

Type 20

Near- / Midfield Studio Monitor













Operation Manual














EN

Safety Instructions

Please read the following safety instructions carefully before setting up your system. Keep the instructions for subsequent reference. Please read the warnings and follow the instructions.

EXPLANATION OF GRAPHICAL SYMBOLS

	The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.		CAUTION RISK OF ELECTRIC SHOCK! DO NOT OPEN!	
	The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.	CAUTION TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT REMOVE THE BACK COVER OR ANY OTHER PART. NO USER-SERVICEABLE PARTS INSIDE. DO NOT EXPOSE THOS EQUIPMENT TO RAIN OR MOISTURE. REFER SERVICING TO QUALIFIED PERSONNEL.		
	To reduce the risk of an electric shock, do not open the loudspeaker yourself. Always refer to qualified service personnel.			
	This product must be connected with an IEC 60320 AC mains power cord (like the one we supplied).			
	Please switch off your audio system before connecting or disconnecting any cables to the speaker – also, if you intend to clean the surface or single components. Never use flammable or combustible chemicals for cleaning audio components.			
	HEDD studio monitors are equipped with universal mains, meaning that the speakers work within a voltage range from 85–264V. This makes voltage switches unnecessary.			
	Do not place this unit on an unstable cart, stand or tripod, bracket or table. The unit may fall, causing serious injury and / or serious damage.			
	This product should never be used outside. Avoid exposing it to rain or any sort of moisture.			
	Powercords and audio cables connected to this product should never be stepped on.			
	Please note that defective cables can harm your speakers and / or create humming, crackling, etc.			

	Always keep electric equipment out of the reach of children.
	Always unplug sensitive electronic equipment during lightning storms.
	The monitor should be installed near the socket outlet and quick disconnection of the device should be easily possible.
	To completely disconnect the speaker from the AC mains, physically disconnect the powercord.
	Please try to avoid touching the speaker diaphragms. Always keep the woofer’s ventilation ports open.
	Don’t use the speaker at very high or low temperatures. The speakers back panel should not be exposed to direct sunlight. Never operate this product in an explosive atmosphere.
	High SPLs can irreparably damage your ears! Please take good care when running the speakers at high levels.
	Make sure that the air can circulate behind the speaker as it needs sufficient cooling.
	Always carry the speaker with the back panel facing to your body. Otherwise, the diaphragm of the woofer can be damaged, which is not covered by the warranty.
	The drivers of the speaker are NOT magnetically shielded! Keep away all items that are sensitive to magnetic fields, like magnetic tapes, credit cards, CRT monitors and so on.
	Keep away Ferro-magnetic (steel, iron, etc.) objects from the tweeter like small screws, swarf and so on. The strong magnetic field of the tweeter can pull objects to the folded diaphragm. This can lead to permanent damage of the tweeter, which is not covered by the warranty.
	For cleaning the surface of the cabinet, we recommend to use a microfiber cloth and simply warm water. Don’t use any aggressive detergent, as it will damage the finish. Always switch off the speaker before cleaning! For cleaning dust out of the loudspeaker diaphragms, use a very soft brush.
	If you need to send the speakers via a postal service, use the original packaging. It is the safest way to get them from A to B.



Introduction

Dear Customer,

many thanks for choosing the HEDD Type 20 active near-to midfield studio monitor. You got yourself a powerful, dynamic and ultra-transparent 3-way system, especially suitable for

- in-depth stereo- and multichannel-mixing
- high-end recording
- broadcast applications and
- mastering

Whether as a full range audio monitor in an elegant studio space or in a broadcast context, the Type 20 is an ideal player in the most diverse fields of application. The impressive technological facts alone speak for themselves: One 7" bass woofer, a dedicated 4"-midrange woofer made of very stiff Honeycomb-sandwich material, Klaus Heinz' latest version of the handmade Air Motion Transformer tweeter, and nothing less than 3×300W of ICEpower® amplification create an ultra-wide frequency range from 32Hz all the way up to 50kHz.

In addition to being super solid and having an extremely high fidelity in the bass and mid range reproduction, the HEDD AMT produces vivid and uncolored high frequency material.

On the following pages, we would like to share with you some tips and advice regarding the operation of this fine product.

Thanks again, and enjoy your new speakers!

