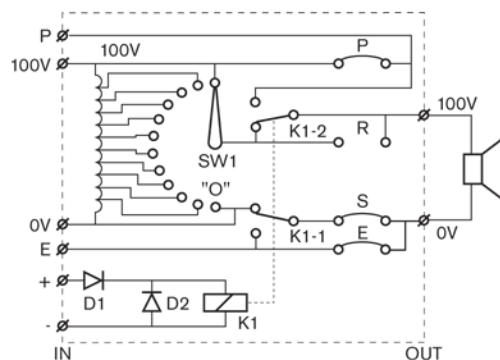
LM1-SMB-MK detail



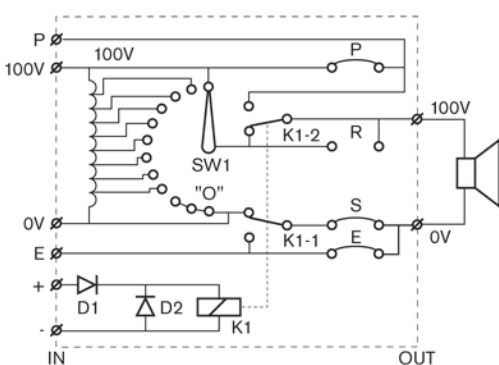
LBC 1400/10 circuit diagram



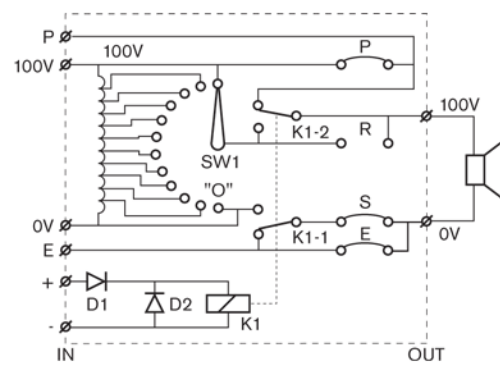
LBC 1400/20 circuit diagram



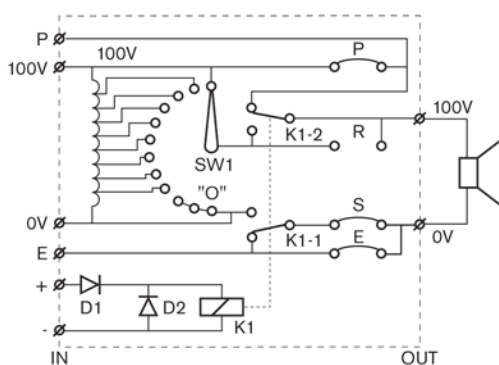
LBC 1420/10 circuit diagram



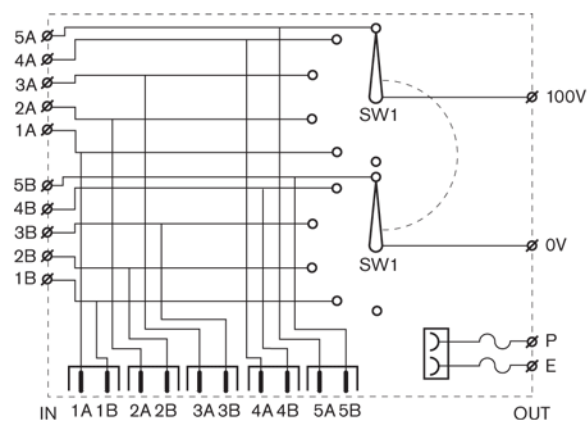
LBC 1410/10 circuit diagram



LBC 1420/20 circuit diagram



LBC 1410/20 circuit diagram



LBC 1430/10 circuit diagram

Technical Specifications

Electrical

LBC 1400/10 and /20

Rated power	12 W
Input voltage	100 V
Attenuation steps	5 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%

LBC 1400/10 and /20

Current consumption	20 mA at 24 VDC
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LBC 1410/10 and /20

Rated power	36 W
Input voltage	100 V
Attenuation steps	8 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC

LBC 1420/10 and /20

Rated power	100 W
Input voltage	100 V
Attenuation steps	10 x 2 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC

LBC 1430/10

Rated power	100 W
Input voltage	100 V
Number of programs	5 programs + off

Mechanical**LBC 1400/10 and /20**

Dimensions (W x H x D)	87 x 87 x 45.6 mm
Weight	226 g
Color	White (RAL 9010)

LBC 1410/10 and /20

Dimensions (W x H x D)	87 x 87 x 45.6 mm
Weight	227 g
Color	White (RAL 9010)

