HK AUDIO

THE SOUNDMAKERS

LINEAR 7

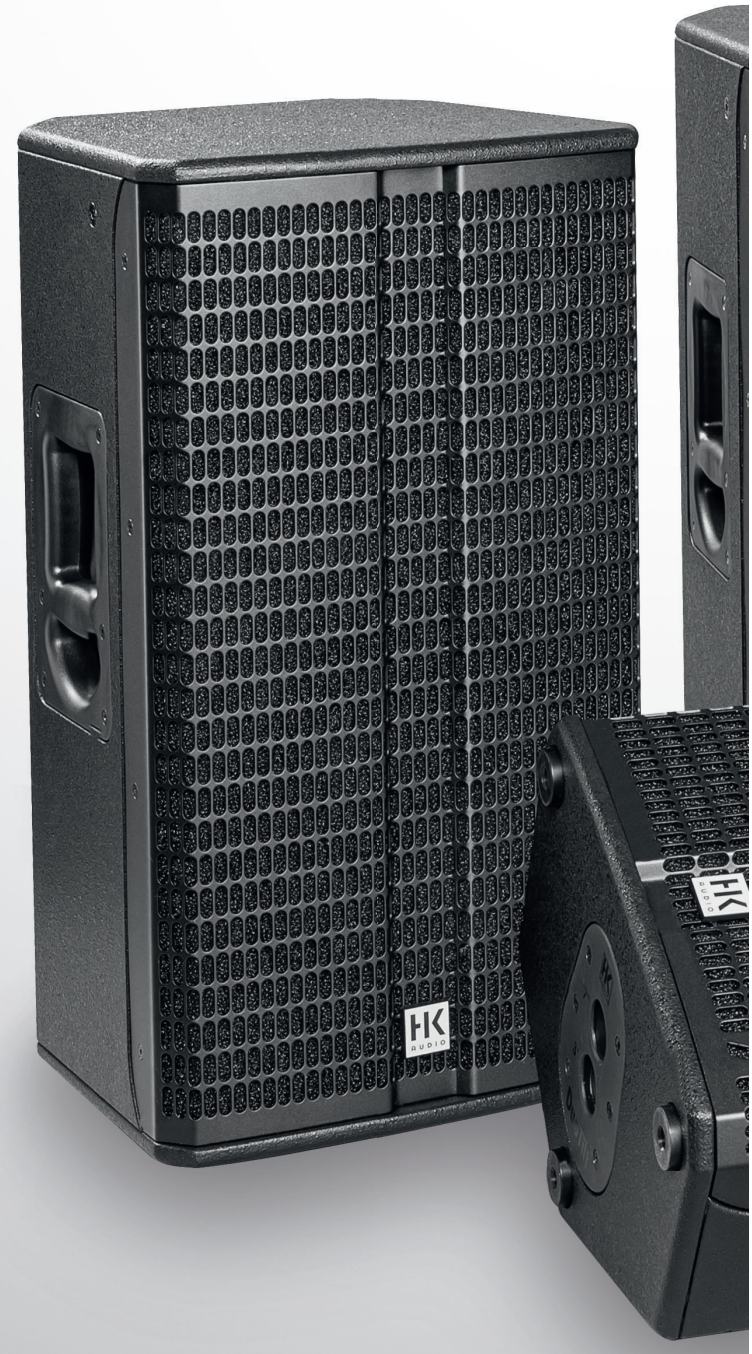
NETWORKED AUDIO PRECISION ›



LINEAR 7

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LINEAR cabinets have been the HK Audio range's go-to solution for upscale performance for over 25 years now. Professional handling, richly detailed definition, ample headroom and high sound pressure levels – they set the performance bar for their respective class. And the all-new LINEAR 7 series takes it up another notch. Powerful DSPs and advanced smart connectivity not only deliver even sharper audio images. They also make gigging life a lot easier with a far more efficient workflow and a host of features that include enhanced power supply.



The latest in audio technology

Although the LINEAR 7 line's visuals and hardware appointments lean heavily on the sleek look and rugged features of the LINEAR 5 series, these enclosures come with a complement of elegantly refined details. HK Audio engineers reinvented the cutting-edge technology inside LINEAR 5 and revamped the cabinets' acoustics from the bottom up. Latest-generation high-performance loudspeakers and drivers, custom-designed horns, muscular Pascal Class-D amplifiers, FIR filtering, a state-of-the-art DSP platform with awesome computing power and high-definition converters – with a feature set as rich as this, the LINEAR 7 family is the precision audio tool of choice for demanding applications.


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FAMILY OVERVIEW

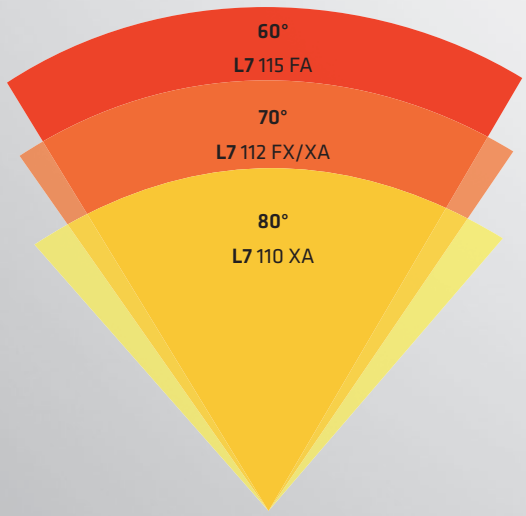
Equipped with high-performance power amplifiers, efficient loudspeakers, state-of-the-art DSP technology and FIR filtering, LINEAR 7 series'mid/high units deliver high-definition audio with extremely low total harmonic distortion. Even at high sound pressure levels, they treat audiences to a beautifully balanced audio experience with no listening fatigue. All XA and FA models come with rotatable horns.

