



T E S S E N

TNA-2051-G3

USER MANUAL

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OVERVIEW

The TNA-2051-G3 is a passive line array loudspeaker comprising two 5-inch HH-designed LF drivers alongside a 1.33-inch Celestion CDX1-10WG compression driver, mounted to a Celestion designed waveguide and horn flare for optimal coverage control and clarity.

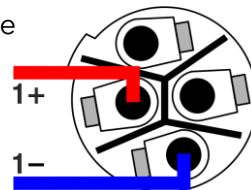
- FEATURES
 - 2 x HH-Designed 5-inch LF drivers.
 - 1 x Celestion CDX1-10WG compression driver.
 - Celestion designed waveguide and horn flare.
 - Sensitivity (1W/1m): 94dB SPL
 - Power rating: 200W AES
 - Nominal dispersion: 120° x 8°
 - Integrated 3-point pin-based rigging system.
 - Hard-wearing black paint finish.
- APPLICATIONS
 - Live Music
 - Nightclubs
 - Auditoriums
 - Theatres
 - Houses of Worship



SPEAKER PANEL



INPUT: An NL4 ±1 socket to allow for the connection to the output of your chosen amplifier via a suitable loudspeaker cable. Check the technical specification of your amplifier to ensure its drive capability and output power are suitable for use with a TNA-2051-G3 cabinet.



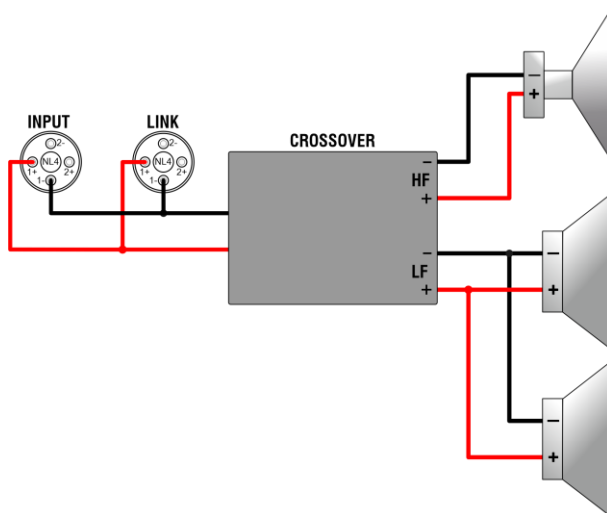
LINK: A second NL4 ±1 internally connected to the INPUT connector and allows the user to daisy-chain additional cabinets.

It is important to note that when selecting the drive capability of the amplifier, loudspeakers connected to the LINK output also need to be considered.

When connected via the LINK output, loudspeakers will be connected in parallel with the combined impedance of 16Ω for the onboard loudspeakers. The combined impedance is calculated with the following equation:

$$\frac{1}{\frac{1}{Z_1} + \frac{1}{Z_2} + \frac{1}{Z_3} + \frac{1}{Z_n}}$$

INTERNAL CONNECTIONS



PIN SYSTEM

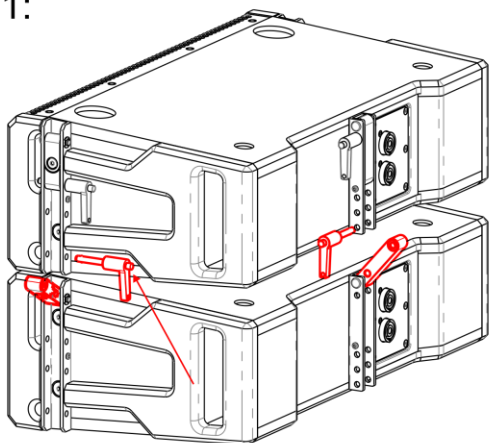
The integrated pin system offers quick and convenient setup to additional TNA cabinets in the range.

In all cases, ensure the pin is pushed all the way into the bracket, and that the locking ball is securely on the outside and locked in place.

Further examples are shown in the TNA-1200S-G3, TNA-2120SA-G3 and TNA-BRK1-G3 manuals available at HH Audio.com

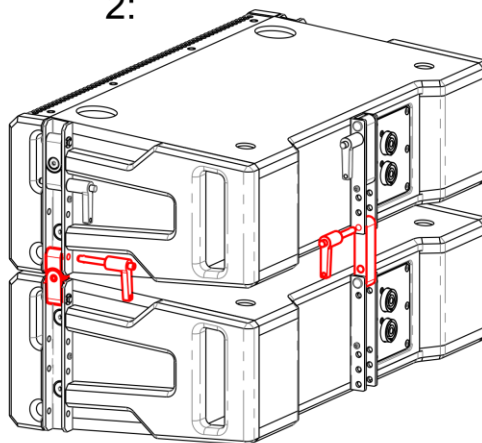
TNA-2051-G3 > TNA-2051-G3

1:



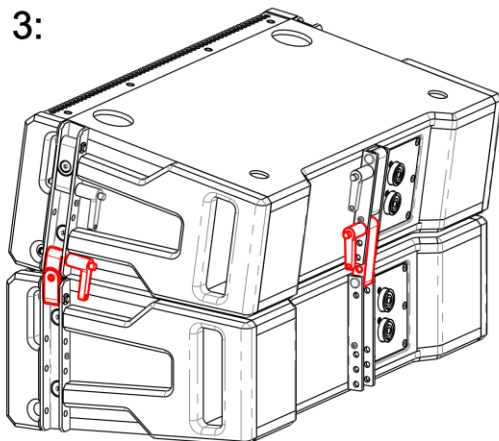
Push to release the locking pin and remove.

