

LAS-BEAM Series

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1 Introduction

This document provides the architects' and engineers' specifications of the loudspeaker LAS-BEAM line array system.

2 Architects' and engineers' specifications

2.1 LAS-BEAM-S

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 4 x 3.5" drivers. Audio feeds are available through two balanced analog inputs and two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. A LED behind the grille provides visual indication of ready or fault conditions.

The loudspeaker array shall be designed for emergency sound systems and have supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100 V audio routing topologies are supported like A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Fault detection of the units will trigger the switched 100 V output on the column.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

Technical specifications

- Transducers: 4 x 3.5" full range chassis
- Operating mode: Active, 4 x DSP amplifier, Class-D
- Minimum amplifier power: 4 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 120 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): ≥ 119 dB SPL
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. $\pm 70^\circ$, digitally controllable
- Vertical beam angle: min. 10° - 40°, digitally controllable
- Generable sound beams: ≥ 1
- Acoustic center: freely adjustable via the line source
- Digital signal processing: 4-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Signal to noise ratio: > 105 dB/A
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array
- System bus: 2x system bus at lockable RJ45 connector with control data and 2x analog audio input
- Relay: 1 relay output as fault signal output
- AC input: 90 V - 264 V AC 50/60 Hz switching power supply with power factor correction
- Maximum current consumption: 5 VA (Normal), 135 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in RAL9006
- Dimensions max. (H x W x D): 506 x 107 x 118 [mm]
- Weight max.: 3.5 kg
- Warranty: 5 years

2.2

LAS-BEAM-L

Digitally controllable active beam steering array with 8x 3.5" drivers.

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 8 x 3.5" drivers. Audio feeds are available through two balanced analog inputs and/or two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. Adjusting the beam forming parameters is done in real time. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. An LED behind the grille provides visual indication of ready or fault conditions. Different setups can be configured and selected using up to 5 presets with different audio and beam settings.

The loudspeaker array shall be designed for implementation in emergency sound systems and has supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100V audio routing topologies are supported: A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Device and line monitoring is possible via only 100 V cabling.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

The loudspeaker array can be stacked from 1 to 5 units to extend its range and increase beam forming capabilities. When stacking a typical coverage up to 70 meters can be achieved.

Technical specifications

- Transducers: 8 x 3.5" full range
- Operating mode: Active, 8 x DSP amplifier, Class-D
- Minimum amplifier power: 8 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 70 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): 125 dB SPL @ 1 m (calc.)
- Maximum sound pressure (25 m): 94 dB SPL @ 25 m
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. +-70°, digitally controllable
- Vertical beam angle: min. 3° - 40°, digitally controllable
- Number of beams - single: 1 or 2 beams (1 column)
- Number of beams - stacked: 1, 2 or 4 beams (2 - 5 columns)
- Typical coverage / throw: 25 meters
- Focus distance 1 m to 50 m

- Acoustic center: freely adjustable via the line source
- Digital signal processing: 8-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Presets: max. 5
- Signal to noise ratio: >105 dB/A
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array, supporting 100 V monitoring
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- System bus: 2x system bus at lockable RJ45 connector with control data and 2 x analog audio input

- Relay: 1 relay output as fault signal output
- AC input: 90 V - 264 V AC 50/60 Hz / 20 W switching power supply with power factor correction
- Maximum current consumption: 10 VA (Normal), 270 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in housing color
- Dimensions max. (H x W x D): 911 x 107 x 118 [mm]
- Weight max.: 5,5 kg
- Warranty: 5 years

2.3

LAS-BEAM-XL

(Consists of 2x LAS-BEAM-L and 1x LAS-BEAM-E)

Digitally controllable active beam steering array with 16x 3.5" drivers. Consists of 2 loudspeaker arrays of 8x 3.5" drivers for easy transportation and handling. The units are interconnected with 1 extender set.

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 16 x 3.5" drivers. Audio feeds are available through two balanced analog inputs and/or two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. Adjusting the beam forming parameters is done in real time. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. An LED behind the grille provides visual indication of ready or fault conditions.

Different setups can be configured and selected using up to 5 presets with different audio and beam settings.

The loudspeaker array shall be designed for implementation in emergency sound systems and has supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100 V audio routing topologies are supported: A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Fault detection of the units will trigger a switched 100 V output on the column.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

Technical specifications

- Transducers: 16 x 3.5" full range
- Operating mode: Active, 16 x DSP amplifier, Class-D
- Minimum amplifier power: 16 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 70 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): 131 dB SPL
- Maximum sound pressure (25 m): 97 dB SPL @ 25 m
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. +-70°, digitally controllable
- Vertical beam angle: min. 3° - 40°, digitally controllable
- Number of beams: 1, 2 or 4 beams
- Typical coverage / throw: 35 meters
- Focus distance 1 m to 75 m

- Acoustic center: freely adjustable via the line source
- Digital signal processing: 8-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Signal to noise ratio: >105 dB/A
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array, supporting 100 V monitoring
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- System bus: 2x system bus at lockable RJ45 connector with control data and 2 x analog audio input
- Relay: 1 relay output as fault signal output

- AC input: 90 V - 264 V AC 50/60 Hz / 40 W switching power supply with power factor correction
- Maximum current consumption: 20 VA (Normal), 540 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in housing color
- Dimensions total max. (H x W x D): 1822 x 107 x 118 [mm]
- Modular: Yes, consists of 2 units
- Weight max.: 11 kg
- Warranty: 5 years

2.4

LAS-BEAM-XXL

(Consists of 3x LAS-BEAM-L and 2x LAS-BEAM-E)

Digitally controllable active beam steering array with 24x 3.5" drivers. Consists of 3 loudspeaker arrays of 8x 3.5" drivers for easy transportation and handling. The units are interconnected with 2 extender sets.