LBC 1420/10 and /20

Dimensions (W x H x D)	87 x 147 x 61.5 mm
Weight	512 g (including surface mounting box)
Color	White (RAL 9010)

LBC 1430/10

Dimensions (W x H x D)	87 x 87 x 32.9 mm
Weight	125 g
Color	White (RAL 9010)

LM1-SMB-MK

Dimensions (W x H x D)	87.3 x 87.3 x 50 mm
Weight	73 g
Color	White (RAL 9010)

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 1400/10 Volume Control 12 W, MK, power-save version	LBC1400/10
LBC 1410/10 Volume Control 36 W, MK, power-save version	LBC1410/10
LBC 1420/10 Volume Control 100 W, MK D/E2, power-save version	LBC1420/10
LBC 1430/10 Program Selector 5-channel, MK	LBC1430/10

Accessories

LM1-SMB-MK surface mounting box, MK	LM1-SMB-MK
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LBC 14xx/x0 U40 Volume Controls and LBC 1431/10 Program Selector



Features

- ▶ 12 W, 36 W and 100 W versions
- ▶ Available in power-save or failsafe versions
- ▶ Built-in 24 VDC override relay
- ▶ Continuous rotating system
- ▶ Suitable for 3 and 4-wire systems
- ▶ Program selector with up to five channels
- ▶ Optional surface mounting box
- ▶ Complies with international installation and safety regulations

Bosch introduces a full range of volume controls and program selectors to provide a complete public address solution.

Functions

Operation

Public address systems are often used for both announcements and background music distribution. Volume controls can be used to adjust the level locally. In addition to volume control, program selectors can also be installed to select five different programs locally. In the event of an (emergency) announcement, the built-in relay ensures that the message is broadcast at a preset level, independent of the local volume setting.

The volume controls come in three versions according to power rating: 12 W, 36 W, and 100 W. The total load of the loudspeakers connected to a volume control may not exceed the rated power.

Each of the three versions is also available in two versions. One is a power-saving, 4-wire volume override (/10 models), where the override relay is activated during an emergency call. The other is a failsafe, 4-wire volume override (/20 models), where the override relay is deactivated during an emergency call.

The design and color are unobtrusive in any interior. Ease of installation, operation and reliability is optimized in the design.

The volume controls and program selectors can be combined with Gira standard 55 system switchers and accessories.

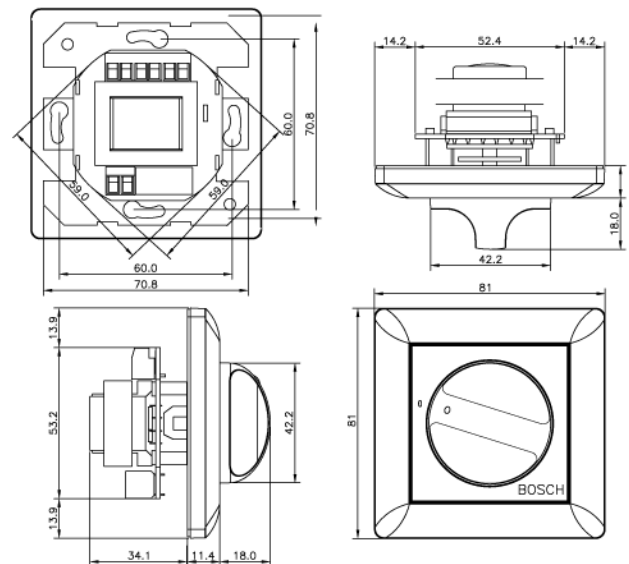
Interconnections

Screw connections

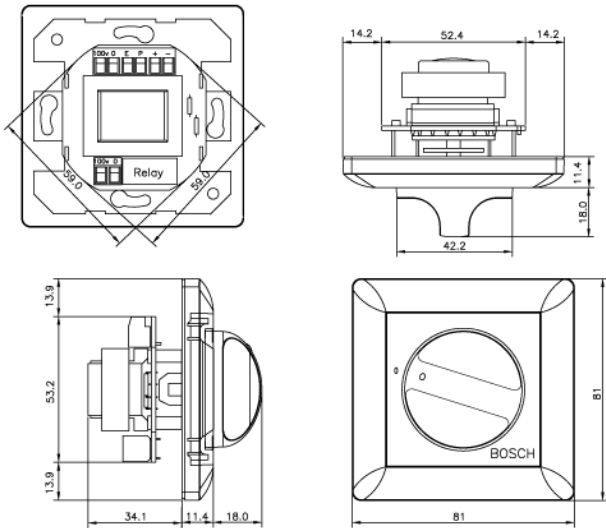
Certifications and Approvals

Region	Certification	
Europe	CE	LBC 14xx/10
		LBC 14xx/20
Safety	acc. to EN 60065	
Self-extinguishing	acc. to UL 94 V0	