The directivity of each cabinet's horn is optimized for its primary purpose – that is, the most frequently used application. The L7 110 XA cab sports a 10" woofer and a horn with a wide 80° x 60° throw pattern to provide uniform near-field coverage. L7 112 XA/FA cabs feature a 12" woofer and a horn with a medium 70° x 50° throw pattern. The L7 115 FA cab comes with 15" woofer and a horn with a narrow 60° x 40° long-throw pattern.

All XA and FA models can be flown by installing the AP-8 attachment and steel cables or chains to their rigging points, or by mounting the appropriate truss brackets. The FA models have heavy-duty 4 x 5 mm threaded inserts in the side-mounted shell grips. They serve to attach the HK Audio TB-45N or TB-45NQ. The added Q designator means that this model features quick-release pins for easy dismounting.

The XA models' wedge monitor-like angled panels do not accommodate a shell grip, so they come with reinforced 2 x 8 mm threaded mounting points that let you bolt on the HK Audio TB-28N truss bracket. Mounting instructions are enclosed with the truss brackets.

Horizontally asymmetrical coverage



Rigging and Clustering



All LINEAR 7 FA and XA models are compatible with HK Audio TB series truss brackets.



The LINEAR 7 FA enclosures' side panels are angled to achieve the best acoustical results when clustering cabinets.

L7 XA models

The housings of the multifunctional L7 110 XA and L7 112 XA models are angled at 30° so you can also set them sidewaysfor use as monitors. Both models offer a preset with a filter optimized for monitoring applications. It attenuates the extra bass generated by floor coupling when you set a speaker on its side for use as a monitor.



L7 FA models

The larger housings of the L7 112 FA and L7 115 FA fullrange models deliver more low-frequency sound pressure, so they are suitable for use as standalone speakers without an added L7 118 Sub A. Optimized for the given speaker, the Bass Boost preset enhances low-frequency response when the situation calls for a more powerful low end.



L7 118 Sub A

The L7 118 Sub A punches well above its weight in the power stakes. Featuring a direct-radiating bass reflex design, it is remarkably compact and, weighing in at 42 kilograms, extremely easy to transport. With its powerful punch, precise response and impressive low-end performance, this active subwoofer is the perfect companion to the mid/high units. It has all the hardware appointments and filter sets you need to configure effective cardioid setups, quickly and easily. Sporting an onboard stereo preamp, it is also perfect for setting up 2.1 systems.



CONNECTIONS AND CONTROL FEATURES





1 All models in the LINEAR 7 family feature analog balanced inputs and outputs as well as professional Ethercon ports. And all devices in the system can be daisy-chained if required – that is, connected in series.

2 Presets are available to tune fullrange and multifunctional models to serve as standalone speakers, monitors or to be combined with subwoofers. Configuring cardioid bass setups is simple with the subwoofers' Cardio 1:1 and Cardio 2:1 settings.

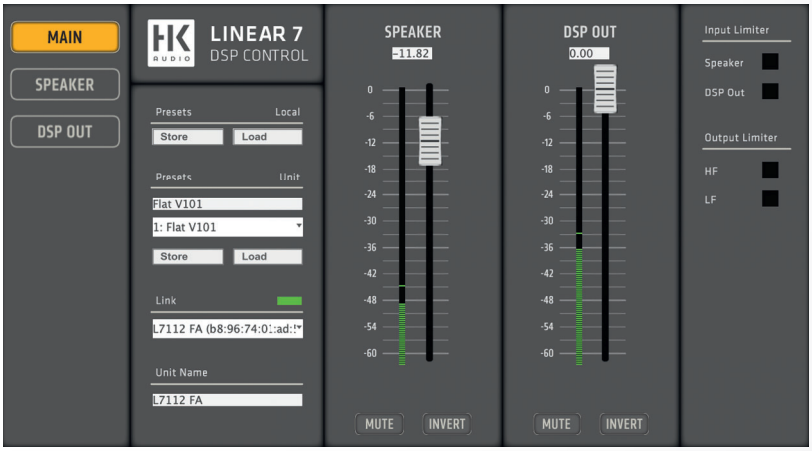
3 DSP Out is an XLR port that serves to integrate an added active speaker lacking network connectivity into a networked setup. This speaker's volume, filtering, limiting and delay may then be controlled independently. For example, this option brings LINEAR 7 mid/high units and LINEAR SUBs together in the same network. The same goes for LINEAR 5 LTS models and the L7 118 Sub A subwoofer.

4 A Powercon mains socket connects the speaker to the power supply. The L7 118 Sub A subwoofer provides a second Powercon socket, an elegant power routing solution for larger systems.

