



Harmonic Design

...simply harmonic sound

Catalogue
2019



...simply harmonic sound

Harmonic Design

The Harmonic Design® Philosophy

The holistic system consisting of loudspeaker box, digital system controller and amplifier represents our understanding of a future-oriented system. The individual components are individually optimized and unfold their full potential in combination as a system: The sound pattern is faithful, the power is exceptional and the handling is simple.

Our Cooperate Goals

As a long-standing and reliable partner of many distributors, rental companies, system integrators, planners, musicians and producers, we want to continue to work alongside you and offer practical top-of-the-range products. The development of new, innovative technologies for the improvement of products plays a key role.

The Promise

We are constantly facing new, demanding challenges, going on unprecedented paths and thus shifting the boundaries of the possible. Our passion comes from our love for art and music. In search of uncompromising sound accuracy, minimal dimensions, superior quality and smart accessories, our goal is a harmonious design. All Harmonic Design® products are made by hand exclusively in Germany. Our top modern facilities ensure the best quality of every product.

What We Provide

Harmonic Design® (hd) offers innovative products with practical orientation that operate due to their specifications, sound quality and diversity in the highest level available in the audio industry. Our products serve professional sound engineers, musicians, DJs, rental companies and system integrators as perfectly matched tools to best support their daily work and performance. The handling and appearance are extremely minimal and unobtrusive, making the sound system almost invisible, connecting the audience to the performance and focusing on the performance itself. We want to support you in your applications and offer you not only sophisticated products, but also a personal contact point for questions, advice and support. Feel free to contact us!

Yours faithfully,

Robin Maier
- CEO -



...simply harmonic sound

Harmonic Design

Harmonic Design®

History



- 1980 Foundation of **Harmonic Design GmbH** based in Rutesheim, Germany
Invention of „Hardy Amps“, professional Bass and Guitar cabinets
- 1986 Unveiling PA speaker systems with specially developed glass fiber reinforced plastic horns to improve coverage and sensitivity
- 1988 Introduction of the **hd MPP3 and 903 System**: The first loudspeaker system with integrated speaker control processor and analog system amplifier
- 1989 Extension of the manufacturing capacity and in-house production of wooden cabinets
- 1990 Harmonic Design® GmbH named exclusive distributor of the world wide leading „MLSSA“ measurement system in Europe
Calibration and acceptance of renewed sound system at Gottlieb-Daimler-Stadion in Stuttgart, Germany
- 1991 Invention of the **hd “CX”Pro-Series** consisting of “CX”Pro Top 12CX2, “CX”Pro Bass SW115 with HFC-technology, “CX”Pro ISP-AMP, first loudspeakers using coaxial loudspeaker designs
- 1994 Acoustic expert assessment for German Bundestag in Bonn, Germany
Introduction of the first digital room-speaker-processor **hd DSC1** with seamless control over every loudspeaker component
- 1995 Introduction of the **hd SYSTEM2000** loudspeakers and electronic devices with ground breaking new technology for loudspeaker system control and optimization, invention of GroupDelayCorrection algorithm, 2-stage limiters and import MLSSA measurement files to directly optimize the system in an all-in-one system
- 1996 **hd CS-Series** large scale touring sound system consisting of **hd FR-2122** top and **hd SW-218** subwoofer
- 1998 Unveiling **hd 8CX** and **hd 12CX** coaxials, active subwoofers **hd 18N** and **hd SW12-15P**, **hd Studio1** reference studio monitor
- 2000 Development of the PowerSound algorithm for improved sound reproduction
Release of the next generation Digital System Controller **hd DSC2** using FIR/IIR technology
hd SPA modular horn loaded speaker system, **hd Sub15**
- 2004 Begin of an extensive research project of a new DSP platform including a monitoring of the connected devices used in future projects
- 2006 Unveiling multichannel digital amplifier and integrated digital signal controller with 4x In / 6x 200 W Out and 4x In / 4x 400 W Out
Compact LineArray series **hd No3** and **hd No5** as well as stackable Coaxial LineArray **hd No7**
- 2008 Invention of PointSource Stick **hd M-Series** and LineArray Stick **hd ML-Series**
- 2012 Introduction of **hd P-Series** with High-End DSPs (FIR/IIR) and 4000W class-D amplifiers
- 2015 Invention of LineArray Stick **hd PL-Series**
hd Beamforming Technology with application in hd ML-Series and hd PL-Series
- 2016 Presentation of the revolutionary large PA system **hd HLS24** HybridLineSource

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hd Sub-Series

Subwoofer

The **hd Sub Series** consists of the passive, compact and powerful vented subwoofers **hd Slim265**, **hd Sub12**, **hd Sub15** and **hd Sub18**. Our extensive experience in over 38 years of chassis development has led to the development of special chassis with large linear excursion, 3", 4" and 5" voice coils, fiberglass coil carrier and double spider. The generously dimensioned ventilation of the voice coil on the pole piece and spider ensures a high continuous power handling and minimal PowerCompression. The improved cooling also increases the durability and reliability of the subwoofer. Excellent dynamics and tight impulse fidelity paired with an extremely high sound pressure level are the results of many individual optimization processes.

An M20 threaded insert on the top of the housing allows the mounting of a distance rod. In addition, four abrasion-resistant rubber feet on the underside and the associated cutouts on top ensure a secure stacking of same cabinets. The NL4 Speakon jacks, mounted on the back of the connector panel, are used to connect and link the input signal. The loudspeaker enclosure is available in the options RAL colors, outdoor and as installation version. The installation version (suffix i) eliminates the M20 flange, the transport handles and the stacking feet cutouts. Matching, padded and water-repellent transport sleeves are optionally available.



hd Sub12
Subwoofer

hd Sub15
Subwoofer

hd Sub18
Subwoofer

hd Infra218

Hybrid Subwoofer



The **hd Infra218** is a high-performance subwoofer with a hybrid enclosure design for the reproduction of extended low frequencies below 28 Hz. Compact dimensions and exceptional power reserves combined with minimal distortion make the hd Infra218 a modern yet flexible tool for large-scale touring and installation applications requiring extreme low- end, high SPL and great control over dispersion.

The optimally tuned, vented, hybrid horn-loaded cabinet houses two special long-excursion 18" cone drivers with a linear displacement of 30 mm. A large, air flow-optimized center reflex port allows excellent air excitation with minimal turbulence and distortion. The transmission range from 28 Hz to 100 Hz makes the Infra218 the perfect bass extension for all Harmonic Design speakers. Thanks to its long throw, high efficiency and passive directivity pattern, the hd Infra218 can be optimally integrated into LineArray applications. The cardioid radiation behavior is generated passively with two or three stacked hd Infra218 down to 70 Hz resp. 55 Hz in the forward radiating mode.

Protective skids made of high-strength PVC on two sides and corresponding recesses on the top of the cabinet ensure a secure footing. A Speakon socket in the protective front grille allows cardioid configurations without special interchangeable cables.

Features

- long throw
- passive directivity pattern
- reversed Speakon connector on front
- extended low frequency performance from 28 Hz
- high SPL in a lightweight compact enclosure
- improved cooling
- reduced power-compression
- M20 flange on two sides (hd Infra218)

Applications

live sound, A/V installations, broadcast, discotheque, sports arenas, concert halls, mobile use

Options

RAL color, outdoor, install version without handles and M20, 100mm hd SilentWheels, wheel board, cover

for usage with

hd Columns, hd x81-Series, hd MP-Series, hd LSA-Series

Model	Type	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
Slim265	Subwoofer	2x 6"	4 / 16 Ω	300 / 600 W	98 dB	118 dB	55 Hz - 200 Hz	9 kg	400 x 102 x 584
Sub12	Subwoofer	12"	8 Ω	400 / 800 W	98 dB	122 dB	40 Hz - 180 Hz	19 kg	400 x 430 x 420
Sub15	Subwoofer	15"	8 Ω	1000 / 4000 W	101 dB	136 dB	40 Hz - 130 Hz	31 kg	465 x 472 x 520
Sub18	Subwoofer	18"N	8 Ω	1800 / 7200 W	102 dB	141 dB	35 Hz - 100 Hz	40 kg	536 x 542 x 600
Infra218	Hybrid	2x 18"N	4 Ω	3600 / 14400 W	106 dB	149 dB	28 Hz - 90 Hz	89 kg	1190 x 536 x 670

hd P-Series

Active System Subwoofer

The **hd P-Series** is acoustically identical to the hd Sub-Series with the difference that the hd P-Series contains the High-End hd MultiDSP and powerful Class-D amplifiers in the same enclosure and thus becomes a basic building block for any mobile plug & play system. The new DSP platform now enables all processing and control functions of large sound systems in easy-to-use plug & play active system.

On the back panel there are LED metering indicators for each input and output channel, as well as an USB interface for setting and managing all audio parameters via PC. The extremely powerful DSP offers FIR- and IIR-filters for the exact adjustments and optimizations of the PA system to the respective application. The input section includes a routing matrix, a signal generator (sine and noise generator) and a freely configurable EQ per input channel with 16 IIR-filters and a 384 taps FIR-filter. There are 16 IIR-filters, 384 Taps



hd P12stereo
Active System Subwoofer



FIR-filter, 100ms delay, 180° phase reversal, Peak- and RMS Limiter, Gain and Mute available per output channel. There are 20 factory presets for all Harmonic Design® speaker system configurations stored for direct recall on the device so that it can always be reset to a defined default state of the system. This guarantees the highest reliability of the connected speakers and ensures a very dynamic and linear sound.

Key Features

- 1x 12" Long-Excursion Subwoofer 400W/800W
- transmission range from 40 Hz
- 3-channel Class-D Amplifier (2x 500W)
- High-End-DSP with FIR-/IIR-Filter
- multistage limiter architecture
- compact and lightweight enclosure
- ergonomic transport handles
- M20 flange

Applications

conference, multimedia applications, TV environments, A/V installations, mobile use

Options

RAL color, install version without transport handles and M20, transport cover

for usage with

hd M-Series , hd ML-Series, hd C-Series

Model	Type	Transducers	Power Rating RMS / Peak	SPLmax	Freq. Range (-6dB)	DSP	Amplifier @ 4 Ω	Weight	Dimensions W x H x D (mm)
P12	active Subwoofer	12"	400 / 800 W	122 dB	40 Hz - 180 Hz	2in3	3x 500W	19 kg	400 x 430 x 420

For user-specific settings, another 20 freely configurable user presets are available to save and manage individual system configurations. A well readable 4-line LCD display with 3.2 "screen size and 5 navigation buttons on the **hd P15** and **hd P18** enable easy and intuitive operation of all functions, as well as the loading of factory or user presets directly on the device without a PC. For reasons of space, the **hd P12stereo** has only full access through USB. This makes it possible to adapt the PA system to the changing requirements from day to day in the shortest possible time and makes the usual complete system change, for a small or large event, superfluous. In addition, the easy-to-use hd LevelZ PC remote software provides even more detailed possibilities of individual adjustments and an unlimited number of user presets and system configurations.



hd P15

Active System Subwoofer

The multi-channel Class-D amplifiers deliver up to 2500W on a single output channel and are designed to meet the highest audio quality and reliability requirements in mobile applications.



This is ensured by a SMPS power supply with Power Factor Correction (PFC), which even under unfavorable power grid conditions, such as under- or overvoltage, thanks to a universal operating range of 85 V to 265 V, can provide full power at all times and is therefore far superior to conventional power supplies.



hd P18

Active System Subwoofer

Key Features

- long excursion speakers
- 3-channel Class-D Amplifier (2500W/800W/800W)
- High-End-DSP with FIR-/IIR-Filter
- multistage limiter architecture
- high SPL in a lightweight compact enclosure
- extended low frequency performance
- 3,2" LCD with navigation buttons and USB
- control of all features directly at the device without PC

Applications

karaoke TV environments, A/V installations, discotheque, sports arenas , concert halls, mobile use

Options

RAL color, install version without transport handles and M20, 100mm hd SilentWheels, wheelboard, cover

for usage with

hd ML-Series, hd x81-Series, hd MP-Series

Model	Type	Transducers	Power Rating RMS / Peak	SPLmax	Freq. Range (-6dB)	DSP	Amplifier @ 4 Ω	Weight	Dimensions W x H x D (mm)
P15	active Subwoofer	15"	1000 / 4000 W	135 dB	40 Hz - 130 Hz	2in4	1x 2500W + 2x 800W	31 kg	465 x 472 x 520
P18	active Subwoofer	18"N	1800 / 7800 W	137 dB	35 Hz - 100 Hz	2in4	1x 2500W + 2x 800W	43 kg	536 x 542 x 600

hd Columns

Overview

Genuine 1-Way Design.