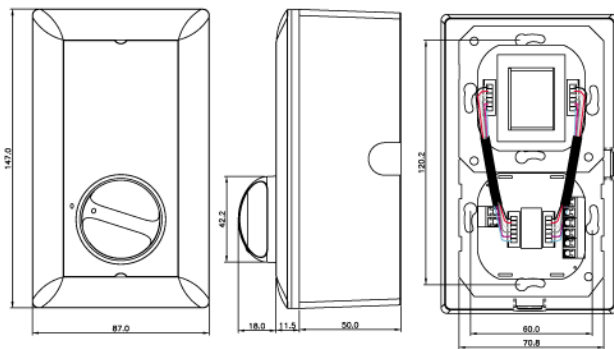
Installation/Configuration Notes



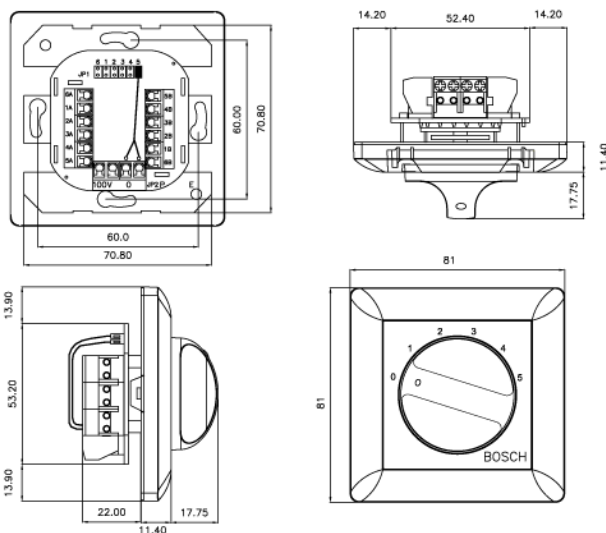
LBC 1401/10 and LBC 1401/20 dimensions in mm



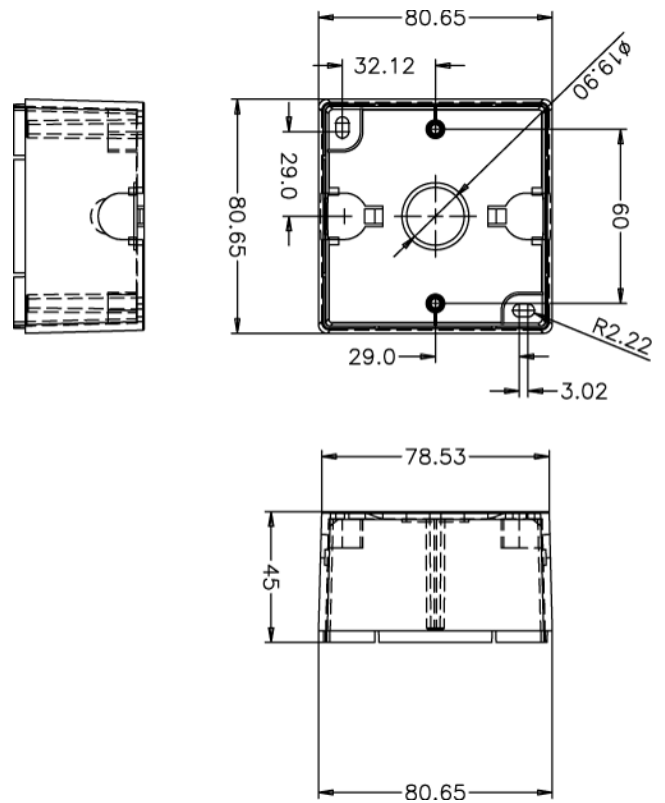
LBC 1411/10 and LBC 1411/20 dimensions in mm