LINEAR 7 speakers' state-of-the-art switching power supplies operate at all voltages, ranging from 90 to 260 volts. They serve as a reliable stabilizer for fluctuating incoming voltage, for example, when operating speakers on power generators.

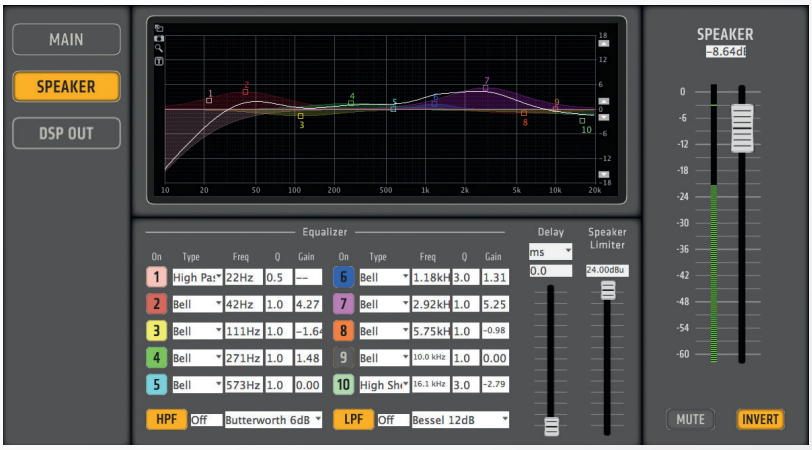
Milan™ Audio Streaming

Like many leading manufacturers, we use Milan, a state-of-the-art AVB-based network environment, to stream audio data. The certification and implementation of Milan is in the works as of September 2019. If you wish to stream audio via Milan, you will later be able to update the firmware via Ethernet using the HK Audio DSP Control (Mac OS and Windows) software. Download this free software at hkaudio.com



Extended remote control

LINEAR 7 does something that only large, pricey touring rigs are expected to do: it enables the tech at the FOH desk to control every mid/high unit, subwoofer and stage monitor from that one central spot. LINEAR 7 brings the benefits of this ultra-efficient workflow to top-drawer professional point-source speakers. A Mac or PC can serve to fine-tune the volume, EQ, limiting, delay and polarity settings of every LINEAR 7 cabinet in the network.



DSP Out

The DSP Out, a very handy feature exclusive to LINEAR 7 cabinets, serves to integrate an added non-network-compatible powered speaker such as a LINEAR series active enclosure into the network and remotely control all its parameters. And that works wonders for your legacy speakers' value retention and service life.

A fully parametric ten-band EQ, high pass filter, low pass filter, delay, polarity and limiting functions are independently available for the Speaker and DSP Outs.

SETUP EXAMPLES



Single fullrange setup
1 x L7 115 FA



2.1 setup
2 x L7 110 XA, 1 x L7 118 Sub A



Power setup
2 x L7 112 FA, 4 x L7 118 Sub A



Club setup
2 x L7 112 FA, 2 x L7 118 Sub A

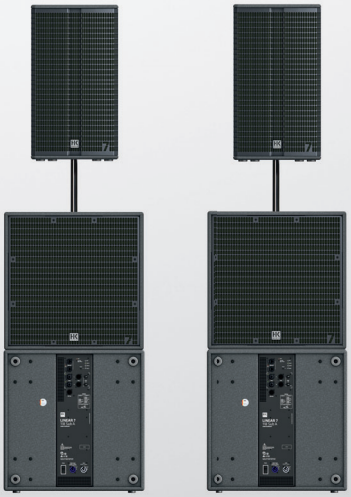
Cardioid pattern for real-world applications

While midrange and high frequencies are naturally more directional, low frequencies tend to radiate in all directions. Excessive bass levels can be quite the problem on and behind the stage.

The more serious issue, though, is that promoters are increasingly making demands to limit the sound distribution range. And there is no alternative to cardioid technology when it comes to meeting specifications for low-range frequencies.

With its hardware appointments and filter sets, the 18" LINEAR 7 subwoofer provides a fast and easy way to configure effective cardioid setups.