In order to transmit a sound event from the fundamental to the overtones, conventional loudspeakers use two or three different types of transducers. This results in incoherence not only in the crossover areas, but also in the important mid-frequency-range due to the different decay times and the different diaphragm mass of the transducers types in a different “response characteristic”. Especially in the reproduction of instruments or speech in which the fundamental range is covered by the one type of transducer and the overtone range by the other type of transducer, the sound is distorted. Here, the consistent 1-way design of the hd column speakers offers clear advantages: the full-range speakers, which reproduce the fundamental tone range up to the overtone range, combined with the arrangement as a PointSource or LineSource, makes the reproduction a first-class listening experience.

Custom Made Standard.

Through optimized production processes, special lengths, colors and options can be produced within a few days. Thus, the architecture does not have to adapt to the speaker, but vice versa.

hd C-Series

Commercial Stick

- PointSource
- 2" fullrange and 3.5" coax speakers
- no DSP processing necessary: usage with any amplifier
- integrated frequency and phase optimized crossover
- coverage 100° x 50° and 80° x 80°
- 100V-Version available
- passive

hd ML-Series

LineSource Stick

- LineSource
- 2" fullrange speakers
- usage with system amplifier
- coverage 100° x 20°
- 100V-Version available
- passive or self-powered with hd Beamforming

hd M-Series

PointSource Stick

- PointSource
- 2" fullrange speakers
- usage with system amplifier
- coverage 100° x 50°
- 100V-Version available
- passive

hd PL-Series

PowerLine Stick

- LineSource
- 3" fullrange speakers
- usage with system amplifier
- coverage 80° x 15°
- passive or self-powered with hd Beamforming

Radiation Characteristic Makes The Difference.

The hd column loudspeakers can be configured both as a line or point sound source. This offers the advantage that the right radiation characteristic can be selected for the specific application. For example, in installations the main loudspeakers can be designed as LineSources and the support loudspeakers as PointSources - with the same appearance.

Suitable For Every Situation.

Various mounting solutions are available with the full-length U-slot at the backside of the column speaker. M6 square nuts can be inserted easily to use tilt and swivel wall mounts or stand adaptors for fixed installations or mobile use. The loudspeaker can be optimally aligned with the decent spherical joint wall mount or with minimal space requirements with L-brackets and two M6 threads top and bottom. A Neutrik NL4MP Speakon is located on the bottom plate for input connection in mobile applications, while a terminal block for fixed installations is located on the inside. On the bottom there is an optional built-in pole flange. For mobile use as a PA system, the use of the hd mounting adapter is recommended. Thus, the pan and tilt adapter can be easily attached and dismantled in seconds with only two thumbscrews.



hd C-Series 2" / 3.5" coax speakers hd M-/ML-Series 2" fullrange speakers hd PL-Series 3" fullrange speakers

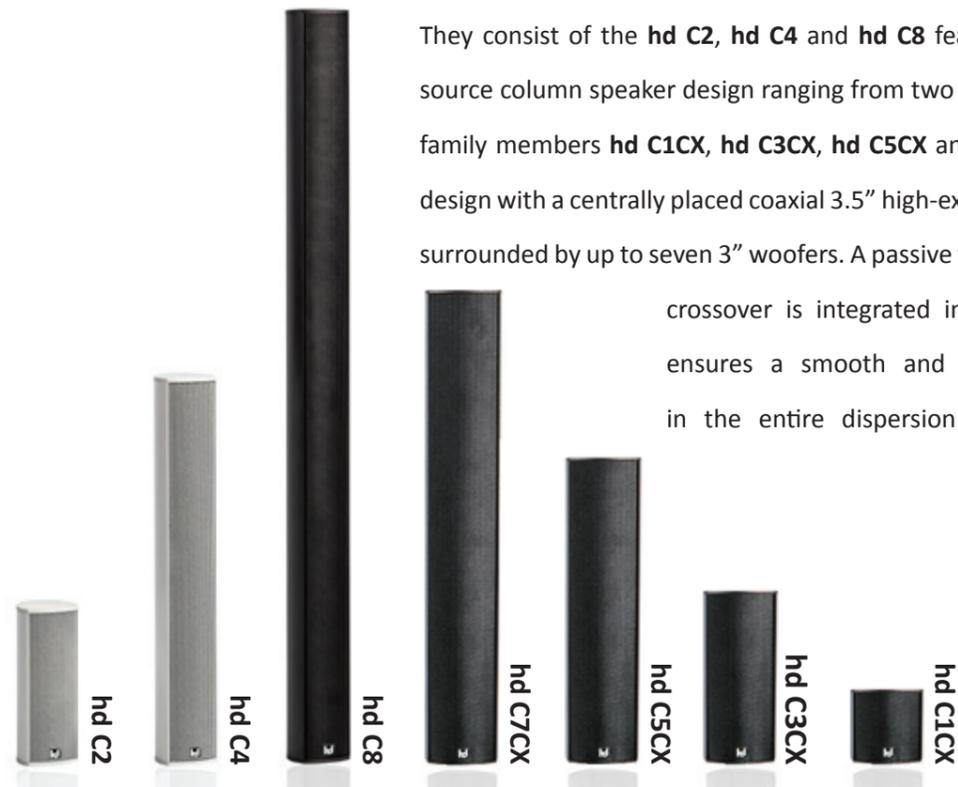
Series	Type	Transducers	Coverage hor x ver	passiveXO	100V Version (optional)	RAL-Painting / Custom length	Ø (mm)
hd C-Series	PointSource	2" / 3.5" coax speakers	100° x 50° / 80° x 80°	Yes	Yes	Yes	80 / 108
hd M-Series		2" fullrange speakers	100° x 50°	-	Yes		80
hd ML-Series	100° x 20°		-	Yes	80		
hd PL-Series	3" fullrange speakers		80° x 15°	-	-		108



hd C-Series

Commercial Stick

The hd C-Series is a product family of commercial design loudspeakers that deliver affordable and excellent performance for music and voice applications, such as in retail stores, public facilities, restaurants, A/V installations, or mobile applications. Equipped with high-end hd drivers, the hd C-Series can be used with any third-party device such as A/V receivers, media control units or multi-channel amplifiers, making system integration easy. The lightweight, stylish and ultra-compact column speakers can be mounted on the ceiling, on the wall or on various stands, and are available in custom color schemes as well as custom-sized enclosures to match every screen size or architectural demand.



They consist of the **hd C2**, **hd C4** and **hd C8** featuring the hd true 1-way point source column speaker design ranging from two to eight 2" fullrange drivers. The family members **hd C1CX**, **hd C3CX**, **hd C5CX** and **hd C7CX** feature a D`Appolito design with a centrally placed coaxial 3.5" high-excursion cone driver with tweeter surrounded by up to seven 3" woofers. A passive frequency- and phase- optimized crossover is integrated into the aluminum housing and ensures a smooth and natural reproduction behavior in the entire dispersion pattern with any drive unit.

Extremely powerful subwoofers from the hd Sub- or P-Series with up to 1800 W AES power handling extend the low frequency sound experience down to the subsonic range. The most elegant solution for extending the low frequency range of the hd C-Series is the super slim **hd Slim265** design subwoofer. It fits in any suspended ceiling, can be mounted to a wall or placed invisible under a piece of furniture due to its height of only 102 mm.



hd Slim265
Design Subwoofer

The hd C-Series can be flexibly and easily installed and mounted. The loudspeaker can be optimally aligned with the decent spherical joint wall mount or with minimal space requirements with L-brackets and two M6 threads top and bottom. If wall mounting is not possible, the speakers can be used with a 3/8" thread on the bottom plate on an elegant designer stand or microphone stand.

Applications in existing or newly designed distributed systems can be realized with the optional 100V versions. Up-to-date transformers guarantee great audio performance even over long distances and with small cable cross-sections. Multiple power taps make it possible to adjust the sound level.

Features

- usable with standard amplifiers
- frequency- and phase-optimized crossover
- elegant design
- precise and smooth coverage
- radiation pattern 100° x 50°
- superb speech intelligibility
- decent integration into architecture
- 100V-version available

Applications

airports, hotels, stations, home cinema, broadcast, conference rooms, A/V installations, multimedia, congress rooms, houses of worship, distributed systems

Options

RAL color, various mounting solutions, 100V-version, custom length

Model	Coverage hor x ver	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
C1CX	80° x 80°	1x 3.5" Coax	8 Ω	40 / 55 W	89 dB	111 dB	120 Hz - 22 kHz	1 kg	108 x 120 x 104
C2	100° x 50°	2x 2"	8 Ω	50 / 70 W	89 dB	113 dB	150 Hz - 22 kHz	2 kg	80 x 205 x 78
C3CX	80° x 80°	3.5" Coax + 2x 3"	4 / 8 Ω	115 / 160 W	90 dB	112 dB	100 Hz - 22 kHz	2 kg	108 x 280 x 104
C4	100° x 50°	4x 2"	4 / 16 Ω	100 / 140 W	92 dB	116 dB	120 Hz - 22 kHz	4 kg	80 x 545 x 78
C5CX	80° x 80°	3.5" Coax + 4x 3"	8 Ω	190 / 265 W	91 dB	115 dB	90 Hz - 22 kHz	2 kg	108 x 460 x 104
C7CX	80° x 80°	3.5" Coax + 6x 3"	8 Ω	265 / 340 W	93 dB	118 dB	80 Hz - 22 kHz	7 kg	108 x 640 x 104
C8	100° x 50°	8x 2"	8 / 32 Ω	200 / 280 W	95 dB	119 dB	90 Hz - 22 kHz	6 kg	80 x 1005 x 78

hd M-Series

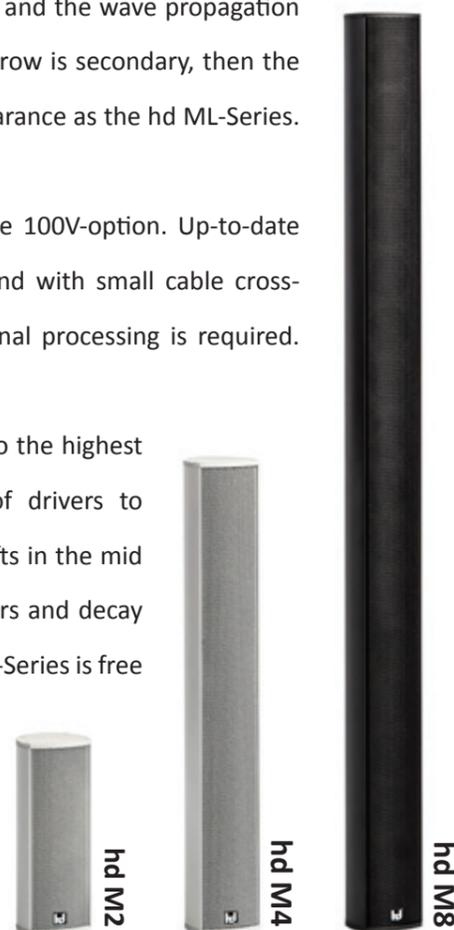
PointSource Stick

The **hd M-Series** are design column speakers with PointSource wave radiation characteristics. The elegant housings are made out of strength aluminum to prevent resonances in the audible frequency range. They are available in various surface structures e.g. powder coated, anodized or varnished in RAL colors. This guarantees an unobtrusive integration into existing spatial architecture of churches, conference rooms or theatres.

The hd M-Series consists of the ultra compact **hd M2**, with two 2" drivers which is ideally suited for near field or voice applications, the slightly larger **hd M4** for example as a fill loudspeaker in church and the **hd M8** as a very compact main loudspeaker in conference or music applications. The number of integrated speakers is easy detect in the product's suffix and allows quick classification of the size, application and power capacity of the end-user and planner. All loudspeakers can be used in distributed high voltage applications with the 100V-option which is also available. The difference between the the hd M- and hd ML-Series is the vertical beam angle and the wave propagation characteristics. Whenever there large vertical dispersion is required and the throw is secondary, then the hd M series is the right choice using the same drivers and the same outer appearance as the hd ML-Series.