LBC 1420/10 and LBC 1420/20 dimensions in mm



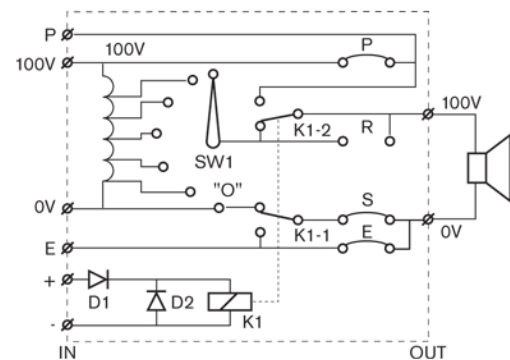
LBC 1431/10 dimensions in mm



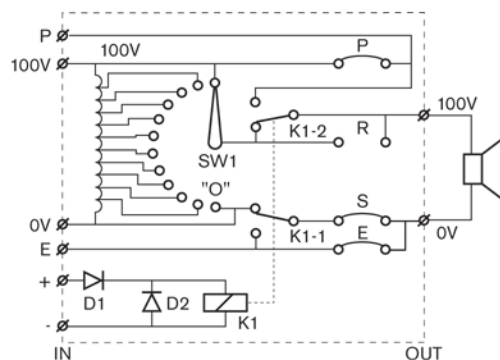
LM1-SMB-U40 dimensions in mm



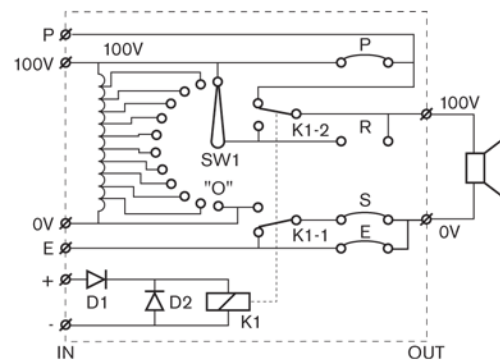
LM1-SMB-U40 detail



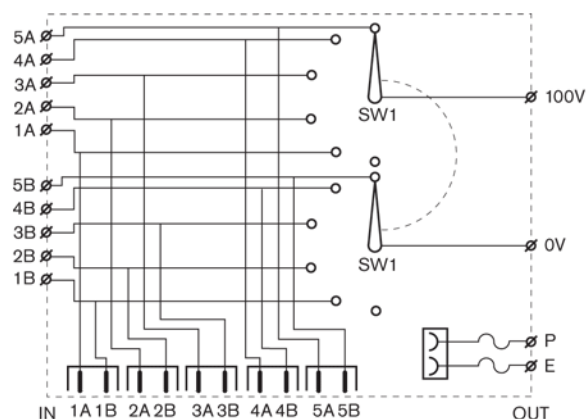
LBC 1401/10 circuit diagram



LBC 1420/10 circuit diagram



LBC 1420/20 circuit diagram



LBC 1431/10 circuit diagram

Rated power	12 W
Input voltage	100 V
Attenuation steps	5 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%

LBC 1401/10 and /20

Current consumption	20 mA at 24 VDC
Connector	Screw terminal

LBC 1411/10 and /20

Rated power	36 W
Input voltage	100 V
Attenuation steps	8 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC
Connector	Screw terminal

LBC 1420/10 and /20

Rated power	100 W
Input voltage	100 V
Attenuation steps	10 x 2 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC
Connector	Screw terminal

LBC 1431/10

Rated power	100 W
Input voltage	100 V
Number of programs	5 programs + off
Connector	Screw terminal

Mechanical**LBC 1401/10 and /20**

Dimensions (W x H x D)	81 x 81 x 45.5 mm
Weight	214 g
Color	White (RAL 9010)

LBC 1411/10 and /20

Dimensions (W x H x D)	81 x 81 x 45.5 mm
Weight	217 g
Color	White (RAL 9010)

LBC 1420/10 and /20

Dimensions (W x H x D)	87 x 147 x 61.5 mm
Weight	512 g (including surface mounting box)
Color	White (RAL 9010)

LBC 1431/10

Dimensions (W x H x D)	81 x 81 x 33.4 mm
Weight	110 g
Color	White (RAL 9010)

LM1-SMB-U40

Dimensions (W x H x D)	80.65 x 80.65 x 45 mm
Weight	60 g
Color	White (RAL 9010)

Environmental

Operating temperature	-10 °C to +55 °C (+14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 1401/10 Volume Control 12W, U40, power-save version	LBC1401/10
LBC 1411/10 Volume Control 36 W, U40, power-save version	LBC1411/10
LBC 1420/10 Volume Control 100 W, MK D/E2, power-save version	LBC1420/10
LBC 1431/10 Program Selector 5-channel, U40	LBC1431/10

Accessories

LM1-SMB-U40 surface mounting box, U40	LM1-SMB-U40
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LBC 14x2/x0 Japanese Volume Controls and LBC 1434/10 Program Selector

4



Features

- ▶ 12 W and 36 W versions
- ▶ Available in power-save or failsafe versions
- ▶ Built-in 24 VDC override relay
- ▶ Suitable for 3-wire and 4-wire systems
- ▶ Program selector with up to five channels
- ▶ Complies with international installation and safety regulations

Bosch introduces a full range of volume controls and program selectors to provide a complete public address solution.