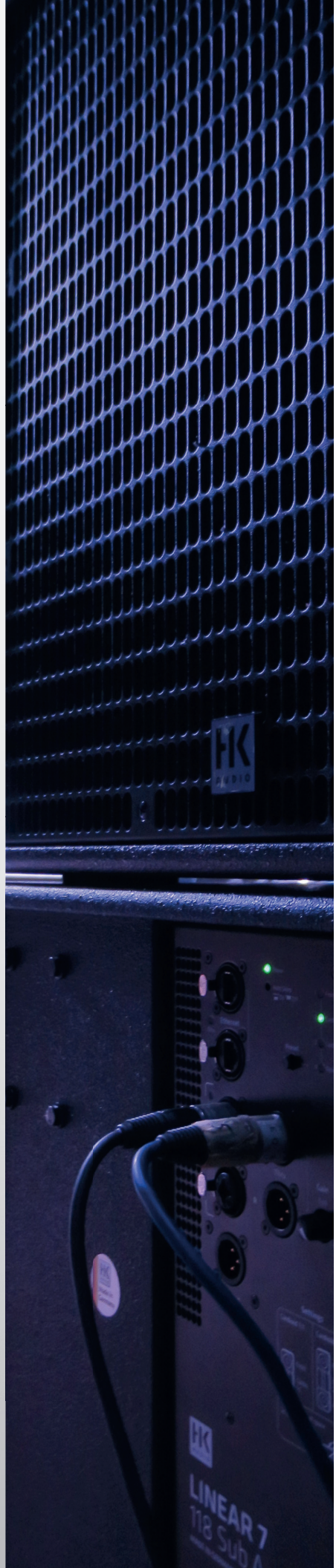




Cardioid setup 1:1
2 x L7 112 FA, 4 x L7 118 Sub A



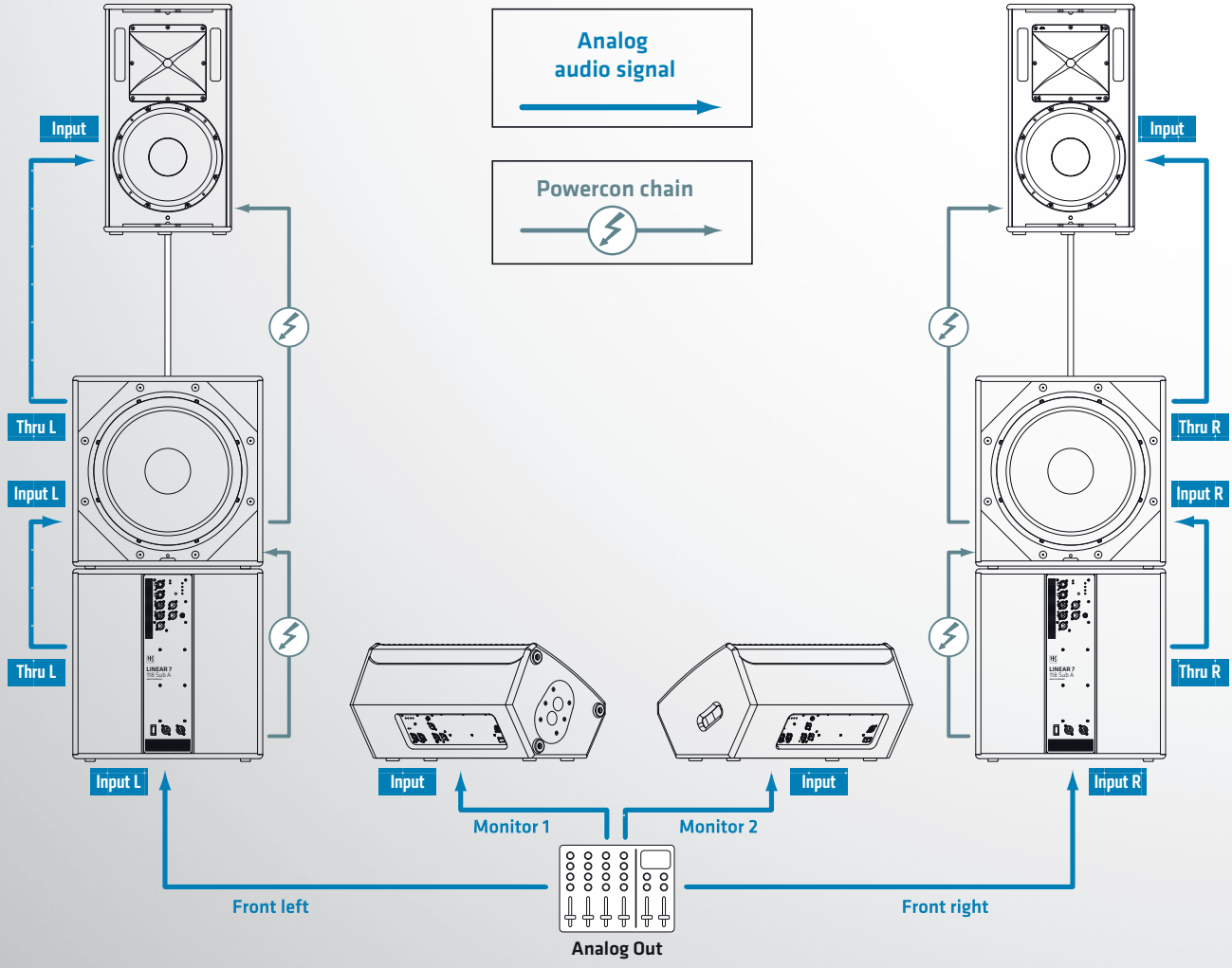
Cardioid setup 2:1
2 x L7 115 FA, 6 x L7 118 Sub A