All loudspeakers can be used in distributed high voltage applications with the 100V-option. Up-to-date transformers guarantee great audio performance even over long distances and with small cable cross-sections. Multiple power taps speaker allow you to adjust the volume. External processing is required.

For superior and linear reproduction of a sound event from the fundamental to the highest audible frequencies conventional loudspeakers must use different types of drivers to reproduce the entire frequency range. The result is incoherence and phase shifts in the mid frequency range due to different diaphragm masses, varying transient behaviors and decay times of the different sized drivers. According to the true 1-way design, the hd M-Series is free of interference in the important mid-range because there are no phase shifts as each speaker has the same signal and characteristics. The result is an outstanding sound quality in music and speech, enhanced dynamics and even coverage of audience areas.



Various mounting solutions are available with the full-length U-slot at the backside of the column speaker. M6 square nuts can be inserted easily to use tilt and swivel wall mounts or stand adaptors for fixed installations or mobile use. A Neutrik NL4MP Speakon is located on the bottom plate for input connection in mobile applications, while a terminal block for fixed installations is located on the inside. On the bottom there is an optional built-in pole flange. The protective design grill with deposited acoustic foam is also available in the same finish like the housings to ensure perfect protection against splash water or damage and unobtrusive integration into any room architecture. The hd M-Series is also available in custom lengths to fulfill all project requirements.

Safely flown applications are possible with an optional clamp or half-coupler for mounting on the loudspeaker column. Robust padded transport bags or lightweight double-cases with wheels provide adequate protection during transport.



Key Features

- point source characteristics
- elegant design
- precise and smooth coverage
- radiation pattern 100° x 50°
- superb speech intelligibility
- decent integration into architecture
- custom sizes available
- 100V-version available

Applications

conference rooms, houses of worship, concert halls, live music, broadcast, A/V installations

Options

RAL color, various mounting and connection solutions, 100V-version, custom length, transport bag

suggested subwoofers

hd Slim265, hd Sub12, hd P12stereo, hd Sub15, hd P15

Model	Type	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
M2	PointSource	2x 2"	8 Ω	50 / 70 W	89 dB	113 dB	170 Hz - 20 kHz	2 kg	80 x 205 x 78
M4	PointSource	4x 2"	4 / 16 Ω	100 / 140 W	92 dB	116 dB	150 Hz - 20 kHz	3 kg	80 x 553 x 78
M8	PointSource	8x 2"	8 / 32 Ω	200 / 280 W	95 dB	119 dB	130 Hz - 20 kHz	5 kg	80 x 1000 x 78



hd ML-Series

LineArray Stick

The **hd ML-Series** is a product family of very compact LineArray Sticks designed specifically for high-quality music and speech reproduction. The lightweight and elegant speakers can be set up and installed in only a few seconds. A perfect integration into the existing room architecture or stage design is achieved by the slim and stylish design of the column speakers and therefore makes the hd ML-Series the first choice of system integrators, event organizers, agencies, musicians and audiences.

The hd ML-Series consists of the **hd ML8**, **hd ML16**, **hd ML24** and **hd ML32** as passive column loudspeakers. Due to the modular design of the hd ML-Series, it is possible to realize customer-specific lengths and assemblies for optimum adaptation to the respective requirements. In the hd ML-Series special designed 2" broadband drivers produce a wave front with accurate cylindrical dispersion characteristics in the whole operating frequency range and up to the highest audible frequencies. The resulting longer throw distance and better speech intelligibility compared to conventional column loudspeakers predestines the hd ML-Series LineArray Sticks for use in acoustically difficult environments such as churches, airports or halls. The long throw of up to 35m and smooth horizontal coverage of 100° makes the hd ML-Series a decent and powerful loudspeaker for superior audio environments with only few speakers.

The 2" chassis, with their small diaphragm weight and almost the same size as the human vocal cords, are the best choice for reproducing the human voice in the most difficult applications such as houses of worship, conference rooms, airports, train stations and live music.

The hd ML-Series is also available with the implementation of the hd Beamforming-Technology. The hd MLBeam-Series are self-powered, digitally steered column speakers with integrated High-End-DSP and powerful multi-channel amplifiers. Extensive beamforming algorithms are applied to shape the sound where it belongs and to take control of all acoustical parameters.

Due to the true 1-way design, the ML Series is free of interference in the important mid frequency range because there are no phase shifts in a crossover that typical 2-way systems have. The result is outstanding sound quality in music and speech, enhanced dynamics and even coverage of the listening areas. The hd ML series is fully compatible with the Harmonic Design® system concept and can be perfectly combined with the active subwoofers hd P12, hd P15 and hd P18 or Harmonic Design System amplifiers.

The **hd MLC** Cardioid expansion module is available for demanding applications in mobile and permanent installations, effectively reducing the backward radiated frequency components by up to 20 dB. The further optimized directivity of the column speaker by the cardioid module thus considerably reduces the feedback susceptibility in the low-mid range and at the same time improves speech intelligibility, since no sound energy is radiated diffusely into unwanted areas. The hd MLC module is mounted directly on the back of the hd LineArray Stick and driven by a separate amplifier channel. Cardioid or hypercardioid characteristics can be easily retrieved using the corresponding DSP preset via the hd LevelZ software. In addition to the reduction of the back radiated sound energy, the hd MLC Cardioid module also extends the SPL capabilities in the low-mid range of the hd ML-Series towards the audience. This makes the sound even more punchy and dynamic with the same line length.

All loudspeakers can be used in distributed high voltage applications with the 100V-option. Various mounting solutions are available with the full-length U-slot at the backside of the column speaker. M6 square nuts can be inserted easily to use tilt and swivel wall mounts or stand adaptors for fixed installations or mobile use.

Key Features

- passive LineArray Stick
- cylindrical wave propagation
- perfect sound & excellent dynamics
- wide coverage 100° x 15°
- superb speech intelligibility
- best integration into room architecture
- custom sizes available
- 100V-version available

Applications

live music, DJ, houses of worship, broadcast, conference, hotels, airports, stations, A/V installations, mobile use

Options

RAL color, various mounting and connection solutions, 100V-version, custom length, transport bag, self-powered Beamforming speakers (hd Beam-Series)

suggested Subwoofer

hd Sub-Series, hd P-Series

Model	Type	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
ML8	LineArray Stick	8x 2"	8 Ω	200 / 280 W	89 dB	119 dB	160 Hz - 20 kHz	4 kg	80 x 553 x 78
ML16	LineArray Stick	16x 2"	4 Ω	400 / 560 W	92 dB	123 dB	140 Hz - 20 kHz	6 kg	80 x 1000 x 78
ML24	LineArray Stick	24x 2"	6 Ω	600 / 840 W	95 dB	125 dB	120 Hz - 20 kHz	8 kg	80 x 1513 x 78
ML32	LineArray Stick	32x 2"	8 Ω	800 / 1120 W	96 dB	127 dB	90 Hz - 20 kHz	10 kg	80 x 1958 x 78
MLC	Cardioid Add-On	9 x 2"	4 Ω	225 / 315 W	89 dB	117 dB	80 Hz - 500 Hz	5 kg	80 x 708 x 78



hd PL16
PowerLine Stick

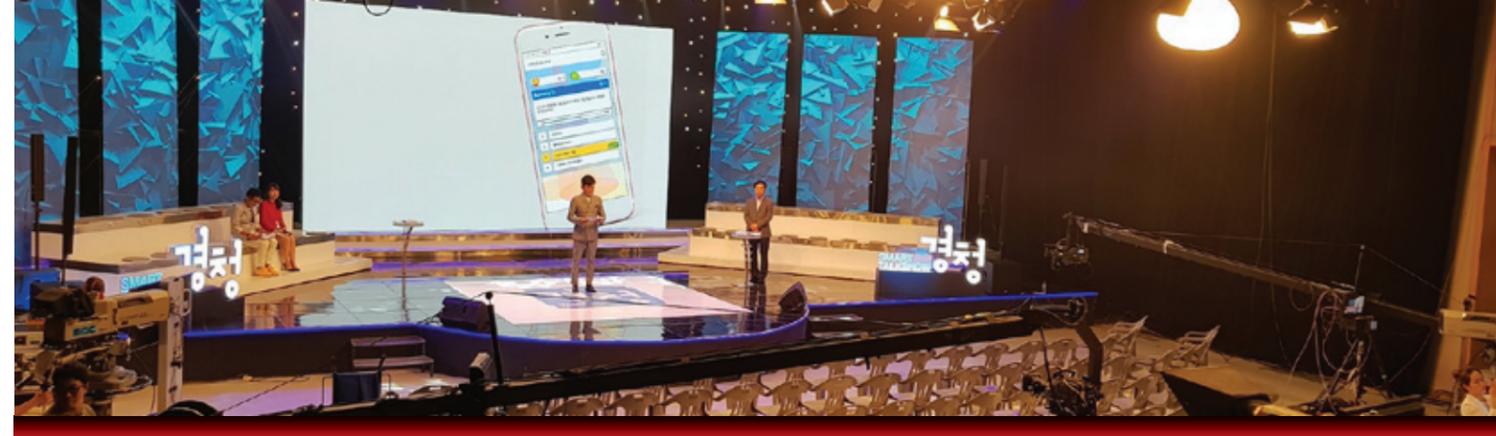
hd PL-Series

PowerLine Stick

The **hd PL-Series** extends the Harmonic Design® LineArray Stick portfolio with a more powerful PowerLine Stick loudspeaker series. The elegant design introduced with the hd ML-Series has been transferred to a slightly larger column speaker series. Lightweight and highly stiff aluminum enclosures paired with groundbreaking newly developed 3" drivers provide high reliability and performance. The true 1-way design delivers superb natural sound reproduction of music and speech in reference studio monitor quality. For mobile applications, the elegant PowerLine sticks can be combined with active system subwoofers of the hd P-Series with their open system architecture to create an elegant and high-performance PA system. With the modular design of each Harmonic Design® column loudspeaker series, custom lengths and color schemes are available to meet the needs of any permanent installation project. A perfect integration into existing space architecture and stage scenery due to the remarkable size-to-performance-ratio makes the hd PL-Series the first choice of architects, system integrators and rental companies around the world.

The **hd PL12**, **hd PL16** and **hd PL24** are the standard models of the hd PL-Series. Equipped with high-performance hd 3" broadband drivers, the hd PL-Series produces a coherent sound field with cylindrical wave propagation. Extensive research and use of new materials has been required to increase the frequency range to the highest audible frequencies with fullrange speakers that do not require additional tweeters. The 1-Way design improvements provide a longer, coherent throw range with less loss of level and frequency over distance at the same time. Cylindrical wave propagation provides better speech intelligibility compared to other column loudspeakers and predestines the PowerLine Stick hd PL-Series for use in difficult acoustic environments such as churches, train stations, airports or concert halls where clarity, performance and an unobtrusive appearance are required.

The hd PL-Series is also available with the implementation of the hd Beamforming-Technology. The hd PLBeam-Series are self-powered, digitally steered column speakers with integrated High-End-DSP and powerful multi-channel amplifiers. Extensive beamforming algorithms are applied to shape the sound where it belongs and to take control of all acoustical parameters.



The **hd PLC** Cardioid expansion module is available for demanding applications in mobile and permanent installations, effectively reducing the backward radiated frequency components by up to 20dB. The further optimized directivity of the column speaker by the cardioid module thus considerably reduces the feedback susceptibility in the low-mid range and at the same time improves speech intelligibility, since no sound energy is radiated diffusely into unwanted areas. The hd PLC module is mounted directly on the back of the hd PowerLine Stick and driven by a separate amplifier channel. Cardioid or hypercardioid characteristics can be easily retrieved using the corresponding DSP preset via the hd LevelZ software. In addition to the reduction of the back radiated sound energy, the hd PLC Cardioid module also extends the SPL capabilities in the low-mid range of the hd PL-Series towards the audience. This makes the sound even more punchy and dynamic with the same line length.

For mobile application the hd PL-Series column speakers are equipped with a Neutrik NL4MP an model dependant either with a 35 mm stand adaptor flange on the bottom or with a rear side mounted tilt/swivel stand adaptor. For fixed installations the connection is made through an almost invisible cable outlet on the back and terminal blocks inside.