Functions

Operation

Public address systems are often used for both announcements and background music distribution. Volume controls can be used to adjust the level locally. In addition to volume control, program selectors can also be installed to select five different programs locally. In the event of an (emergency) announcement, the built-in relay ensures that the message is broadcast at a preset level, independent of the local volume setting.

The volume controls come in two versions according to power rating: 12 W and 36 W. The total load of the loudspeakers connected to a volume control may not exceed the rated power.

Each of the three versions is also available in two versions. One is a power-saving, 4-wire volume override (/10 models), where the override relay is activated during an emergency call. The other is a failsafe, 4-wire volume override (/20 models), where the override relay is deactivated during an emergency call.

The design and color are unobtrusive in any interior. Ease of installation, operation and reliability is optimized in the design.

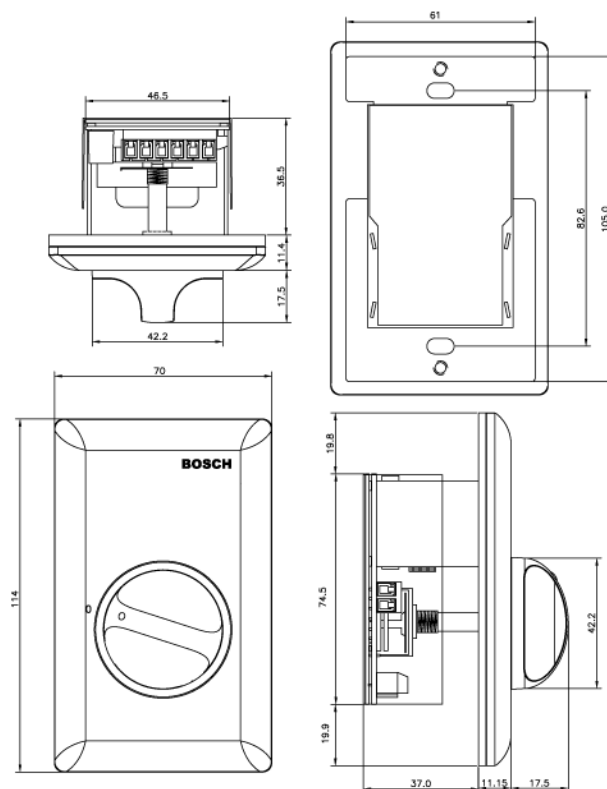
Interconnections

Screw connections

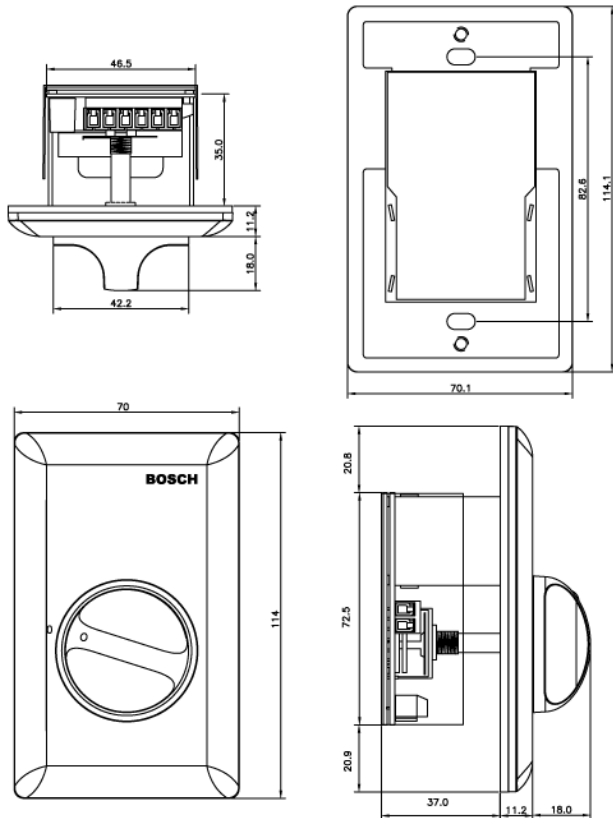
Certifications and Approvals

Region	Certification	
Europe	CE	LBC 14xx/10 LBC 14xx/20
Safety		acc. to EN 60065
Self-extinguishing		acc. to UL 94 V0