Klaus Heinz and the HEDD Team

UNPACKING AND CONNECTING

- Unpack the monitor carefully and give it an hour to acclimate to the temperature of your room
- Connect it to the power-socket
- Connect your audio source via the balanced XLR (6), unbalanced RCA (5), or HEDD Bridge inputs (8), then select the chosen input with the INPUT SOURCE SWITCH on the back panel (4).

Every HEDD studio monitor is equipped with regulated Universal Mains, working from 85V-264V. This means that the amps will work at their full capacity under any voltage condition. Plug and play – wherever you are.

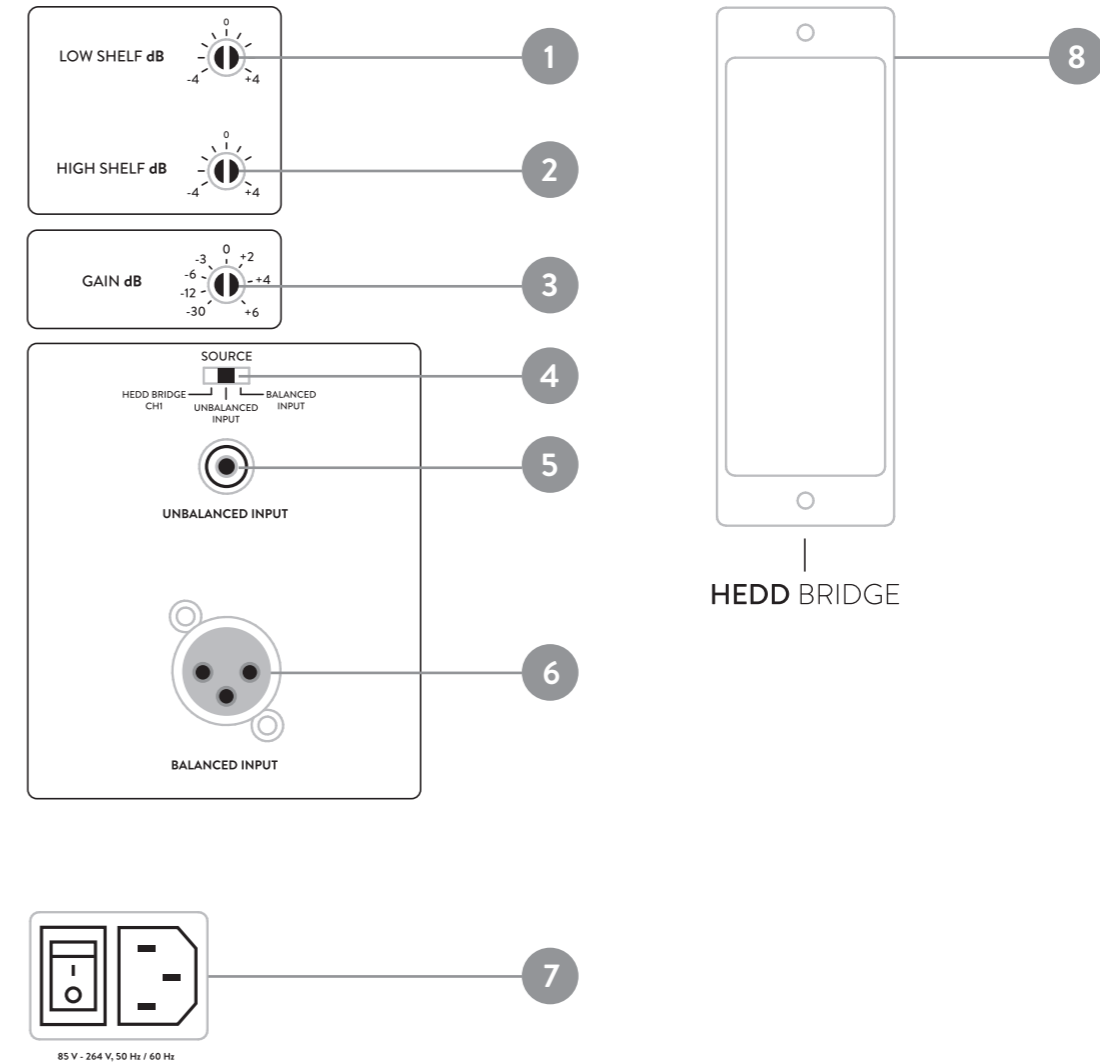
GAIN (3)

The Gain control lets you adjust the overall volume of the speaker in a range from -30dB to +6dB. You can use this control to make the speaker work flawlessly with your other equipment or to compensate for any level differences between the speakers, may they be caused by your listening position, the room acoustics, or slight variations of the control knob's tolerance.