Key Features

- passive PowerLine Stick
- cylindrical wave propagation
- perfect sound & excellent dynamics
- high SPL
- wide coverage 80° x 10°
- superb speech intelligibility
- best integration into room architecture
- custom sizes available
- 100V-version available

Applications

live music, DJ, houses of worship, broadcast, conference, hotels, airports, stations, A/V installations, mobile use

Options

RAL colors, various mounting and connection solutions, 100V-version, custom length e.g. PL32, PL40 self-powered Beamforming speakers (hd Beam-Series)

suggested Subwoofer

hd Sub-Series

Model	Type	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
PL12	PowerLine Stick	12x 3"	6 Ω	450 / 630 W	94 dB	124 dB	130 Hz - 18 kHz	9 kg	108 x 1029 x 104
PL16	PowerLine Stick	16x 3"	4 Ω	600 / 840 W	96 dB	127 dB	110 Hz - 18 kHz	11 kg	108 x 1353 x 104
PL24	PowerLine Stick	24x 3"	6 Ω	900 / 1260 W	97 dB	128 dB	80 Hz - 18 kHz	15 kg	108 x 2001 x 104
PLC	Cardioid Add-On	9x 3"	4 Ω	340 / 470 W	93 dB	120 dB	70 Hz - 500 Hz	7 kg	108 x 878 x 104

Harmonic Design® Beamforming Technology

Overview

Harmonic Design® Beamforming loudspeakers offer great potential for improving sound distribution in complex architectures and highly reverberant rooms. The goal is to focus the sound only on the auditory surfaces, while shading surfaces that cause unwanted reflections and produce disturbing diffuse sound should be shaded. This leads to a much better speech intelligibility and a first-class listening experience in speech and music performances for each listener, allows an unobtrusive positioning of the speakers in previously unsuitable positions, as well as a flexible adaptation of the speaker radiation characteristics to different applications.

Compact Design.

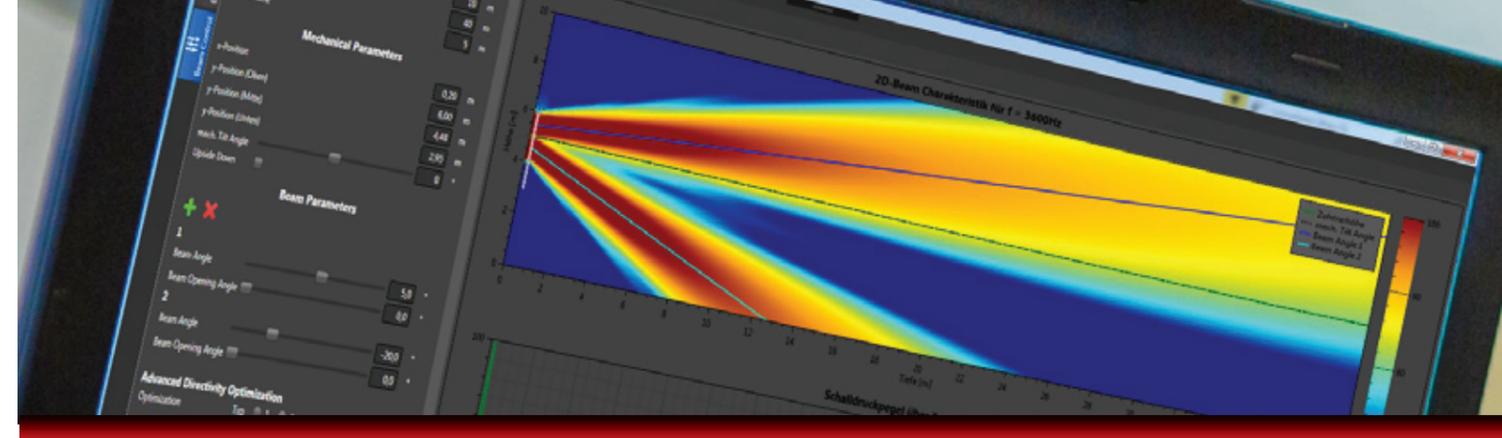
The ultra-compact width of just 80 mm makes the hd ML-Series the narrowest beamforming speaker available, which is almost invisible in permanent installations. The elegantly designed aluminum enclosure and the finely woven steel grille with premium powder coating seamlessly integrate the sleek, unobtrusive look of the column speakers into the room architecture, inspiring planners, architects, system integrators, event organizers and the audience.

Genuine 1-Way Design.

For excellent and linear reproduction of a sound event from the lowest to the highest audible frequency, conventional loudspeakers must use different types of drivers to reproduce the entire frequency range. The result is incoherence and phase shifts in the middle frequency range due to different membrane mass, varying transient response and decay time speakers of different sizes have. The hd column loudspeakers of the hd ML- and PL-Series are exclusively equipped with full-range loudspeakers and thus trouble-free in the important mid-frequency range, as each loudspeaker has the same response and characteristics. The result is excellent sound quality for speech and music, improved dynamics and consistent horizontal coverage of the listening areas.

Cost Efficient.

With our Beamforming technology, we offer a completely new price-performance ratio. This allows the use of the technology for projects that would require influencing the sound beams, but have so far exceeded the budget. Our own in-house developed and manufactured components, algorithms and the planning software guarantee cost efficiency.



Scalable and Customizable.

The modular concept of the hd ML-/PL-Series continues in the Beam-Series. Up to 32 DSP/amplifier channels, scalable in segments of 8, individual length and RAL colors, seamlessly integrate the speaker into the architecture - not the other way around. The standard colors are black (RAL 9005) and white (RAL 9010) without surcharge. The continuous U-slot on the back of the aluminum profile allows the use of M6 square nuts to attach a wall mount adapter or the use of the hd mounting adapter for quick and easy mounting of the tilt and swivel stand adapter for mobile applications. Top and bottom M6 threads allow wall mounting with minimal space requirements using the accessories L-brackets. The electronic unit is integrated into the housing of the loudspeaker and is optimally protected by the continuous fine-structured design grid with backed acoustic foam and ensures an inconspicuous integration into any room architecture.

Dante® Spoken here.

The Harmonic Design® Beamforming loudspeakers are prepared for digital audio transmission with Dante audio streams from e.g. mixers or Matrix systems. This allows digital streaming of audio packets over a Dante network directly and without additional DA/AD conversion to the integrated DSP core and amplifiers. A software-controlled redundant input selector switch for the analogue secondary input ensures fail-safety if required. If no digital transmission is required, both analog inputs (primary and secondary) can be used to create an analog fallback strategy.

Way-Beyond Spatial Aliasing.

The selection of 2" and 3" full-range chassis enables the shifting of the inevitable spatial aliasing from linear loudspeaker arrays to the highest frequencies. Due to the increasing directivity of the speakers, this phenomenon is also suppressed. The motivation to keep the speaker diameter to a minimum has increased the challenges for our research and development department in terms of the size of multi-channel amplifiers and DSP platforms, but it was a necessary step to ensure the musicality of the beam-formed speaker array.



Multi-Channel DSP Architecture.

Based on the enormous computing power of our hd MultiDSP, a new multi-channel DSP architecture has been developed that meets the high demands of beamforming algorithms. Each of the up to 32 output channels as well as user channel features a 384 Taps FIR filter and 16x IIR filters in double precision. The all-new hd BeamDSP performs over 300 million instructions per second to meet real-time criteria and provide enough freedom to shape the sound as needed.

Powerful Amplifiers.

Each loudspeaker chassis is equipped with a DSP channel and a digitally interfaced and microprocessor controlled state-of-the-art Class-D amplifier. This guarantees best SNR for all gain settings and the possibility to surveil the impedance of each chassis and report its status in case of any fault. Each amplifier channel can deliver up to 75 watts into 4 Ω loads, delivering uncompromising audio with premium dynamics and headroom.

Harmonic Design® Beamforming Key Features

- 2In/32Out High-End hd BeamDSP
- redundant input selection fallback algorithm
- analog + digital inputs with Dante®**
- AdvancedDirectivityOptimization algorithm
- 384 Taps FIR-Filter each Input/Output
- 16x IIR-Filter (double precision) each Input/Output
- modular equipping in segments of 8
- 75W Class-D amplifiers with digital input for best SNR
- ImpedanceControl with fault detection
- multistage Limiter-Architecture (Peak/RMS/Thermal)
- hd LevelZ Remote Software via USB
- standard colors: black RAL 9005 & white RAL 9010

Applications

- airports
- stations
- churches
- lecture halls
- houses of worship
- museums
- conference rooms
- hotels
- sport arenas
- A/V installations
- live events
- mobile use

**Dante® optional

hd Beam-Series

Beamforming Stick

Key Features

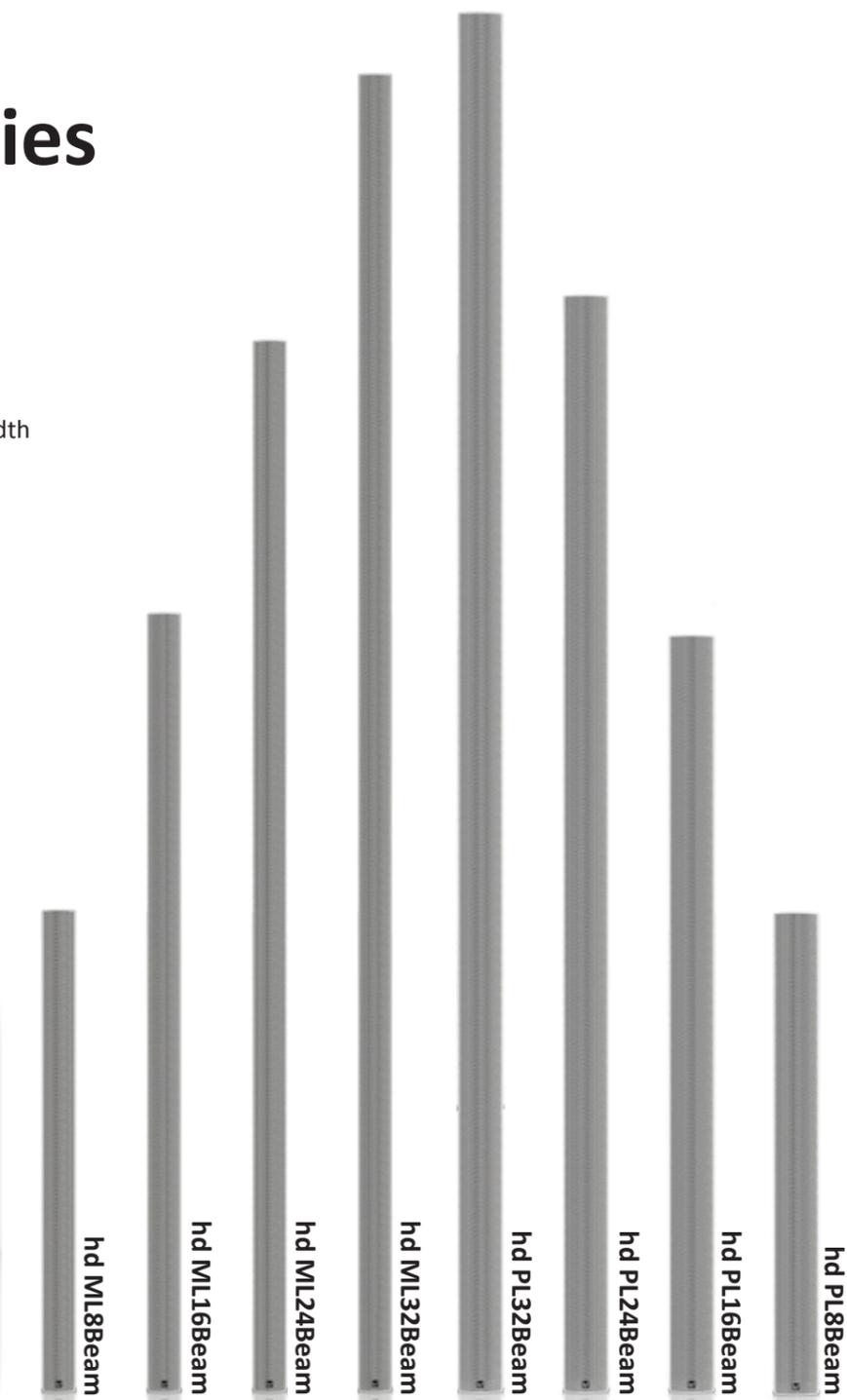
- shielded fullrange chassis
- standard colors: RAL 9005 & RAL 9010
- smallest footprint starting at 80 mm width
- perfect sound & excellent dynamics
- wide horizontal coverage
- superb speech intelligibility
- best integration into room architecture
- HiFi-Sound