SETUP EXAMPLES

USING FACTORY PRESETS TO SET UP A NON-NETWORKED SYSTEM

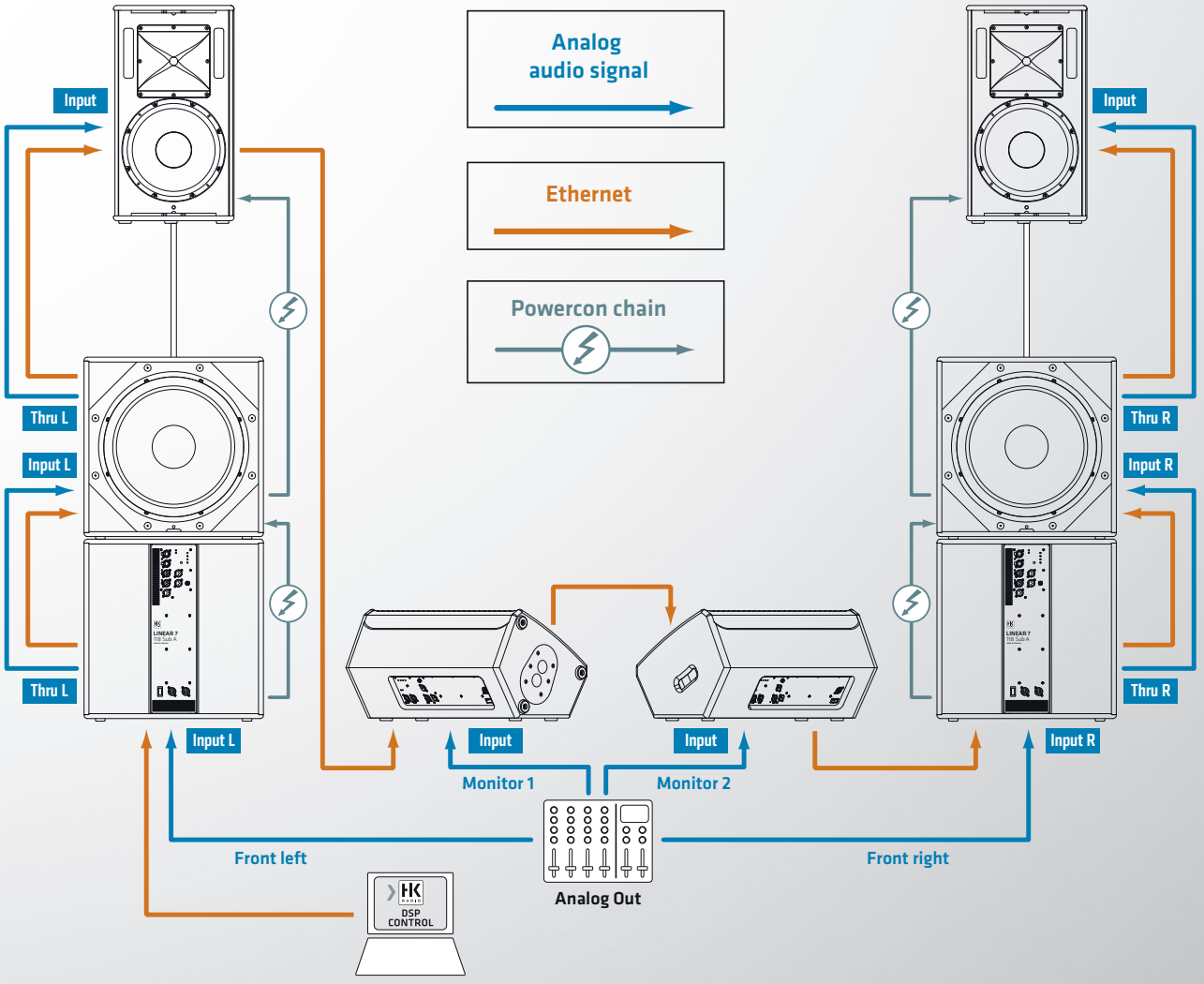
The setup pictured here shows you how to deploy LINEAR 7 without networked control of the speakers. Simply select the appropriate pre-set using the switch on the back of the speakers – that is all you have to do to operate this system and achieve the best acoustical results for a cardioid setup.



To find the matching, cardioid preset easily the setup options are printed on the back panel of the L7 118 Sub A.

SETTING UP A NETWORK-CONTROLLED SYSTEM FOR ANALOG AUDIO

This setup consists of an analog audio system with added network control. No other hardware is needed, apart from a laptop. Simply connect the laptop to the nearest LINEAR 7 cabinet via Ethernet/Ethercon and then daisy-chain the rest – that is, connect one speaker to the next. You can identify the individual cabinets using the HK Audio DSP CONTROL software. The flashing LED on the front and rear panels tell you which is which.