SHELVING FILTERS (1 & 2)

Listening to these monitors can be a real joy, but depending on the acoustical properties of the room you are working in, it might at times be difficult for the speakers to unfold their rich sound quality. It is precisely for this reason that we included two highly efficient shelving-filters (Low Shelf < 200Hz / High Shelf > 2kHz) that are designed to overcome deficient acoustics, typically found in rooms with uneven geometries, hard (glass, stone) or overly muffled (carpets, curtains) surfaces.

Controls



Introduction

STATUS LEDs

On the front of your speaker, you can see a front LED panel which will indicate its operational status in the following way:

- Red “OL”: lights up if the limiter circuit of the speaker kicks in and protects the drivers from overloading
- Green “PWR / STBY”: normal operational power-on status
- White “SYNC”: lights up if the speaker is synchronized with a digital source (HEDD Bridge card)

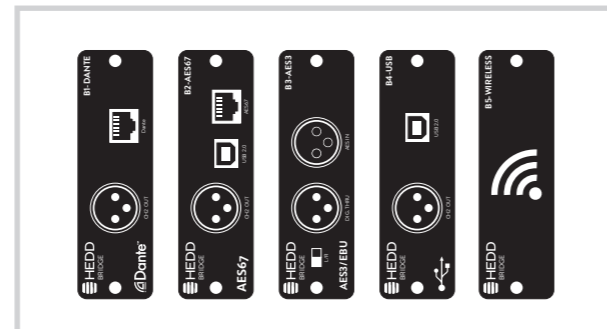
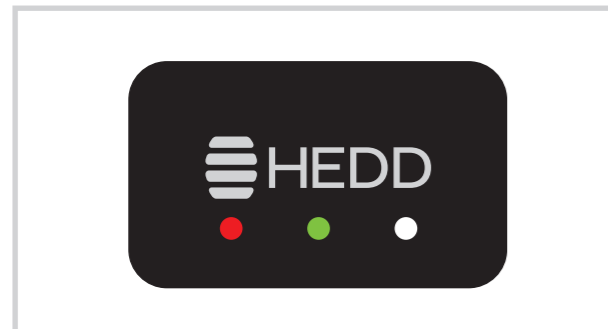
HEDD BRIDGE

The HEDD Bridge was inspired by the rather simple and yet absolutely vital idea that our analog speakers should feature a freely configurable system that, being located on the back panel of each monitor, allows for the optional integration of specific digital audio protocols. The HEDD Bridge is nothing less than a modular system of input cards that enables all HEDD monitors to fully handle digital protocols such as USB2, AES3, Wireless and even AES67 / Dante, that is Audio-over-IP. As a customer you can either stay completely in the analog domain or can choose the HEDD input module that fits your workflow and audio environment in the best possible way.

The HEDD Bridge brings versatile digital input connectivity including two AoIP options to the world of professional monitoring. For the first time, it becomes possible for studio monitors to be integrated into today’s most established audio network protocols: Audinate’s Dante and Ravenna Network / AES67.

Here are a few examples of how loudspeakers can be used in an AoIP environment:

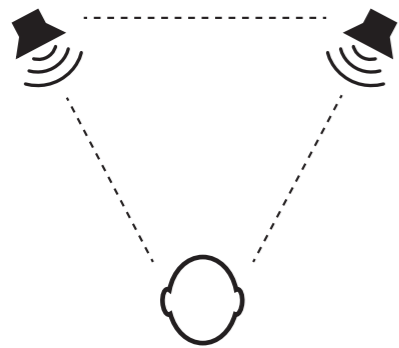
- Directly connect a computer to the loudspeakers via a CAT.6 Ethernet cable and stream high resolution audio
- In complex multi-channel setups (like Dolby Atmos, Auro 3D), multiple separate loudspeakers can be fed with a single high-resolution audio stream and each one of these speaker channels can be controlled individually by software control applications
- Audio devices in different rooms or facilities (e.g. movie theaters, conference rooms, live concerts and music festivals) can be controlled from one or multiple workspaces connected to the Ethernet network
- AoIP will enable broadcast engineers to simplify the in-house signal distribution in broadcast stations