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 24 x 3.5" drivers. Audio feeds are available through two balanced analog inputs and/or two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. Adjusting the beam forming parameters is done in real time. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. An LED behind the grille provides visual indication of ready or fault conditions.

Different setups can be configured and selected using up to 5 presets with different audio and beam settings.

The loudspeaker array shall be designed for implementation in emergency sound systems and has supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100 V audio routing topologies are supported: A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Fault detection of the units will trigger a switched 100 V output on the column.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

Technical specifications

- Transducers: 24 x 3.5" full range
- Operating mode: Active, 24 x DSP amplifier, Class-D
- Minimum amplifier power: 24 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 70 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): 132 dB SPL @ 1 m (calc.)
- Maximum sound pressure (25 m): 100 dB SPL @ 25 m
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. +-70°, digitally controllable
- Vertical beam angle: min. 3° - 40°, digitally controllable
- Number of beams: 1, 2 or 4 beams
- Typical coverage / throw: 70 meters
- Focus distance 1 m to 90 m

- Acoustic center: freely adjustable via the line source
- Digital signal processing: 8-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Signal to noise ratio: >105 dB/A
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array, supporting 100 V monitoring
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- System bus: 2x system bus at lockable RJ45 connector with control data and 2 x analog audio input
- Relay: 1 relay output as fault signal output

- AC input: 90 V - 264 V AC 50/60 Hz / 60 W switching power supply with power factor correction
- Maximum current consumption: 30 VA (Normal), 810 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in housing color
- Dimensions total max. (H x W x D): 2733 x 107 x 118 [mm]
- Modular: Yes, consists of 3 units
- Weight max.: 16.5 kg
- Warranty: 5 years

2.5

LAS-BEAM-3XL

(Consists of 4x LAS-BEAM-L and 3x LAS-BEAM-E)

Digitally controllable active beam steering array with 32x 3.5" drivers. Consists of 4 loudspeaker arrays of 8x 3.5" drivers for easy transportation and handling. The units are interconnected with 3 extender sets.

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 32x 3.5" drivers. Audio feeds are available through two balanced analog inputs and/or two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. Adjusting the beam forming parameters is done in real time. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. An LED behind the grille provides visual indication of ready or fault conditions.

Different setups can be configured and selected using up to 5 presets with different audio and beam settings.

The loudspeaker array shall be designed for implementation in emergency sound systems and has supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100 V audio routing topologies are supported: A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Fault detection of the units will trigger a switched 100 V output on the column.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

Technical specifications

- Transducers: 32x 3.5" full range
- Operating mode: Active, 32 x DSP amplifier, Class-D
- Minimum amplifier power: 32 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 70 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): 134 dB SPL @ 1 m (calc.)
- Maximum sound pressure (25 m): 102 dB SPL @ 25 m
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. +-70°, digitally controllable
- Vertical beam angle: min. 3° - 40°, digitally controllable
- Number of beams: 1, 2 or 4 beams
- Typical coverage / throw: 70 meters
- Focus distance 1 m to 90 m

- Acoustic center: freely adjustable via the line source
- Digital signal processing: 8-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Signal to noise ratio: >105 dB/A
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array, supporting 100 V monitoring
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- System bus: 2x system bus at lockable RJ45 connector with control data and 2x analog audio input
- Relay: 1 relay output as fault signal output

- AC input: 90 V - 264 V AC 50/60 Hz / 80 W switching power supply with power factor correction
- Maximum current consumption: 40 VA (Normal), 1080 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in housing color
- Dimensions total max. (H x W x D): 3644 x 107 x 118 [mm]
- Modular: Yes, consists of 4 units
- Weight max.: 22 kg
- Warranty: 5 years

2.6

LAS-BEAM-4XL

(Consists of 5x LAS-BEAM-L and 4x LAS-BEAM-E)

Digitally controllable active beam steering array with 40x 3.5" drivers. Consists of 5 loudspeaker arrays of 8x 3.5" drivers for easy transportation and handling. The units are interconnected with 4 extender sets.

The loudspeaker array shall have digitally controllable beam steering technology. It is an active DSP line source with 40 x 3.5" drivers. Audio feeds are available through two balanced analog inputs and/or two 100 V transformer balanced floating inputs.