Options

RAL color, custom size, various mounting solutions: tilt & swivel adaptor, L-brackets

suggested Subwoofer

hd Slim265, hd Sub-Series, hd P-Series



Model	Transducers	max. Beam Count	Amplifier	SPLmax	Freq. Range (-6dB)	Connections	Weight	Dimensions W x H x D (mm)
ML8Beam	8x 2"	1	8x 75W	119 dB	160 Hz - 20 kHz	Phoenix 3-pole Mains Phoenix 6-pole Input Dante® Ethernet* USB	5 kg	80 x 1103 x 78
ML16Beam	16x 2"	2	16x 75W	123 dB	140 Hz - 20 kHz		8 kg	80 x 1780 x 78
ML24Beam	24x 2"	3	24x 75W	125 dB	110 Hz - 20 kHz		12 kg	80 x 2413 x 78
ML32Beam	32x 2"	4	32x 75W	127 dB	90 Hz - 20 kHz		16 kg	80 x 2998 x 78
PL8Beam	8x 3"	1	8x 75W	123 dB	130 Hz - 20 kHz		10 kg	108 x 1118 x 104
PL16Beam	16x 3"	2	16x 75W	126 dB	110 Hz - 20 kHz		18 kg	108 x 1763 x 104
PL24Beam	24x 3"	3	24x 75W	127 dB	90 Hz - 20 kHz		23 kg	108 x 2541 x 104
PL32Beam	32x 3"	4	32x 75W	129 dB	70 Hz - 20 kHz		29 kg	108 x 3189 x 104

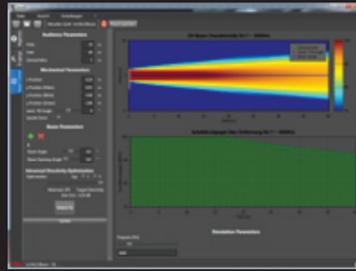
*optional

Shape your Sound

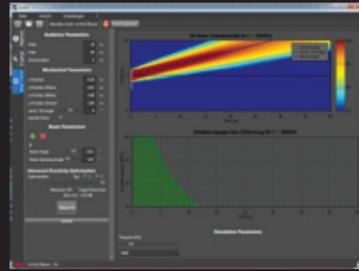
BeamControlParameters

Beam Steering.

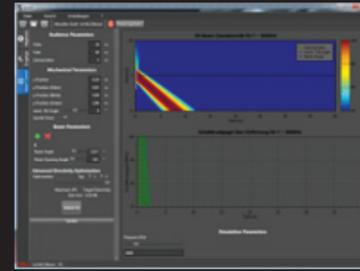
Beam steering is the basic discipline of beam forming where the main lobe is digitally steered up- or downwards. Harmonic Design® Beamforming loudspeakers are capable to adjust the vertically main lobe beam angle up to $\pm 60^\circ$ with an accuracy of $0.1^\circ/\text{step}$.



main beam @ 0°



main beam @ $+10^\circ$



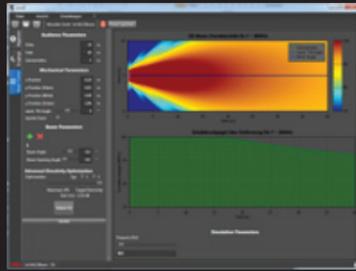
main beam @ -32°

Frequency Independent Opening Angle.

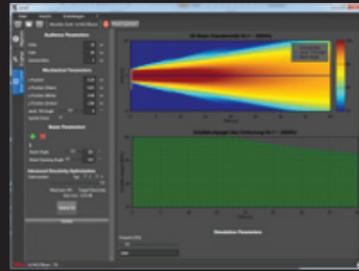
Conventional loudspeaker arrays increase their directivity with increasing frequency resulting in a wide main lobe at low frequencies and a narrow main lobe at high frequencies. A frequency independent opening angle preserves the same opening angle over a great bandwidth within physical limitations and is adjustable from minimum to 90° in 0.1° steps. This guarantees perfect concentration of sound where it belongs and where not.

conventional main beam

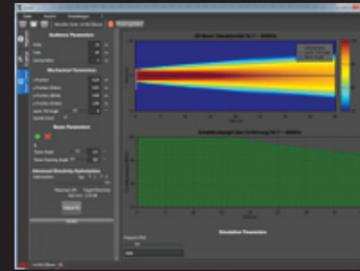
f = 800 Hz



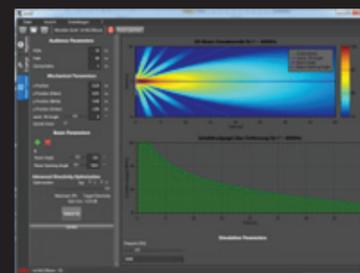
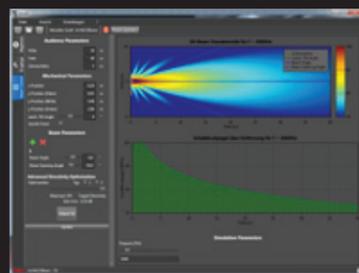
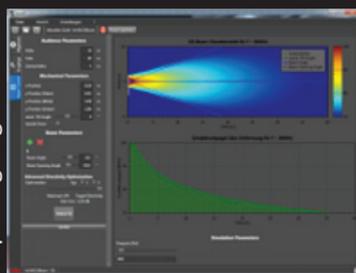
f = 2 kHz



f = 4 kHz

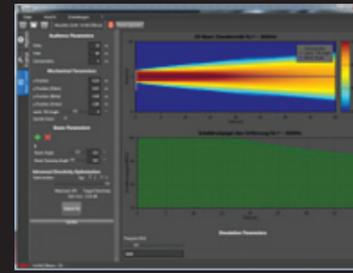


frequency independent opening angle $\theta = 30^\circ$

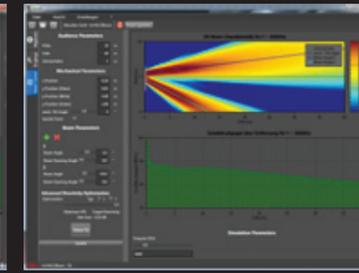


Multiple Beams.

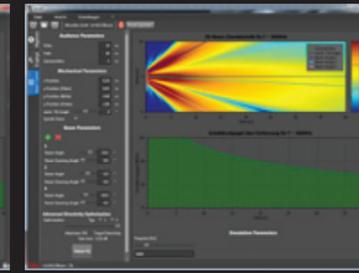
The unique Harmonic Design® Algorithm enables up to 4 separate main beams that can be steered individually and still create a specific frequency independent opening angle.



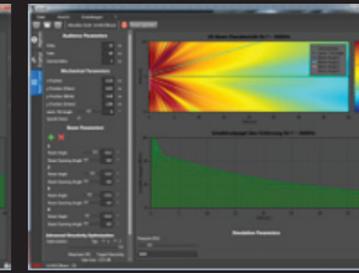
main beam @ 0°



2 beams @ $+5^\circ | -20^\circ$



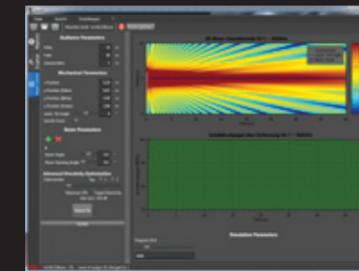
3 beams @ $+20^\circ | -2^\circ | -20^\circ$



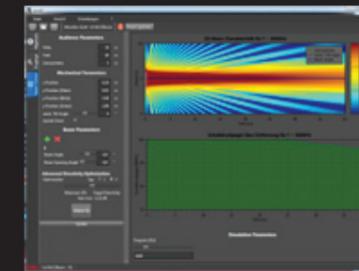
4 beams @ $35^\circ | +12^\circ | -12^\circ | -35^\circ$

Advanced Directivity Optimization.

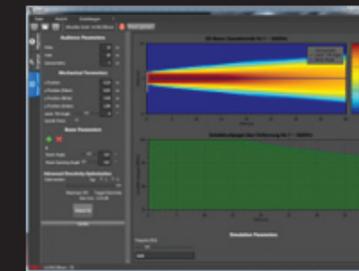
The conventional beam radiation pattern also contains unwanted side lobes that excite the auditorium with disturbing noise while declining the speech intelligibility. By applying special algorithms to the individual DSP channels, an almost optimum, light-beam-like main lobe beam is achievable with an accurate side lobe suppression. The enhancements to improve speech intelligibility in reverberant rooms by applying ADO algorithm are extreme. The strength of the optimization tool may be adjusted by the end-user either towards maximum SPL or optimum target directivity.



conventional beam pattern, ADO off



intermediate ADO



maximum ADO

Focus.

By default the focus point of the wave fronts of the individual loudspeakers is infinity and creates parallel running pressure waves. At the distance infinity all wave fronts are perfectly correlated and coherent meaning they arrive at the same time with the same relative phase. Whenever this large throw is not necessary it may be useful to focus the wave fronts to the front rows in steps of 0.1m to tighten the „sweet spot“.



hd x81-Series

Universal Loudspeaker

The **hd x81-Series** are lightweight, compact and decent designed 2-way passive loudspeakers and consists of the universal loudspeakers **hd 181** and the Low-Profile-Monitor **hd 281M**. The combination of 8" low-frequency-woofer and 1" high-frequency-driver provides excellent dynamics, hi-fi sound and linearity of the speaker cabinet. The specially designed 8" ferrite woofer is perfect for reproducing voice and instruments due to its fast attack and decay. The powerful 1" driver with Kapton diaphragm provides improved HF reproduction and produces a uniform dispersion of 80° x 60° with the BEM / FEM optimized elliptical horn.

The speaker cabinet is made of high-quality birch multiplex and provided with a shock, scratch and weatherproof polyurethane plastic coating. Ergonomic handles allow easy transport.

The loudspeaker components are protected by a sturdy, rustproof, coated steel grille with deposited acoustic foam. A variety of M8 inlet threads and a pole flange allow usage on a distance rod or tripod or with a flight and swivel bracket. The NL4 Speakon sockets mounted on the back of the connection panel are used to connect and link the input signal. The speaker cabinet is available in the RAL colors and outdoor options.

The **hd 8CXN** is a passive 2-way system equipped with a bass-reflex 8" neodymium midrange speaker and a 1" neodymium high-frequency driver. Operation is possible via any power amplifier - even without DSP - and makes the **hd 8CXN** the optimal solution for high-quality mobile or permanently installed public address applications in, for example, industrial events, theaters or sports facilities.



hd 8CXN
Koaxiallautsprecher



hd 181
Universallautsprecher



hd 281M
Low-Profile-Monitor

Key Features

- usable without DSP
- frequency and phase response optimized crossover
- coverage pattern 80° x 60°
- lightweight compact enclosure
- HiFi-sound
- superb speech intelligibility
- reduced power-compression
- elegant design

Applications

rental companies, concert halls, mobile use, broadcast discotheque, sports arenas, KTV, A/V installations

Options

RAL color, various mounting options, outdoor, transport cover

for extended low frequency usage

hd Sub-Series, hd P-Series

Model	Type	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
8CXN	Coax	8"N / 1"N	8 Ω	280 / 800 W	97 dB	125 dB	70 Hz - 22 kHz	8 kg	240 x 360 x 220
181	mid/high	8" / 1"	8 Ω	250 / 500 W	94 dB	121 dB	95 Hz - 20 kHz	12 kg	245 x 430 x 280
281M	Monitor	2x 8" / 1"	8 Ω	500 / 1000 W	100 dB	124 dB	65 Hz - 20 kHz	19 kg	500 x 350 x 430

hd MP-Series

Multi Purpose Loudspeaker

The **hd MP10N**, **hd MP12N** and **hd MP15N** are full range cabinets that have been specifically designed and optimized to be true a real multi-purpose loudspeaker for permanent installation and mobile applications. The innovative acoustic design achieves a true linear response - not only in terms of flat frequency response, but also in the dynamic range and every other acoustic parameter. Precisely engineered and elaborate crossover ensures outstanding high performance of the compact speakers. The hd MP-Series cabinets are equipped with most powerful neodymium low-frequency drivers with 600W/2400W (RMS/Peak). The new neodymium high frequency driver is coupled to a large, rotatable horn with a particularly low crossover frequency, which guarantees a high directivity and controlled radiation behavior in the important voice range. Two different horn variants allow different horizontal and vertical dispersion patterns of 90° x 60° or 60° x 40°.