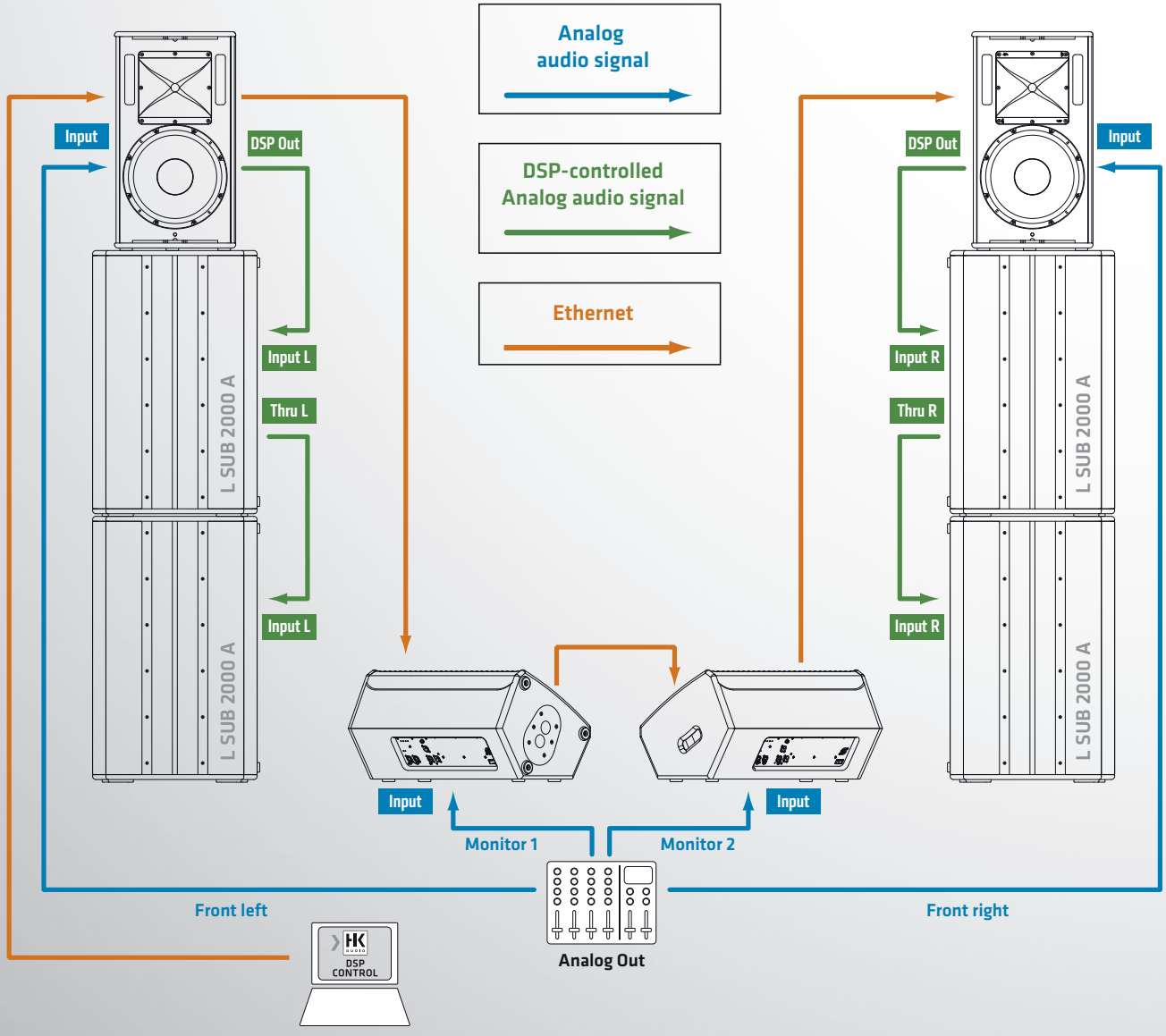


The Ethernet/Ethercon connection from the laptop to the stage can easily be replaced with a Wi-Fi access point.