On board signal processing is available: EQ, delay, side-lobe optimization, input priority switching, preset switching and beam steering. Adjusting the beam forming parameters is done in real time. One digital, fanless PWM 100 W amplifier per driver. Setup and control is via a system bus via license-free system software. The programming of the speaker can be protected against unauthorized access via password. An LED behind the grille provides visual indication of ready or fault conditions.

Different setups can be configured and selected using up to 5 presets with different audio and beam settings.

The loudspeaker array shall be designed for implementation in emergency sound systems and has supervision functions for amplifier and load monitoring, thermal protection, current limiting and power supply monitoring. Several redundant 100 V audio routing topologies are supported: A only, B only, A+B, Class A loop, Fallback to B, Fallback to A. The loudspeaker array shall be fully compatible with PRAESENSA 100 V monitoring technology PRA-EOL and PRA-EOB. Fault detection of the units will trigger a switched 100 V output on the column.

The housing is made of corrosion-resistant, extruded aluminum with three integrated T-slot profiles in the sides and on the back for flexible mounting of tripod, wall and ceiling mounts. The loudspeaker front is protected by a metal grille. EASE simulation data is available for integration into acoustic simulations.

Technical specifications

- Transducers: 40 x 3.5" full range
- Operating mode: Active, 40 x DSP amplifier, Class-D
- Minimum amplifier power: 40 x 100 watts (peak)
- Cooling: Passive, fanless and silent
- Minimum frequency response: 70 Hz - 18 kHz (-10 dB)
- Maximum sound pressure (1 m): 136 dB SPL @ 1 m (calc.)
- Maximum sound pressure (25 m): 104 dB SPL @ 25 m
- Beam angle horizontal: 130° (3 kHz), 70° (10 kHz)
- Beam angle vertical: min. +/-70°, digitally controllable
- Vertical beam angle: min. 3° - 40°, digitally controllable
- Number of beams: 1, 2 or 4 beams
- Typical coverage / throw: 70 meters
- Focus distance 1 m to 90 m
- Acoustic center: freely adjustable via the line source
- Digital signal processing: 8-channel DSP, 96,000 Hz sample rate, 20-20,000 Hz
- Signal to noise ratio: >105 dB/A
- Audio 100 V input: 2 channels A/B; transformer balanced (floating) at loudspeaker array, supporting 100 V monitoring
- Audio line level input: 2 channels A/B; transformer-balanced at system bus
- System bus: 2x system bus at lockable RJ45 connector with control data and 2x analog audio input
- Relay: 1 relay output as fault signal output

- AC input: 90 V - 264 V AC 50/60 Hz / 100 W switching power supply with power factor correction
- Maximum current consumption: 50 A (Normal), 1350 VA (Max)
- Protection circuit: Soft start, over temperature, short circuit, overload
- Housing: Corrosion resistant aluminum housing, powder coated in RAL9006
- Front grille: Steel grille, powder coated in housing color
- Dimensions total max. (H x W x D): 4555 x 107 x 118 [mm]
- Modular: Yes, consists of 5 units
- Weight max.: 27.5 kg
- Warranty: 5 years

2.7 LAS-BEAM-CON

Interface to the system bus of the beam steering loudspeaker arrays. The interface is required for the configuration of the digitally controllable line sources. It serves as a link between the operating software and the corresponding terminals. The converter provides audio inputs (A and B) and converts RS485 control data into a USB-C connection. A fault contact is triggered by the status of the connected beam steering arrays.

Technical specifications

- USB interface: USB-C
- Power supply: via USB-C
- Audio: Channel A and B via 3-pin screw terminal connectors
- System bus: RJ45, automatic RS-485 data flow control
- Relay: Via 2-pin screw terminal connector
- Signaling: Status LED for USB power supply (green), status LED (orange) for data transfer
- Housing: Aluminum
- Color: Black
- Mounting: DIN-rail
- Dimensions (W x H x D): 42 x 80 x 60 mm

2.8 LAS-BEAM-WMS

Wall bracket set for mounting beam steering array speakers equipped with 3.5" drivers. The wall mount set consists of 2 mounting brackets which shall be fixed in the rear slot at the top and bottom part of the speaker. The speaker can be aimed horizontally (rotatable). The bracket is attached to the wall with a screw connection via a vertical and horizontal slotted hole. The distance between the speaker and the wall can be adjusted mechanically via a slotted hole in the mounting bracket. The bracket is made of steel and will be supplied in RAL9006. 1 set consists of brackets for 2 loudspeaker positions.

Technical specifications

Dimensions (H x W x D): 110 x 30 x 70 [mm]

2.9 LAS-BEAM-E

Extender set for stacking two beam steering array speakers equipped with 3.5" drivers. The Extender set consists of 3 mounting plates which shall be fixed in the rear and side slots of the speaker. The lower half slides into the top of the lower array loudspeaker. The upper array loudspeaker can be placed on the lower array loudspeaker by sliding the rear and side slots over the extender set. The plates are attached to the speaker with Allen screw connections. This way two beam steering array loudspeakers can be connected with 1 set to create a stacked array. Up to 5 beam steering arrays can be stacked together with 4 sets.

The bracket is made of steel and will be supplied in RAL9006. There are 2 extender sets in 1 box.

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