The acoustical and mechanical design guarantees a coherent, free of interference and balanced reproduction of different music styles and sounds even without additional DSP. Harmonic Design® MPs can easily be connected to any standard power amplifier. Noteworthy is the unique reproduction of transients and the tonal depth and clarity of effects. The SuperVented cabinet design combined with an extremely resilient voice coil paired with the neodymium magnet geometry assembly of the latest technology makes the hd MP-Series a dynamic full range loudspeaker. They are seamlessly integrated into the Harmonic Design® system philosophy by simply adding multiple subwoofers of the hd Sub-Series or hd P-Series as well as driving up to four hd MPs on a single Harmonic Design® system amplifier channel.



hd MP10N

Multi Purpose Loudspeaker

hd MP12N

Multi Purpose Loudspeaker

hd MP15N

Multi Purpose Loudspeaker



The rounded and asymmetrical enclosure is made of high-quality birch multiplex and is provided with a weatherproof polyurethane coating. The integrated 35 mm tripod adaptor allows use on a stand as a front system and is complemented by two practical monitor angles of 32/35° and 45° for decent and resounding monitor applications. Three Speakon connectors - two on the back, one on the bottom - ensure unobtrusive and kinking-free wiring. A powder-coated steel grille with acoustic foam on the inside protects the drivers. An ergonomic handle for transport is placed on top of the cabinets. The hd MP15N has an extra pair of grips on the bottom. Extensive accessories and twelve integrated M8 mounting points offer maximum flexibility for daily changing sound reinforcement tasks. In addition to the extremely robust polyurethane coating in black or white, RAL colors are also available.



Key Features

- coverage 90° x 60°, 60° x 40°, rotatable
- high SPL output
- lightweight compact enclosure
- extended full range performance for standalone use
- usable without DSP
- extensive optimized crossover
- outstanding voice and music quality
- monitor angle of 32°/35° and 45°

Applications

concert halls, mobile use, A/V installations, discotheque, sports arenas, KTV, public buildings

Options

RAL color, various mounting solutions, transport cover, outdoor

for extended low frequency usage

hd Sub-Series, hd P-Series, hd Infra218

Model	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)	Monitor Angle
MP10N	10"N / 1.4"N	8 Ω	600 / 2400 W	100 dB	133 dB	60 Hz - 20 kHz	15 kg	300 x 520 x 300	35° / 45°
MP12N	12"N / 1.4"N	8 Ω	600 / 2400 W	100 dB	134 dB	55 Hz - 20 kHz	18 kg	354 x 575 x 320	32° / 45°
MP15N	15"N / 1.4"N	8 Ω	600 / 2400 W	101 dB	134 dB	50 Hz - 20 kHz	23 kg	430 x 650 x 380	32° / 45°



...simply harmonic sound



hd HLS-Series

HybridLineSource

Revolutionary HybridLineSource-Technology.

The HybridLineSource is a new and worldwide unique loudspeaker system developed by Harmonic Design, which reduces the needed truck space dramatically and improves the quality of a public address system to a new level of uniformity and complete absence of distortions. The HybridLineSource System is equipped with two specially designed high performance 10" resp. 12" neodymium low frequency chassis and reaches already a sensitivity of 107dB (hd HLS20P) and 108dB (hd HLS24P) in the low-mid-frequency range.



hd HLS20

HybridLineSource

hd HLS24

HybridLineSource

Powerful LineSource-Unit makes the Difference.

The exceedingly large-dimensioned high frequency LineSource-section consists of three resp. four 1.4" neodymium compression drivers with a special polymer diaphragm, coupled to dedicated LineSource wave formers generating a cylindrical wave front with a vertical opening angle of 40°. Therefore the throw of a HybridLineSource-System is comparable with a LineArray. Due to the coaxial setup the horizontal coverage pattern is free of interference in the crossover area and perfectly consistent over an angle range of 100°. Double-Hangs become redundant.

Efficiency new Defined.

The innovative and unique hybrid horn-loaded-, vented-, coaxial- and LineArray- enclosure design ensures seamless efficiency, most compact dimensions and undistorted high SPL larger 144 dB. The hd HLS24 HybridLineSource-System sets new standards in every event in the popular and daily used double-12" class. With the use of multiple 1.4"

compression drivers the typically occurring distortion of a single driver at higher levels, is dramatically reduced another advantage is the improved headroom to cover larger distances. The special SuperVentedDesign ensures a dynamic and broadband reproduction below 60 Hz without additional subwoofers in standalone full range mode. Cut mode guarantees strict neutrality in maximum performance applications.

Easily Combinable.

The mechanical structure allows the use on a speaker stand or flown vertical arrays. Every loudspeaker has an integrated 3-point FastRig rigging system where the inter element curvature can be set precisely in 5° steps from 5° to 20°.

Reliable and Audiophile.

Operation takes place with Harmonic Design® system amplifiers and guarantees outstanding performance and compatibility even in the worst circumstances as well as highest efficiency in terms of power consumption, truck space and output level. Up to two loudspeakers can be connected in parallel to the Harmonic Design® system amplifiers. An optional available passive phase optimized crossover allows simple and quick operation on a single system amplifier channel. The 2-way active BI AMP mode guarantees strict neutrality for maximum performance applications. An accurate prediction is possible with EASE Focus.



Sophisticated Accessories save Time and Costs.

The hd HLS-RF3 is a rigging frame and stand adaptor likewise that may be used to carry a single unit on a speaker stand with precise adjustable tilt in 1° steps from 0° - 20° as well as to fly a vertical array of up to three loudspeakers. This gives best flexibility for daily changing applications while reducing the accessories effort.

Sound with System.

There are perfectly matched hd TourSys systems comprised of top loudspeakers, subwoofers and system amplifiers as complete Allround-PA systems available. Several TourSys systems may be combined to realize shows with up to 5.000 listeners.



hd HLS20

HybridLineSource



Key Features

- passive 2-way loudspeaker with 2x 10"N / 3x 1.4"N
- power handling 1200 W / 4800 W (AES/Peak)
- coverage 100° x 40°
- optional frequency- and phaseoptimized crossover
- innovative hybrid design
- integrated 3-Point FastRig-Rigging
- weight 34 kg

Applications

rental companies, live music, DJ, concert halls, mobile use, discotheque, sports arenas

Options

passive XO, hd HLS20-RF3, hd UniFrame16, hd HLS20-Tour-Case, RAL-Color

for extended low frequency usage

hd Sub18, hd P18, hd Infra218

Model	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
HLS20	2x 10"N	LF: 4 Ω, HF: 16 Ω	1200 / 4800 W	LF: 107 dB HF: 109 dB	143 dB	70 Hz - 20 kHz	34 kg	400 x 520 x 540
HLS20P	3x 1.4"N	passive XO: 4 Ω		107 dB			36 kg	



hd HLS24

HybridLineSource



Key Features

- passive 2-way loudspeaker with 2x 12"N / 4x 1.4"N
- power handling 1200 W / 4800 W (AES/Peak)
- coverage 100° x 40°
- optional frequency- and phaseoptimized crossover
- innovative hybrid design
- integrated 3-Point FastRig-Rigging
- weight 45 kg

Applications

rental companies, live music, DJ, concert halls, mobile use, discotheque, sports arenas

Options

passive XO, hd HLS24-RF3, hd UniFrame16, hd HLS24-TourCase, RAL-Color

for extended low frequency usage

hd Sub18, hd P18, hd Infra218

Model	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
HLS24	2x 12"N	LF: 4 Ω, HF: 8 Ω	1200 / 4800 W	LF: 108 dB HF: 110 dB	144 dB	60 Hz - 20 kHz	45 kg	480 x 675 x 560
HLS24P	4x 1.4"N	passive XO: 4 Ω		108 dB			47 kg	



hd LSA12 LineSourceArray Module

The hd LSA12 is an efficient LineArray element of the latest generation, equipped with a specially designed high performance 12" neodymium low frequency chassis. The high frequency unit is equipped with two 1.4" neodymium compression drivers with special polymer diaphragm coupled to dedicated line source wave formers to generate a cylindrical wave front.

Brilliant speech intelligibility paired with dynamic tonality and complemented by an extreme spatial resolution and depth of effects is exceptional and up to this point only familiar from significantly larger systems.

With the integrated three-point FastRig rigging system vertical arrays of up to 16 elements can be flown safely and the vertical coverage angle can be set precisely in 1° steps from 0° to 11°. All components and quick lock pins are fastened to the cabinet. The various horns available for the high frequency units allow symmetrical and asymmetrical horizontal coverage angles for fixed installations, to adjust the audio system precisely to the audience and avoids annoying reflections from walls or obstacles. The special SuperVentedDesign ensures a dynamic and broadband reproduction below 45 Hz in fullrange mode. For high performance applications the system response can be extended with the hd Sub-Series below the subsonic frequency range.



hd UniFrame16 RiggingFrame

hd LSA-Series LineSourceArray

Extensive accessories for easy and safe transport or rigging adaptors like the hd LSA12-SF6 small frame to safely fly up to six elements as well as the larger hd UniFrame16 allows up to flown 16 modules according to BGV-C1. The multi-functional time- and cost saving rigging frame allows practice-oriented flown- or ground-stacked applications with the hd LSA-Series or the hd HLS-Series.

Operation takes place with Harmonic Design® system amplifiers and guarantees outstanding performance and compatibility even in the worst circumstances as well as highest efficiency in terms of power consumption, truck space and output level. The hd LSA12-TourSys1 and the larger hd LSA12-TourSys2 are the perfect matched complete LineArray systems for beginners and advanced LineArray users. Several TourSys systems can be put together to cover audiences of up to 15.000 listeners.

Up to six loudspeakers can be connected in parallel to the Harmonic Design® system amplifiers. An optional available passive phase optimized crossover allows a simple and quick operation on a single system amplifier channel. The 2 way active standard mode guarantees strict neutrality and no compromise high end sound for all maximum performance applications.

An accurate prediction of the radiated sound field as well as calculation the optimum splay angles for the given setup is possible with EASE Focus.



Key Features

- passive 2-way loudspeaker 1x 12"N / 2x 1.4"N
- power handling 600 W / 2400 W (AES/Peak)
- coverage 90° x 15° or 120° x 15°
- optional frequency- and phaseoptimized crossover (hd LSA12P)
- most compact dimensions, linear system tuning
- integrated 3-Point FastRig-Rigging
- weight 27 kg

Applications

rental companies, live music, DJ, concert halls, mobile use, discotheque, sports arenas

Options

passive (hd LSA12P), hd LSA12-SF6, hd UniFrame16, hd LSA12 TourCase Dolly, RAL color

for extended low frequency usage

hd Sub15, hd Sub18, hd Infra218

Model	Transducers	Impedance	Power Rating RMS / Peak	Sensitivity (1W / 1m)	SPLmax	Freq. Range (-6dB)	Weight	Dimensions W x H x D (mm)
LSA12	1x 12"N	LF: 8 Ω HF: 16 Ω	600 / 2400 W	LF: 105 dB HF: 110 dB	138 dB	45 Hz - 20 kHz	27 kg	575 x 340 x 430
LSA12P	2x 1.4"N	passive XO: 8 Ω		105 dB	138 dB		28 kg	

hd Qi-Series

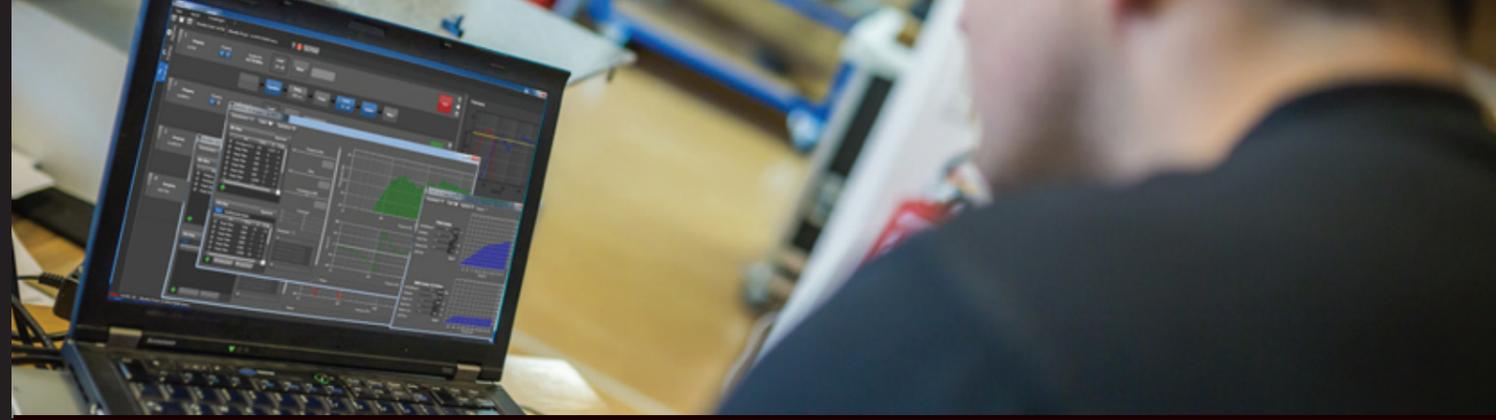
DSP Installation Amplifier

The **hd Qi-Series** is a modular equipped, flexible hardware and software solution for driving Harmonic Design® loudspeaker systems. The two height-unit, rack-mount includes four symmetrical inputs, up to 4 power outputs, and a fully digital signal processor with advanced IIR- and FIR-filtering techniques. The accompanying control software **hd LevelZ** provides comprehensive control of all parameters from a Windows-based computer or directly at the device via the large 3,2" LCD-Display with navigation buttons.