Speaker Placement

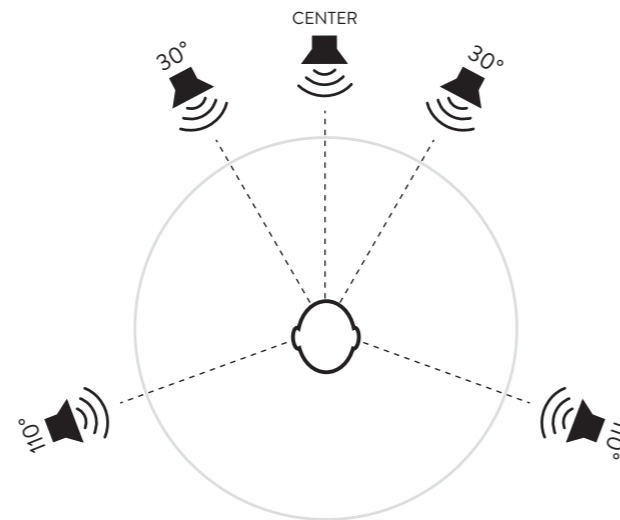
STEREO POSITIONING

In a stereo setup the speakers should be placed horizontally and facing towards you. The tweeters should match the height of your ears. This is the best way to perceive the intended character of the monitor. For optimizing your listening position, place the two speakers so that they form an equilateral triangle with your listening position (see figure below). This position should be an imaginary center point between the two speakers. Play a recording that you are familiar with and try playing around with adjusting the distance of the speakers and the distance of your listening position accordingly. Stop when you think that you hear an authentic stereo panorama. Trust your ears, they are your best friend.



SURROUND POSITIONING

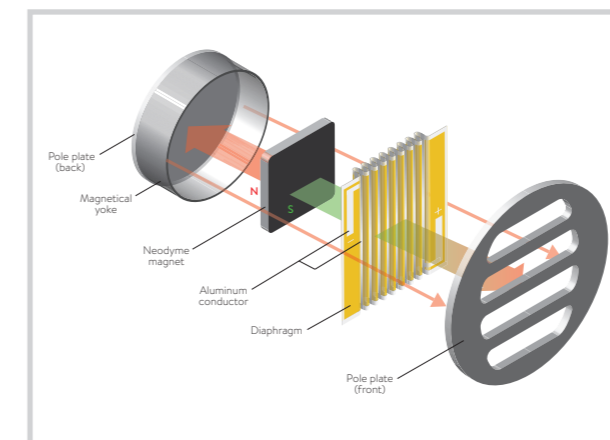
Place the speakers in a circle around your listening position and work with the following angles: Center 0°, Front/Right 30°, Rear/Right 110°, Rear/Left 250° and Front/Left 330°. The surrounding walls should be at least 40cm away from every speaker to avoid early reflections. We recommend that you use the same type of speaker for every channel (except the subwoofer, of course), because otherwise you can run into negative frequency and/or phase coloration. Check out the ITU recommendation BS.2159-4 for a detailed explanation.



HEDD Air Motion Transformer

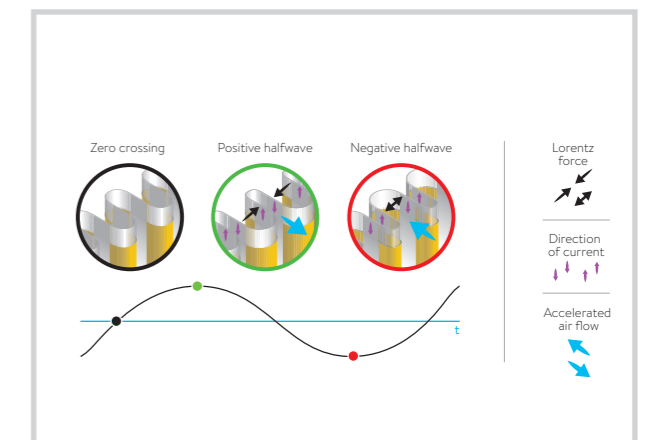
HEDD studio monitors are equipped with a special tweeter design that - based on a brilliant idea by the German-American physicist Oskar Heil - was introduced to the professional audio world by HEDD founder Klaus Heinz. It is called the Air Motion Transformer (AMT).