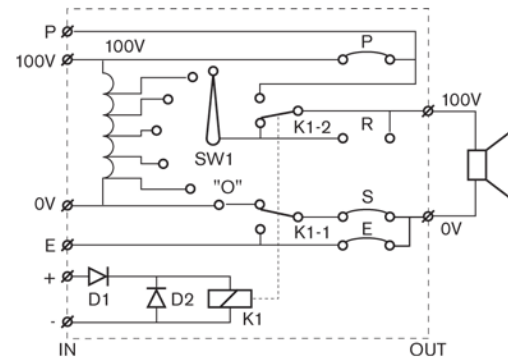
Installation/Configuration Notes



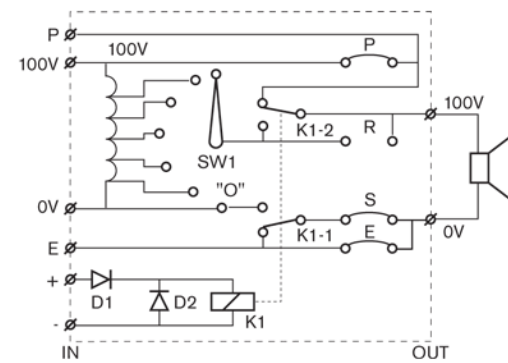
LBC 1402/10 and LBC 1402/20 dimensions in mm



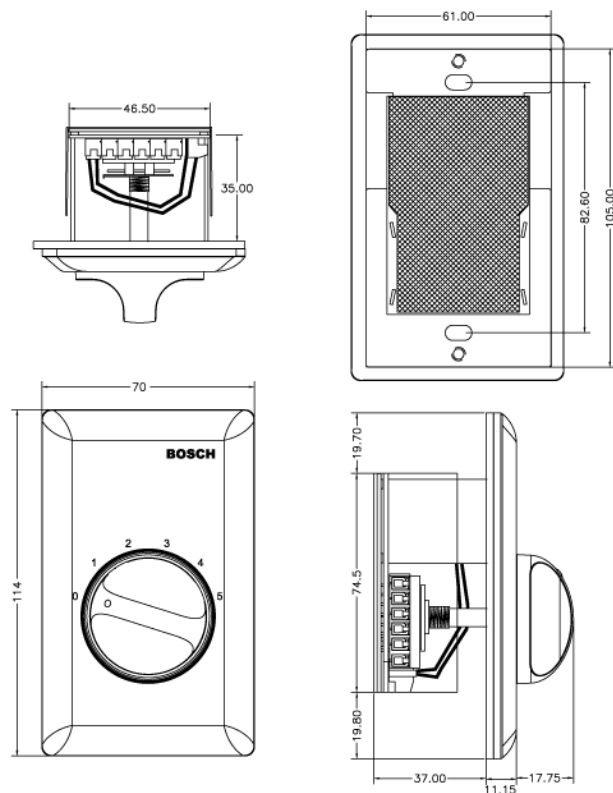
LBC 1412/10 and LBC 1412/20 dimensions in mm