A two- or four-channel Class-D amplifier delivers 500W for each output channel and supplies ample continuous and peak power to the drivers. They have been invented to fulfill the highest demands on audio quality and reliability for fixed installation projects and mobile applications. Thanks to the high efficiency power stages the heat dissipation of the amplifier is dramatically reduced in comparison to analogue amplifiers. An intelligent temperature management system guarantees lowest fan noise emission and activates the fans only if the operation mode requires it. The up to two separate switching mode power supplies with PFC have a large operating range from 95V-265V AC 50Hz/60Hz.

In applications that require more amplifier power the two spare XLR-DSP outputs of the 2-channel-version **hd Qi5002** can be used in combination with a conventional amplifier with more power. A system consisting of two top loudspeakers and two subwoofers would be configured that the top loudspeakers are powered through the **hd Qi5002** and the subwoofers through the external power amplifier, but with **hd MultiDSP** processing to ensure best sound.



The integrated digital system controller **hd MultiDSP** offers an extensive equalization architecture that includes equalization, comprised of 16 IIR-Filter in double precision with adjustable slopes, widths and gain, and a FIR filter, both available on each of the inputs and outputs and a multi-stage limiter architecture per output. This enables the opportunity for the system technician to generate a specific FIR-filter for the venue and tune and optimize the system with the approach that is common for conventional multiband-EQs - but without phase distortions.

Key Features

- 4In/4Out High-End **hd MultiDSP**
- up to 4 power outputs
- modular equipping, separate power supplies
- 500W Class-D amplifier elements with PFC
- FIR- & IIR-Filters
- maximum performance and reliability
- multistage Limiter-Architecture (Peak-/RMS-Limiter)
- 3,2" LCD Display with navigation buttons and USB
- control of all features directly at the device without PC
- **hd LevelZ Remote Software**

Applications

- live music, DJ, houses of worship, museums
- conference rooms, hotels, airports and stations
- A/V installations, mobile use

Model	Input/Link	DSP	Amplifier	Power Rating RMS @ 4 Ω	DSP Output	THD+N 1kHz @ 1W	Protection Circuits	Weight	Dimensions W x H x D (mm)
Qi5002	4x XLR	4In/4Out FIR-/IIR-Filter	Class-D with PFC	2x 500W	2x XLR	0,003 %	Yes	7 kg	19" x 2U x 300
Qi5004				4x 500W	-			8 kg	



System Amplification

Powersoft DSP System Amplifier

Since our company was founded in 1980, we rely in sophisticated systems consisting of loudspeaker, signal processor and power amplifier. In any Harmonic Design® system, powerful, versatile and intelligent signal processors and amplifiers play a key role in linearity and reliability in harsh everyday life. After extensive research and evaluation, in addition to our proprietary DSP amplifier platform from the hd P-, Qi- and Beam-Series, we trust in Powersoft DSP amplifier platforms for their neutrality and flexibility, as well as their state-of-the-art signal processors that meet our in-house DSP development experience and obviously with plenty of power reserves are well suited to draw the full potential of the hd speaker system. The impressive performance of modern DSP amplifiers, however, are ultimately only worth so much of how much the factory presets exploit and fit well with the speaker design. Besides the capabilities of DSP amplifiers the essential thing that makes a noticeable difference is the use of perfectly matched settings and presets using FIR and IIR filters as well as bulletproof multi-stage Limiter settings.

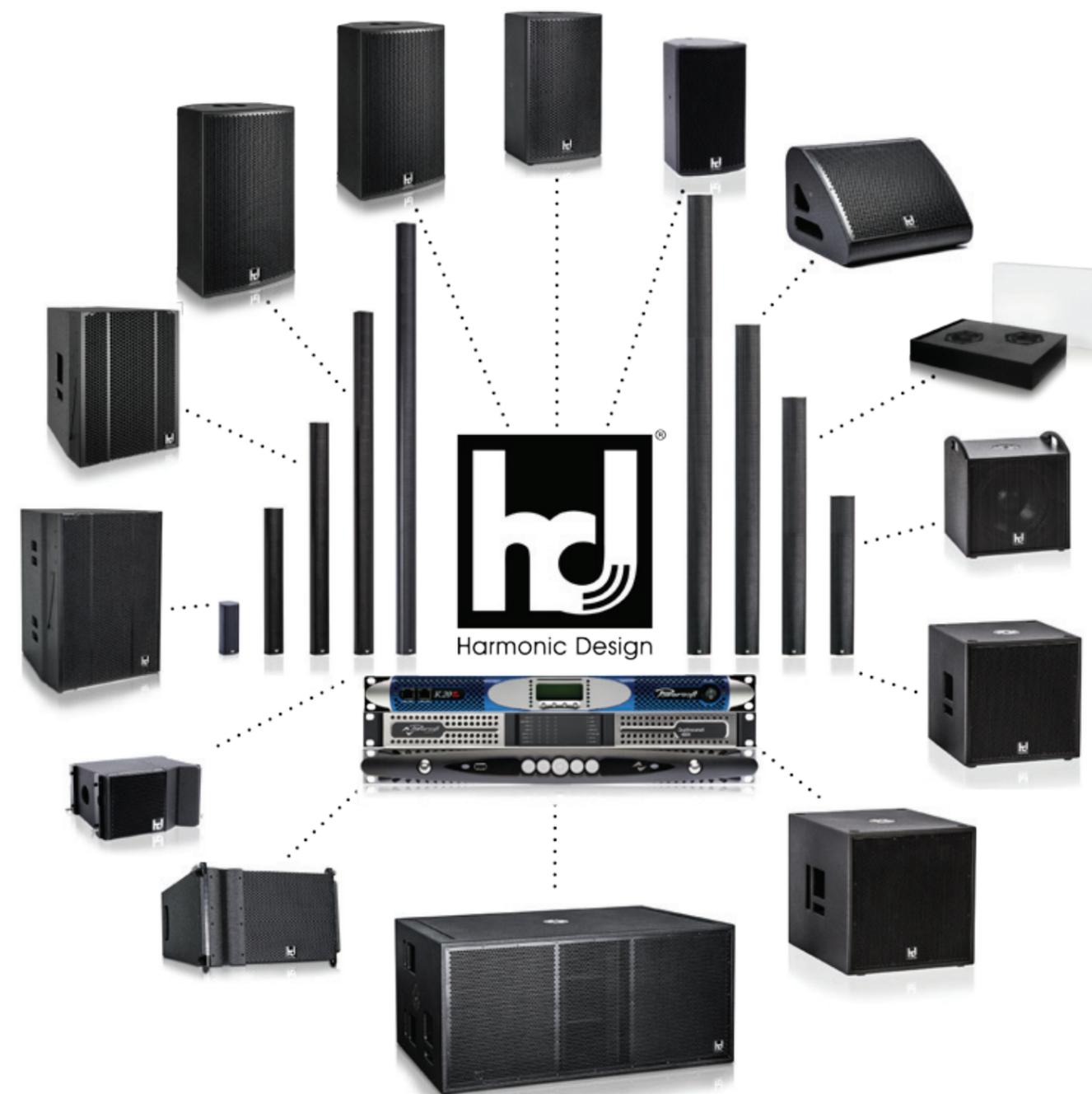
As we develop every new loudspeaker in companion with our system amplifiers, we can match the drivers and designs to the amplifiers and with that we can achieve always more SPL, headroom, frequency response and reliability. So all specified hd System amplifiers guarantee the best achievable performance of each hd Loudspeaker system, right from the beginning when the corresponding speaker preset is loaded. The users can bank on the linearity given by the available presets and can focus on system tuning and room relevant adjustments, without improving any lack of a speaker systems response.

Various touring grade accessories such as the useful **hd PowerUnit** or vibration-free **hd TourCases** complete the system concept. The hd PowerUnit enables the use of up to three Powersoft amplifiers fed from a power line, either with a 32A CEE single- or three-phase input for high power requirements, or a single 230V Powercon connector for smaller applications. The outputs to the amplifiers can be user-specifically wired to meet the diverse needs of small to large scale applications. Two additional 230V outlets are designed to connect consumers in the same phase to avoid mains hum. The hd TourCases are shock mounted and available in 3U and 5U usable interior height and protect the inside with robust rubber buffer fastenings. The high demands of touring sound applications have been taken into account to save the user time, weight and transport space.



hd TourRack + PowerUnit
3U Shock Mount Touring Rack

The Powersoft system amplifiers offer up to 20kW total power on 1U, a high-power DSP with FIR and IIR filters, intelligent 3-phase load sharing, innovative features such as DampingControl for subwoofers and sophisticated Armonía remote monitoring software with numerous useful plug-ins such as Smaart measurement import.



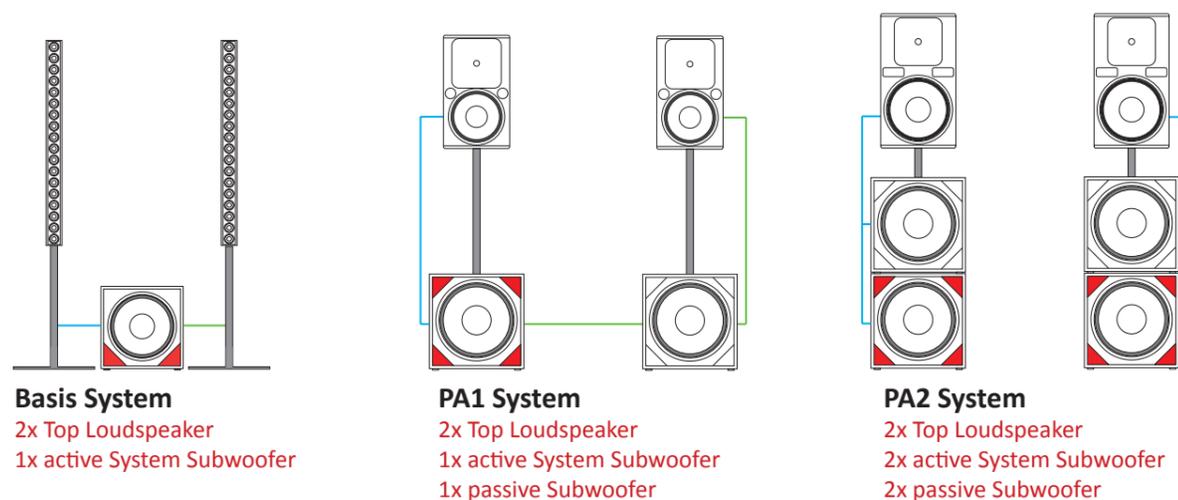
Model	Input	DSP-Filter	Amplifier	Power Rating RMS @ 4 Ω	Protection Circuits	Weight	Dimensions W x H x D (mm)
Duecanali4804 DSP+D	Phoenix/DANTE	FIR / IIR	Class-D with PFC	2x 2400 W	Yes	7 kg	19" x 1U x 358
Quattrocanali4804 DSP+D	Phoenix/DANTE			4x 1200 W		7 kg	19" x 1U x 358
K20DSP	2x XLR			2x 5200 W		12 kg	19" x 1U x 475
X4	4x XLR/DANTE			4x 3000 W		15 kg	19" x 1U x 495

Ultimate System Conception

Choose Your Sound!