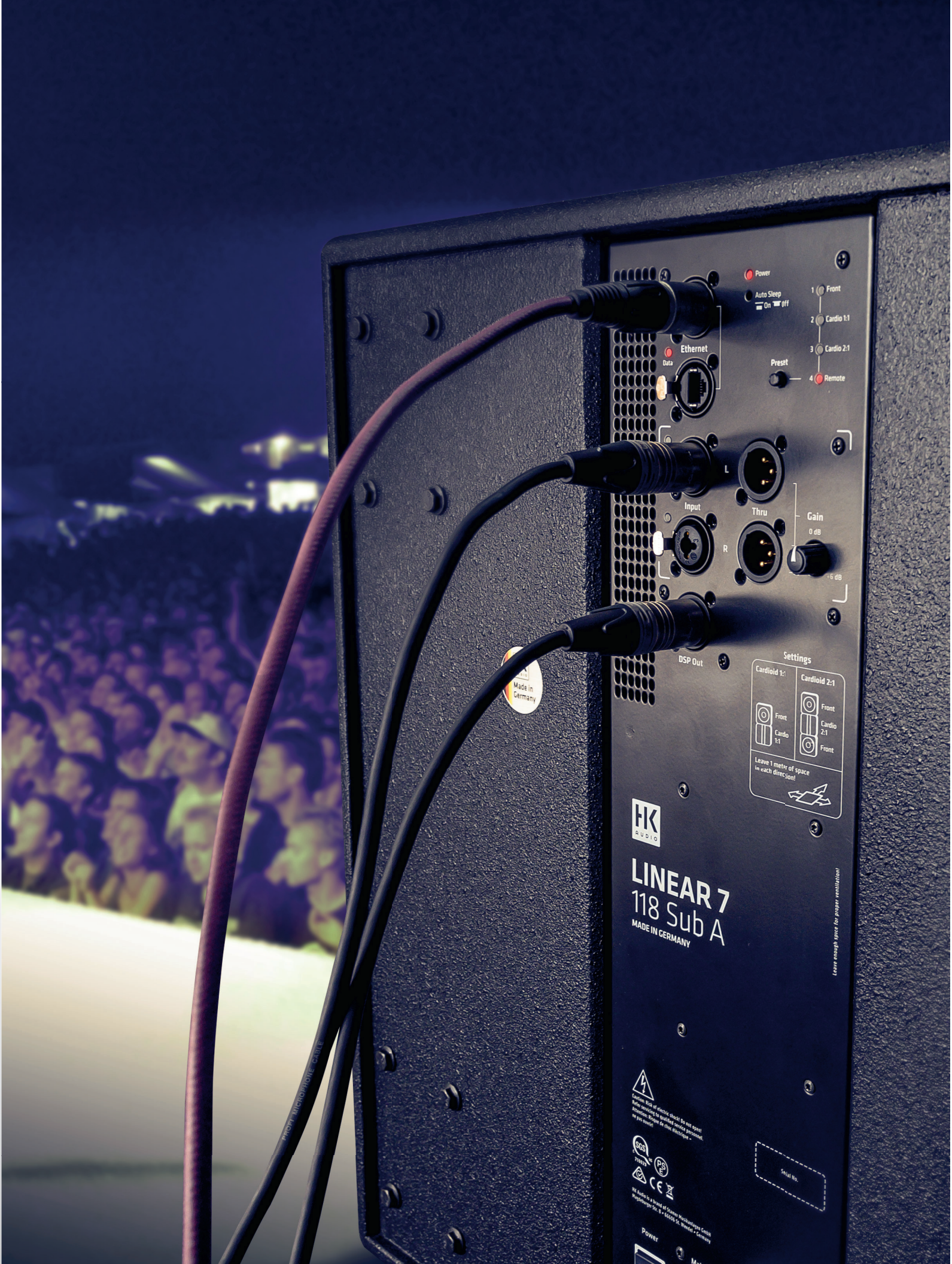
SETUP EXAMPLES

THE ENTRY-LEVEL SETUP

This setup gives you a quick way into the world of network control without requiring any added hardware apart from a laptop. In this example, an analog audio signal from the mixing console goes to the L7 FA cabinets to be filtered by the DSP Out and forwarded to the L Sub 2000 A. The L7 FA speakers then serve to control the L7 FA network.



The Ethernet/Ethercon connection from the laptop to the stage can easily be replaced with a Wi-Fi access point.


Power
Auto Sleep
On
Off
1 Front
2 Cardio 1:1
3 Cardio 2:1
4 Remote
Preset
Ethernet
Data
L
R
Input
Thru
Gain
0 dB
-5 dB
DSP Out
Settings
Cardioid 1:1
Front
Cardio 1:1
Cardioid 2:1
Front
Cardio 2:1
Front
Leave 1 meter of space in each direction!
Made in Germany
LINEAR 7
118 Sub A
MADE IN GERMANY
Leave enough space for proper ventilation!
Serial No.
Power

ACCESSORIES



TB-N

Truss brackets are available for all XA and FA models. The FA models have heavy-duty 4 x 5 mm threaded inserts in the side-mounted shell grips. They serve to attach the legacy LINEAR 5 TB-N and TB-NQ brackets as well as the new TB-45N and TB-45NQ brackets. The newer versions feature enhanced stiffness and corrosion protection, and their width can be adjusted without tools. The TB-45N is ideal for permanent installation. The TB45NQ's quick-release pins make it the first choice for touring. The XA models' wedge monitor-like angled panels do not accommodate a shell grip, so they come with reinforced 2 x 8 mm threaded mounting points that let you bolt on the HK Audio TB-28N truss bracket. Mounting instructions are included with the truss brackets.



Rear Protection Plate

Made of sturdy sheet metal, this rear panel cover makes the L7 118 Sub A's electronic components splash proof, and guards against. With the benefit of the installed keyholes, you only have to loosen the wing screws a touch to remove the sheet metal cover. The slanted bit at the bottom serves as a drip edge when it rains. The grille serving to ventilate the electronic components is backed with acoustic foam to effectively protect connectors and control features. The acoustic foam also dims the LEDs, which is helpful for cardioid setups on dark stages, but leaves the LEDs just bright enough to see their status.



Transport/Rain Covers

Padded covers are available as optional accessories to protect LINEAR 7 series FA and XA model speakers against abrasions in transit and against rain when in operation. The front of the cover rolls up to reveal a layer of splash water repellent gauze that is permeable to sound. Two transparent plastic windows at the rear afford easy access to, and an unobstructed view of, the connectors and controls. The openings for the carrying handles are designed to accommodate truss brackets, so you can fly the enclosure with the rain cover on.



AP-8

With a working load limit (WLL) of 360 kg, the AP-8 serves to safely attach steel cables or chains to all XA and FA models.



Tilt Unit

HK Audio offers an optional Tilt Unit if you wish to tilt the mid/high units when they are stacked directly on subwoofers. It screws into the L7 118 Sub A's M20 mount, just like a speaker pole. This lets you take advantage of the DuoTilt's -3° and -7° inclination angles in stacked setups with the Tilt Unit holding the mid/high units in place.



Stereo Pole Add-on M20

This add-on set for half-stack systems consists of two height-adjustable König & Meyer M20 speaker extension poles, two high-quality signal cables and a carrying bag.