Unlike the vast majority of tweeters (electro- and magnetostatic designs, cones, domes), which move the air in a 1 : 1 ratio (diaphragm velocity equals the air velocity), the Air Motion Transformer is based on a folded elastic diaphragm, where the single folds open and close in an alternating pattern and thus breathe the air in and out. The air driven through the folds is accelerated to a 4 : 1 ratio, meaning that the air flow is four times as fast as the single moving fold (see figure). This is a huge advantage when it comes to reproducing musical signals with fast transients / short attacks such as cymbals, voices or plugged guitar strings.



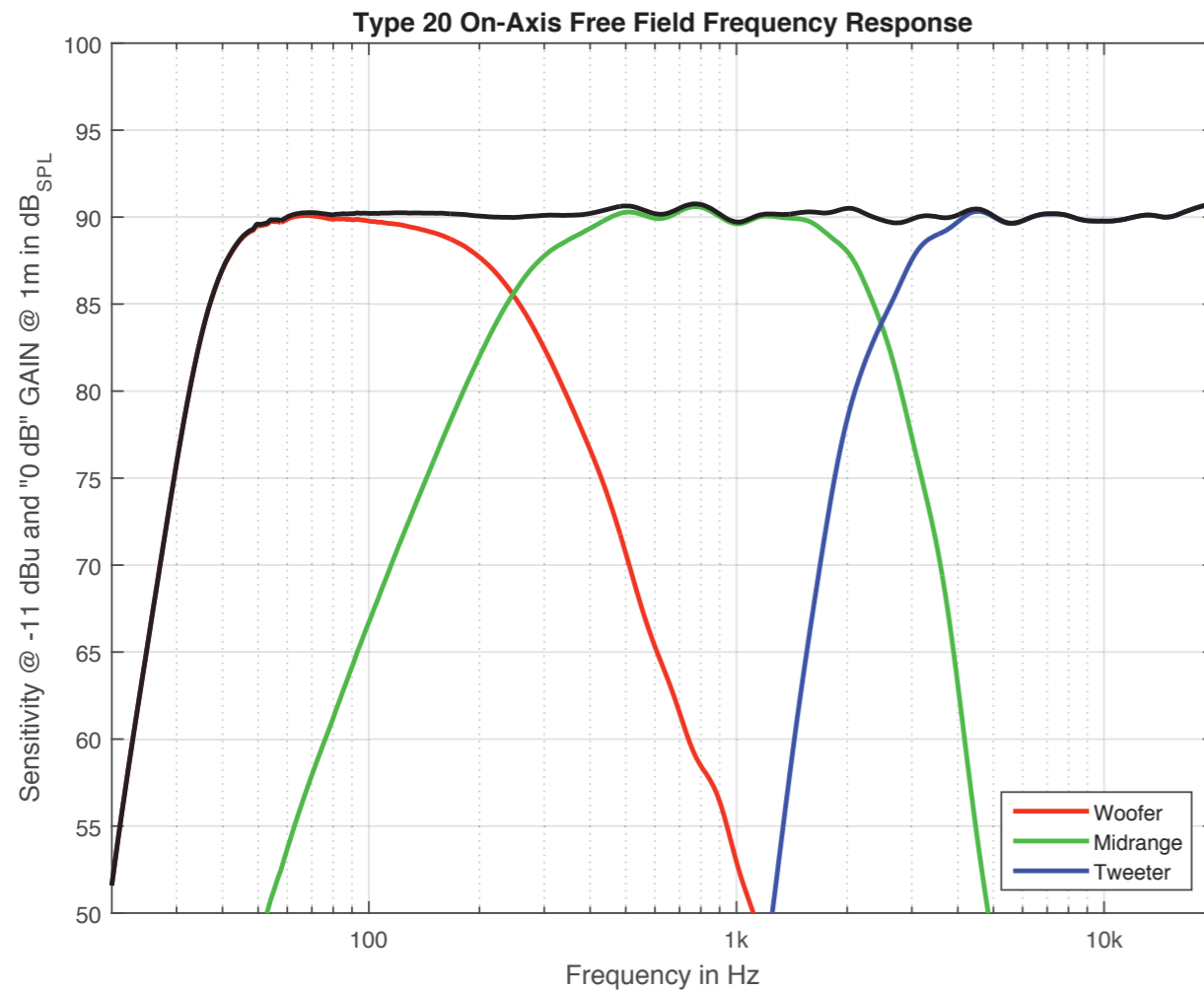
Another aspect of this fascinating design has to do with the actual diaphragm area and its importance for the dynamic range of the transducer. In a cone-like design, the cone itself is the acoustically active area - and this is true for pretty much all other drive units. The diaphragm of the HEDD Air Motion Transformer, however, is folded into the 3rd dimension, meaning that a significantly larger foil can be used. That way, the acoustically effective area of the diaphragm is increased by a factor of more than 2.5, resulting in an increased dynamic output and a much wider dispersion.