Harmonic Design® Systems

The Basic System comprises two top loudspeakers combined with an hd DSP-controlled active subwoofer. PA1 Systems also include a passive slave subwoofer, which can easily be connected to the active sub. PA2 Systems additionally include one active and passive subwoofer each.



Active System Subwoofers are fitted with the latest high-efficiency Class-D amplifiers. Harmonic Design's integrated four-channel hd MultiDSP with FIR/IIR filter technology allows a phase coherent adjustment between subwoofers and tops, guaranteeing a balanced homogeneous sound at any sound level. Harmonic Design's own, uncompromising developed factory presets using FIR-filtering and GroupDelay-Correction technology are designed to ensure linear sound reproduction even in the most diverse sound reinforcement situations. Using the integrated audio processing tools (EQ, delay, etc.), individual settings can also be created and saved as presets. All systems are perfect tools for engineers, DJs, musicians and rental companies according to their linear and genuine sound reproduction.

hd LevelZ

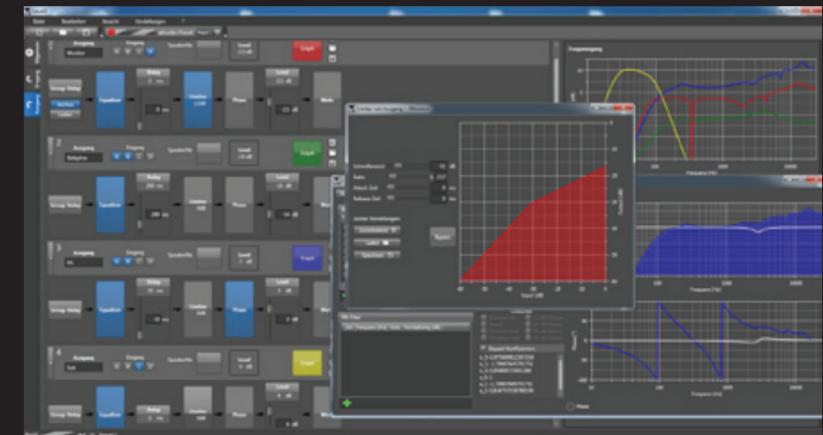
Remote Software

The hd MultiDSP platform with open architecture guarantees a perfect control of all relevant system components thanks to the all new and easy to use, windows -based remote software **hd LevelZ**. This new DSP platform enable now all processing and remote features of large scale sound systems in a smart plug & play device. The input section comprises a routing matrix, a function generator (sine and noise) and per input 16 IIR-Filter in double precision with adjustable type, slope, width, gain and a 384-Taps FIR-Filter. Per output channel there are 16 IIR-Filter in double precision with adjustable type, slope, width, gain, 384-Taps FIR-Filter, up to 100 ms delay, phase reversal, peak-limiter, RMS-limiter, gain and mute.

20 Factory-Presets are available for all Harmonic Design® loudspeaker configurations to be accessed directly at the device that one can always reset the settings to default. This guarantees best reliability for the connected loudspeakers and ensures a dynamic and linear sound reproduction.

For specific user settings there are another 20 freely configurable User-Presets to adjust the system to the individual demands and taste. Control via the software enables most detailed changes and manage unlimited User-Preset configurations.

All settings will be loaded even from totally unknown devices and may be adjusted after few seconds of synchronization.



Key Features

- 16 IIR-Filter (double precision) per input/output
- 384 Taps FIR-Filter per input/output
- maximum performance and best reliability
- multistage Limiter-Architecture (Thermal-/Peak-/RMS-Limiter)
- 3,2" LCD Display with navigation buttons and USB
- control of all features directly at the device without PC
- Windows based remote software hd LevelZ



Systemproposals

Basic Systems



hd M8/P12stereo

PointSource Stick System

- 2x hd M8 PointSource Stick
- 1x hd P12stereo Active System Subwoofer
- point source characteristics
- conference, multimedia and speech up to 100 people
- ultra compact and lightweight
- wide and uniform dispersion
- decent optics
- plug & play
- system power: 800Wrms



hd ML24/P15

LineArray Stick System

- 2x hd ML24 LineArray Stick
- 1x hd P15 Active System Subwoofer
- smooth coverage due to cylindrical wave propagation
- multimedia, live music, DJ and speech up to 150 people
- compact and lightweight
- best optical integration into room architecture
- large range
- rich bass
- system power: 2.200Wrms

hd PL12/P15-PA1

PowerLine Stick System

- 2x hd PL12 PowerLine Stick
- 1x hd P15 Active System Subwoofer
- 1x hd Sub15 Subwoofer
- uniform coverage thanks to cylindrical wave propagation
- live music, DJ and speech up to 200 people
- large throw and high SPL
- decent optics
- rich bass
- compact and lightweight
- best optical integration into room architecture
- DSP-AUX for Monitor / Delayline
- plug & play
- system power: 2.900Wrms



hd PL16/P18-PA1

PowerLine Stick System

- 2x hd PL16 PowerLine Stick
- 1x hd P18 Active System Subwoofer
- 1x hd Sub18 Subwoofer
- uniform coverage thanks to cylindrical wave propagation
- live music, DJ and speech up to 300 people
- large throw and high SPL
- decent optics
- best optical integration into room architecture
- DSP-AUX for Monitor / Delayline
- impressive low-end reproduction
- plug & play
- system power: 3.700Wrms



Systemproposals

PowerLine Stick PA1 Systems

Systemproposals

PA1 Systems



hd 181/P15-PA1

Multi Purpose PA-System

- 2x hd 181 Multi Purpose Loudspeaker + 1x hd P15 Active System Subwoofer + 1x hd Sub15 Subwoofer
- live music, DJ and speech up to 300 people
- compact and lightweight
- elegant optics
- DSP-AUX for Monitor / Delay
- wide coverage 90° x 60°
- plug & play
- system power: 2.500Wrms



hd MP10N/P18-PA1

Multi Purpose PA-System

- 2x hd MP10N Multi Purpose Loudspeaker + 1x hd P18 Active System Subwoofer + 1x hd Sub18 Subwoofer
- live music, DJ and speech up to 500 people
- compact and lightweight
- high SPL
- DSP-AUX for Monitor / Delay
- various dispersions possible: 90° x 60°, 60° x 40°
- plug & play
- system power: 3.500Wrms



hd MP12N/P18-PA1

Multi Purpose PA-System

- 2x hd MP12N Multi Purpose Loudspeaker + 1x hd P18 Active System Subwoofer + 1x hd Sub18 Subwoofer
- live music, DJ and speech up to 500 people
- compact and lightweight
- high SPL
- DSP-AUX for Monitor / Delay
- various dispersions possible: 90° x 60°, 60° x 40°
- plug & play
- system power: 3.500Wrms

Systemproposals

PA2 Systems

hd PL16C/P18-PA2

PowerLine Stick System

- 2x hd PL16 PowerLine Stick
- 2x hd PLC Cardioid Module
- 2x hd P18 Active System Subwoofer
- uniform coverage thanks to cylindrical wave propagation
- live music, DJ and speech up to 300 people
- large throw and high SPL
- superb low-mid directivity control due to cardioid module
- decent optics
- best optical integration into room architecture
- impressive low-end reproduction
- plug & play
- system power: 4.880Wrms



hd HLS20/P18-PA2

Power-PA-System

- 2x hd HLS20 HybridLineSource
- 2x hd P18 Active System Subwoofer
- 2x hd Sub18 Subwoofer
- live music, DJ and speech up to 800 people
- extreme high SPL
- 2x DSP-AUX for Monitor / Delay
- 2x amplifier outputs with DSP processing for Monitor / Delay
- large range due to cylindrical wave propagation characteristic
- compact dimensions, light-weight and easy handling
- plug & play
- system power: 6.600Wrms



Systemproposals

TourSys1 Systems



hd HLS20-TourSys1

Allround PA-System

- 2x hd HLS20P HybridLineSource
- 2x hd Infra218 Hybrid Subwoofer
- 1x hd X4 system amplifier
- live music, DJ and speech up to 1.000 people
- compact dimensions, light-weight and easy handling
- extreme high SPL
- remote surveillance & remote control
- plug & play
- system power: 8.400Wrms

hd HLS24-TourSys1

Allround PA-System

- 2x hd HLS24P HybridLineSource
- 2x hd Infra218 Hybrid Subwoofer
- 1x hd X4 system amplifier
- live music, DJ and speech up to 1.200 people
- compact dimensions, light-weight and easy handling
- extreme high SPL
- remote surveillance & remote control
- plug & play
- system power: 8.400Wrms



hd HLS24-TourSys2

Allround PA-System

- 2x hd HLS24P HybridLineSource
- 4x hd Infra218 Hybrid Subwoofer
- 1x hd X4 system amplifier
- live music, DJ and speech up to 1.500 people
- compact dimensions, light-weight and easy handling
- extreme high SPL
- remote surveillance & remote control
- plug & play
- system power: 12.800Wrms

Systemproposals

TourSys2 Systems



hd LSA12-TourSys2

LineArray-System

- 12x hd LSA12P LineSource Array Module
- 6x hd Infra218 Hybrid Subwoofer
- 2x hd X4 system amplifier
- live music, DJ and speech up to 2.500 people
- compact dimensions, light-weight and easy handling
- high SPL
- smooth coverage
- remote surveillance & remote control
- cardioid setups possible
- plug & play
- system power: 18.200Wrms



References

Fascinating Versatile



Architecture and Technology are no contrasts

All speakers and accessories may be colored like the surroundings to ensure an decent optics and best integration into room architecture or may be protected with the outdoor option from damage due to varying climate. Simulation data of the loudspeaker help during the planning of installations and generates beforehand planning certainty.

No compromises at mobile usages

The active plug&play systems are built for daily operation even under worst circumstances. They are a reliable tool for live sound engineers and musicians all over the world that not only go in for quality but also for decent optics, ease of use, seamless flexibility and efficiency.



At home on the main stages of the world

Harmonic Design® Systems are a symbol for audiophile reproduction of spoken word and sound since 1980. They accomplish what they are designed for on multiple stages, events and venues: Open your artistry to a wide audience.



...simply harmonic sound

Harmonic Design

About Us

...simply harmonic sound

Made & Engineered In Germany

Harmonic Design® products are designed, developed and manufactured entirely by hand in South Germany, Steinheim an der Murr. Regional specialist suppliers from Germany deliver premium and durable components and devices to fulfill our strict quality requirements. Thus we achieve an extraordinarily high quality and reliability of our products. With our constantly growing worldwide distributor network we can offer direct support to the end-users around the world.

Over 39 Years Of Experience

Since its foundation in 1980, Harmonic Design® stands for research, development and manufacturing of cutting-edge loudspeaker systems and acoustic services. We thought early in systems and established the use of system controllers (analog at that time) as early as 1988. At the beginning of the 90s, the MLSSA measuring system took computer-aided speaker development to a new level. The first digital signal processor followed in 1994 with pioneering filter capabilities. In recent years, we have pioneered technologies like GroupDelayCorrection, PowerSound-Algorithm, the revolutionary HybridLineSource-Technology and hd Beamforming.

Ultimate System Conception

Harmonic Design® active systems are composed of loudspeaker system, digital system controller and amplifier. The individual components are networked with each other and ensure easy operation, highest sound quality and enormous reliability. Each mid/high loudspeaker system is interchangeable to achieve the best performance depending on requirements and application.

Audiophile Top Performance

Harmonic Design® loudspeaker systems are well known for their neutral and linear sound. Using state-of-the-art methods and measuring techniques, the loudspeaker components are examined and improved down to the smallest detail. The linearity is characterized not only by the flat frequency response, but also by the impulse response accuracy, precisely graduated tonal depth and minimal distortions.



Where all began...

hd 903 | Heritage 3-way PA-System

- fullrange 3-way horn-loaded PA cabinet
- innovative fiberglass reinforced plastic horn
- analog system processor with sense wiring
- 900 W system amplifier
- 1988 - 1992



Celebrating
30 years
hd system
concept



Engineered
and
Made
in
Germany



...simply harmonic sound

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