TECHNICAL DATA



	L7 110 XA	L7 112 XA	L7 112 FA	L7 115 FA	L7 Sub 118 A
Max. SPL @ 10% THD	128 dB half space (70 Hz – 12 kHz average)*	130 dB half space (70 Hz – 12 kHz average)*	130 dB half space (70 Hz – 12 kHz average)	130 dB half space (70 Hz – 12 kHz average)*	129 dB half space (72 Hz – 100 Hz average)
Max. SPL peak @ 10% THD	131 dB half space*	131 dB half space*	131 dB half space	131 dB half space*	131 dB half space
Max. SPL peak calculated	137 dB half space	137 dB half space	137 dB half space	137 dB half space	135 dB half space
Frequency response +/- 3 dB	95 Hz – 19 kHz*	95 Hz – 19 kHz*	64 Hz - 19 kHz	60 Hz – 19 kHz*	42 Hz – X-over
Frequency response -10 dB	75 Hz – 19 kHz*	70 Hz – 19 kHz*	55 Hz - 20 kHz	50 Hz – 19 kHz*	38 Hz – X-over
Power amp output (peak power)	2000 W	2000 W	2000 W	2000 W	2000 W
Amp type	Class D – biamped	Class D – biamped	Class D – biamped	Class D – biamped	Class D
Bass woofer	-	-	-	-	1 x 18", 4" voice coil
Low/Mid speaker	1 x 10", 2.5" voice coil	1 x 12", 2.5" voice coil	1 x 12", 2.5" voice coil	1 x 15", 3" voice coil	-
HF driver	1", 1.4" voice coil	1", 1.7" voice coil	1", 1.7" voice coil	1", 1.7" voice coil	-
Horn directivity	80° x 60° CD horn, rotatable	70° x 50° CD horn, rotatable	70° x 50° CD horn, rotatable	60° x 40° CD horn, rotatable	-
Active x-over frequency	2 kHz FIR X-Over with 60 dB/oct.*	1.6 kHz FIR X-Over with 60 dB/oct.*	1.6 kHz FIR X-Over with 60 dB/oct.	1,6 kHz FIR X-Over with 60 dB/oct.*	-
Filter presets	Flat, Monitor, Low Cut, Remote	Flat, Monitor, Low Cut, Remote	Flat, Boost, Low Cut, Remote	Flat, Boost, Low Cut, Remote	Front, Cardioid 1:1, Cardioid 2:1, Remote
Network port	Ethercon RJ45, 1 x In, 1 x Thru	Ethercon RJ45, 1 x In, 1 x Thru	Ethercon RJ45, 1 x In, 1 x Thru	Ethercon RJ45, 1 x In, 1 x Thru	Ethercon RJ45, 1 x In, 1 x Thru
Remote software	HK Audio DSP CONTROL (Windows, Mac OS, iPad to follow)	HK Audio DSP CONTROL (Windows, Mac OS, iPad to follow)	HK Audio DSP CONTROL (Windows, Mac OS, iPad to follow)	HK Audio DSP CONTROL (Windows, Mac OS, iPad to follow)	HK Audio DSP CONTROL (Windows, Mac OS, iPad to follow)
Sampling rate	96 kHz	96 kHz	96 kHz	96 kHz	96 kHz
System latency	less than 2.6 ms	less than 2.6 ms	less than 2.6 ms	less than 2.6 ms	less than 2.6 ms
Mains connector	1 x Powercon NAC3 In, 100–240 V	1 x Powercon NAC3 In, 100–240 V	1 x Powercon NAC3 In, 100–240 V	1 x Powercon NAC3 In, 100–240 V	1x Powercon NAC3 In, 1 x Powercon NAC3 Thru, 100–240 V
Clustering angle	-	-	70°	60°	-
Angles up	30°	30°	-	-	-
Pole mount	HK Audio DuoTilt 3/7	HK Audio DuoTilt 3/7	HK Audio DuoTilt 3/7	HK Audio DuoTilt 3/7	M20
Suspension points	5 x M8 (AP-8)	5 x M8 (AP-8)	4 x M8 (AP-8)	3 x M8 (AP-8)	-
Grips	2 x standard flush-mount handles	1 x HK Audio MultiGrip, 1 x standard flush-mount handles	2 x HK Audio MultiGrip	2 x HK Audio MultiGrip	2 x HK Audio MultiGrip
Housing	Hybrid (birch multiplex /MDF)	Hybrid (birch multiplex /MDF)	Hybrid (birch multiplex /MDF)	Hybrid (birch multiplex / MDF)	Birch multiplex
Front grille	2 mm metal grille backed with black acoustic foam	2 mm metal grille backed with black acoustic foam	2 mm metal grille backed with black acoustic foam	2 mm metal grille backed with black acoustic foam	2 mm metal grille backed with black acoustic foam
Finish	Black acrylic enamel	Black acrylic enamel	Black acrylic enamel	Black acrylic enamel	Black acrylic enamel
Dimensions (W x H x D)	36.5 x 54.5 x 30.5 cm, 14-21/64 x 21-29/64 x 12-1/64"	37.5 x 67.5 x 31 cm, 14-49/64 x 25-37/64 x 12-13/64"	37.5 x 67.5 x 37 cm 14-49/64 x 25-37/64 x 14-9/16"	45.5 x 71.5 x 45.5 cm, 17-29/32 x 28-5/32 x 17-29/32"	55.5 x 56.5 x 69 cm, 21-27/32 x 22-1/4 x 27-5/32"
Weight	20kg /44.1 lbs*	22 kg* / 48.5 lbs*	23kg / 50.7 lbs	31 kg / 68.3 lbs*	40.4 kg / 89.1 lbs

*Preliminary Data

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