In their new monitor designs, HEDD introduces an even further improved version of the AMT. A strong magnetic field lowers distortion and intermodulation while a special waveguide is used to reach lower crossover frequencies, which is crucial for shaping the midrange of 2- and 3-way studio monitors.



Frequency Response

The individual responses of the woofers, midrange and tweeter drivers as well as the overall frequency response of the loudspeaker is depicted here.



Troubleshooting



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Problem	Solution
"ON" LED lights green but no audio output	<p>Check the wiring and make sure that all cables are working and connected correctly.</p> <p>Check if you have selected the correct input via the SOURCE switch on the back panel of the speaker.</p> <p>Connect an audio source directly to the speaker. If you do hear audio now, the malfunction is in your signal path.</p> <p>If the back panel of the speaker is very hot, it may be that the internal thermal protection of the amplifiers has shut down the audio output to prevent electrical damage. Turn the unit off, let it cool down and repower.</p>
Hum, buzz and noise	<p>Disconnect all signal cables. If the noise is gone, check your audio cables and the equipment in your signal path.</p> <p>Check if you have any electrical devices that potentially produce high amounts of RFI (cellphones, switching power supplies, radio equipment) sitting next to your speakers.</p> <p>Try to connect the speakers to a different power socket.</p>
"OL" LED lights up constantly	<p>Reduce the input audio level either on the source or with the help of the GAIN control.</p>
"SYNC" LED lights up but no audio	<p>Check if you have selected the HEDD BRIDGE input via the SOURCE switch on the back panel of the speaker.</p> <p>Check if you have routed the audio source correctly to the HEDD BRIDGE output of your HEDD Bridge extension card.</p>
Speakers vary in volume	<p>Use the GAIN control to compensate for any level differences.</p>

All our products comply with RoHS and WEEE.
 This product has a 2-year-warranty. Contact us or visit our website for warranty information.

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Technical Data

Drivers	
Woofers	7" (182mm) Ultra Honeycomb Composite
Voice coil Ø	2" (50mm)
Midrange	1 x 4" (120mm) Ultra Honeycomb Composite
Voice coil Ø	1.25" (32mm)
Tweeter	1x HEDD AMT (HEDD Air Motion Transformer)
Equiv. Diaphragm Ø	2.2" (56mm)
Input connectors	
Analog balanced/ unbalanced	XLR / RCA
Digital/HEDD Bridge Options	AES67 Ravenna, Dante, AES3/EBU
General data	
Amplification (ICEpower®)	3 x 300W
Sensitivity	218 mVrms (-11 dBu) / 90 dB SPL / 1m at 0 dB GAIN
Input gain	-30dB ... +6dB
Maximum input level (balanced / unbalanced)	6Vrms (+17.8dBu, +17.6dBV) / 4.5Vrms (+15.3dBu, +13.0dBV)
High Shelf EQ > 2kHz	±4dB at 20kHz
Low Shelf EQ < 200Hz	±4dB at 50Hz
Frequency response	32Hz-50kHz
Frequency response ± 1.5dB	40Hz - 20kHz
THD 90dB/1m > 100Hz	≤0.5 %
Max SPL sine wave 100Hz - 3kHz /1m	≥110dB
Max SPL peak per pair at 1m	≥120dB
Crossover frequency	250Hz / 2.5kHz
Input impedance (balanced / unbalanced)	10kΩ / 47kΩ
Weight	15kg
Height x Width x Depth	280mm x 358mm x 338mm
Warranty	2 years

The information and data contained in this manual is subject to change without prior notice.



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