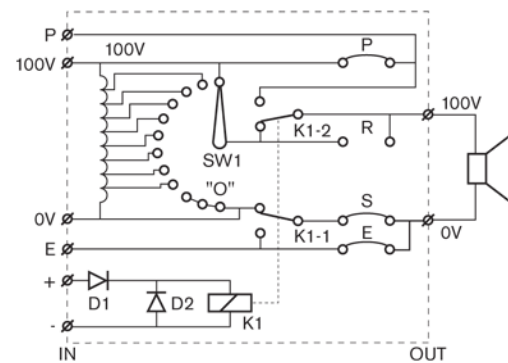
LBC 1402/10 circuit diagram



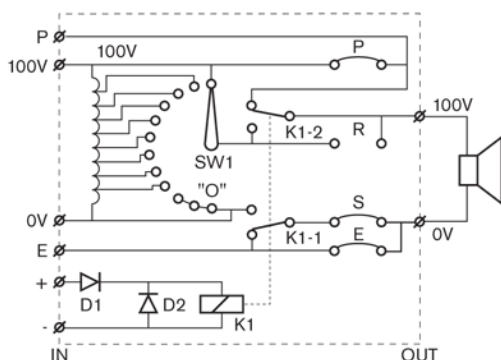
LBC 1402/20 circuit diagram



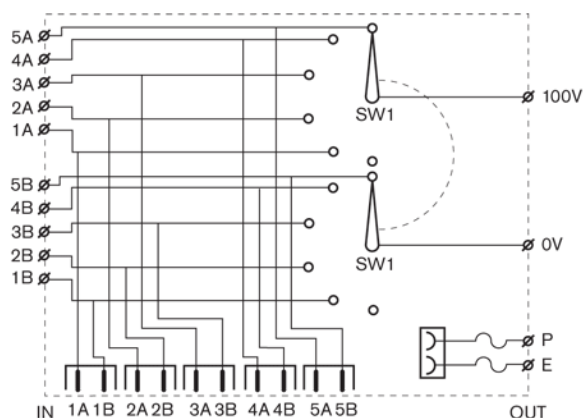
LBC 1434/10 dimensions in mm



LBC 1412/10 circuit diagram



LBC 1412/20 circuit diagram



LBC 1434/10 circuit diagram

Mechanical**LBC 1402/10 and /20**

Dimensions (W x H x D)	70 x 114 x 48.2 mm
Weight	210 g
Color	Off-white (RAL 9010)

LBC 1412/10 and /20

Dimensions (W x H x D)	70 x 114 x 48.2 mm
Weight	260 g
Color	Off-white (RAL 9010)

LBC 1434/10

Dimensions (W x H x D)	70 x 114 x 48.2 mm
Weight	200 g
Color	Off-white (RAL 9010)

Environmental

Operating temperature	-10 °C to +55 °C (14 °F to +131 °F)
Storage temperature	-40 °C to +70 °C (-40 °F to +158 °F)
Relative humidity	<95%

Ordering Information

LBC 1402/10 Volume Control 12 W, Japanese, power-save version	LBC1402/10
LBC 1412/10 Volume Control 36 W, Japanese, power-save version	LBC1412/10
LBC 1434/10 Program Selector 5-channel, Japanese	LBC1434/10

Technical Specifications**Electrical****LBC 1402/10 and /20**

Rated power	12 W
Input voltage	100 V
Attenuation steps	5 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC

LBC 1412/10 and /20

Rated power	36 W
Input voltage	100 V
Attenuation steps	8 x 3 dB + off
Frequency response	50 Hz to 20 kHz (-1 dB)
THD	<0.5%
Current consumption	20 mA at 24 VDC

LBC 1434/10

Rated power	100 W
Input voltage	100 V
Number of programs	5 programs + off

LBC 3080/01 Fire Dome



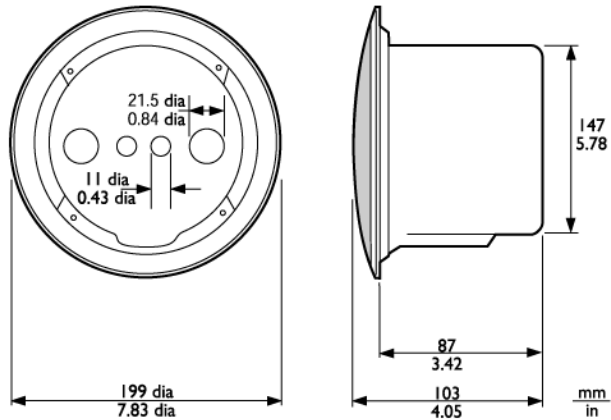
During a fire, the ceiling cavity can allow fire or smoke to spread throughout a building. To inhibit fire entering the cavity via the ceiling loudspeaker, it can be fitted with an LBC 3080/01 steel fire dome. This is mounted on the loudspeaker assembly using four self-tapping screws supplied with the fire dome. The fire-dome has knockout holes for two grommets (supplied) and two cable glands (PG 13).

This fire dome can only be used with the ceiling speakers: LBC 3087/41, LBC 3090/01 and LBC 3090/31.

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

Installation/Configuration Notes



LBC 3090/01 and LBC 3080/01 Fire Dome assembly dimensions in mm (in)

Parts Included

Quantity	Components
1	LBC 3080/01 Fire Dome
4	Self tapping screws
2	Rubber grommets

Technical Specifications

Mechanical

Dimensions (dia. x max depth)	147 x 87 mm (5.8 x 3.4 in)
Weight	360 g (0.8 lb)
Color	White (RAL 9010)
Certified B15	Acc. to DIN 4102

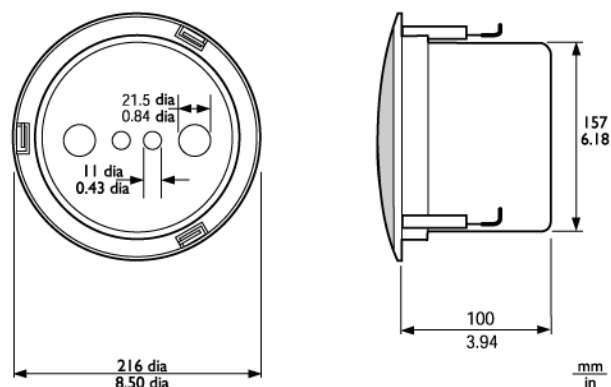
Ordering Information

LBC 3080/01 Fire Dome	LBC 3080/01
metal fire dome for the LBC 3087/41, LBC 3090/01 and LBC 3090/31 ceiling loudspeakers	

LBC 3081/02 Fire Dome



Installation/Configuration Notes



LBC3086/41 + LBC 3081/02 fire dome assembly dimensions in mm (in)

During a fire, the ceiling cavity in which loudspeakers are installed can allow flames to spread throughout a building. To prevent fire entering the cavity via the loudspeaker, the ceiling loudspeaker can be fitted with a steel fire dome (LBC 3081/02). This optional fire dome is clicked into the mounting-ring via three leaf springs, before the loudspeaker is inserted. For extra convenience, a safety cord from the fire dome allows the installer to temporarily hang the loudspeaker unit during installation. This cord also provides reassurance after installation. The fire-dome has knockout holes for two grommets (supplied) and two cable glands (PG 13).

This fire dome can only be used with the LBC 3086/41 Ceiling Loudspeaker.

Note Product photo includes LBC 3086/41

Parts Included

Quantity	Components
1	LBC 3081/02 Fire Dome
1	Safety cord
2	Rubber grommets

Technical Specifications

Mechanical

Dimensions (dia. x max. depth)	157 x 70 mm (6.2 x 2.8 in)
Weight	360 g (0.8 lb)
Color	Flame red (RAL 3000)
Certified B15	Acc. to DIN 4102

Certifications and Approvals

Region	Certification
Europe	CE Declaration of Conformity

Ordering Information

LBC 3081/02 Fire Dome
metal fire dome for LBC 3086/41 ceiling loudspeaker

LBC3081/02

LBC 3082/00 Fire Dome



Ordering Information

LBC 3082/00 Fire Dome	LBC 3082/00
metal fire dome for LBC 3099/41 ceiling loudspeaker	

4

During a fire, the ceiling cavity in which loudspeakers are installed can allow flames to spread throughout a building. To prevent fire entering the cavity via the loudspeaker, the ceiling loudspeaker can be fitted with a steel fire dome. This optional fire dome is mounted on the loudspeaker assembly using four self-tapping screws supplied with the fire dome. The fire dome has knockout holes for two grommets (supplied) and two cable glands (PG 13).

This fire dome can only be used with the LBC 3099/41 Ceiling Loudspeaker.

Certifications and Approvals

Region	Certification
Europe	CE

Parts Included

Quantity	Components
1	LBC 3082/00 Fire Dome
4	Self tapping screws
2	Rubber grommets

Technical Specifications

Mechanical	
Dimensions (dia. x max depth)	182 x 100 mm (7.2 x 3.9 in)
Weight	540 g (1.19 lb)
Color	White (RAL 9010)
Certified B15	Acc. to DIN 4102

IP Rating

A two-digit number (as specified in Australian Standards AS 1939 and EN 60529) is used to provide an IP-rating to a piece of electronic equipment, or to an enclosure for electronic equipment.

The two digits represent three different forms of environmental influence:

- The first digit represents protection against ingress of solid objects
- The second digit represents protection against ingress of liquids

The larger the value of each digit, the greater the protection from that influence. As an example, a product rated as IP 57 would be better protected against environmental factors than another similar product that was only rated as IP 43.

Value	First Digit	Second Digit
	Protection against ingress of solids	Protection against ingress of liquids
0	No protection	No protection
1	Protected against solid objects over 50 mm e.g. hands, large tools.	Protected against vertically falling drops of water.
2	Protected against solid objects over 12 mm e.g. finger-tips, large tools.	Protected against direct sprays of water up to 15° from vertical.
3	Protected against solid objects over 2.5 mm e.g. wire, small tools.	Protected against direct sprays of water up to 60° from vertical.
4	Protected against solid objects over 1.0 mm e.g. wires.	Protected against water sprayed from any direction. Limited ingress permitted.
5	Limited protection against dust ingress (no harmful deposit)	Protected against low pressure water jets from any direction. Limited ingress permitted.
6	Totally protected against dust ingress.	Protected against high pressure water jets from any direction. Limited ingress permitted.
7		Protected against immersion between 15 cm and 1m.
8		Protected against long periods of immersion under pressure.

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