2:



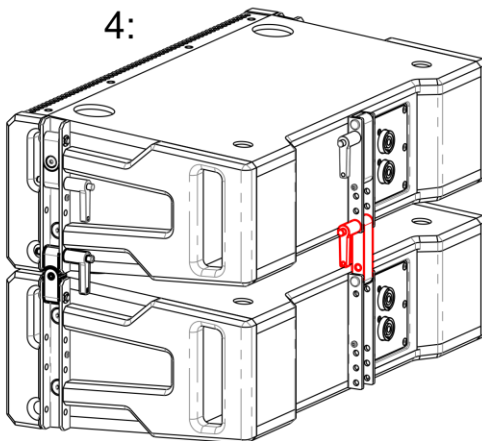
Rotate the pin mechanism to align with the mounting hole on the second TNA-2051-G3.

3:

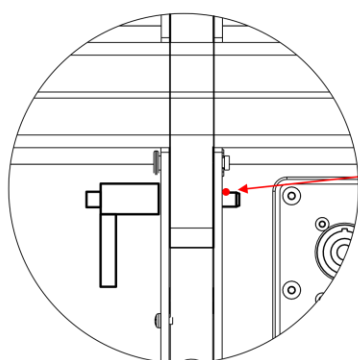


Press the locking pin button then insert into the bracket ensuring it is all the way home. Repeat with the remaining side locking pin.

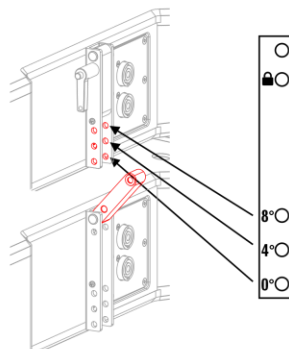
4:



Angle adjustment is achieved with the rear locking pin and location holes.

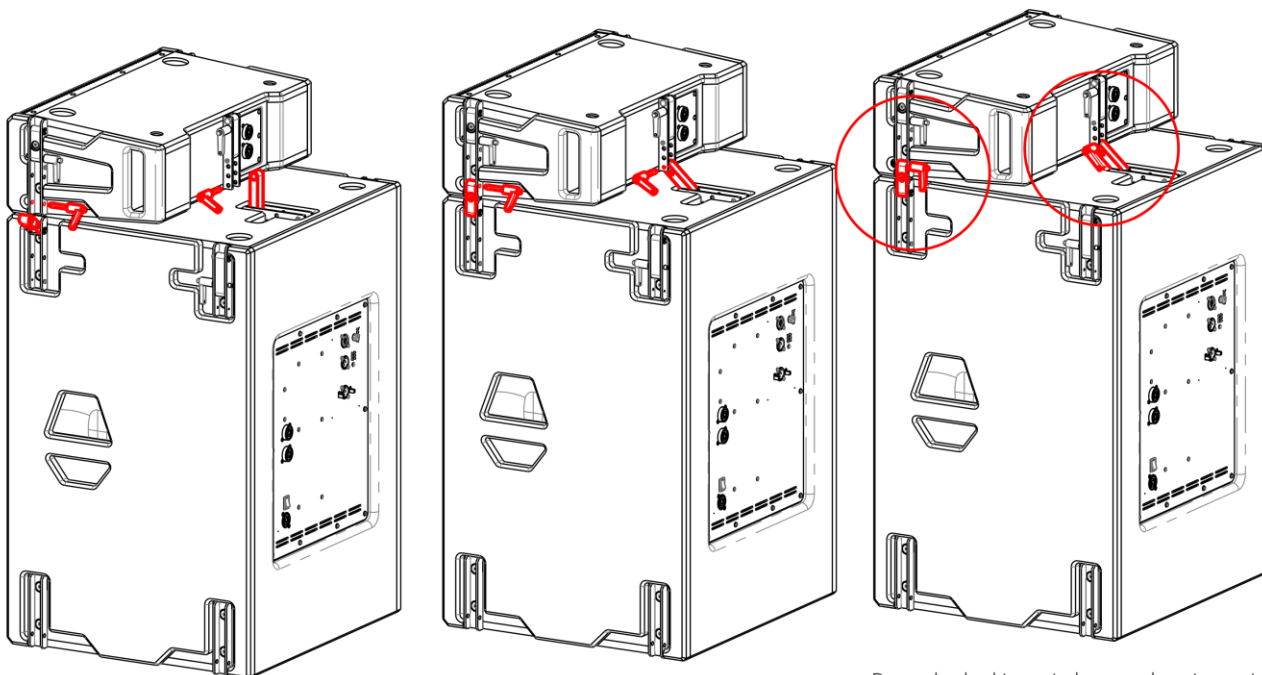


Ensure the locking ball is fully on the outside of the extrusion and check it is secure. Pull to check.



TNA-2051-G3 > SUB (TNA-1200S-G3 OR TNA-2120SA-G3) STACKED

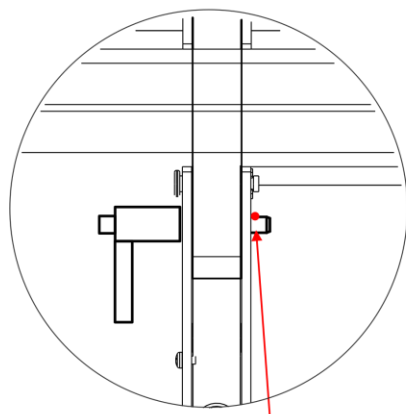
Place the TNA-2051-G3 on top of the sub. First connect the front two supports, then use these to pivot the rear and set the desired angle.



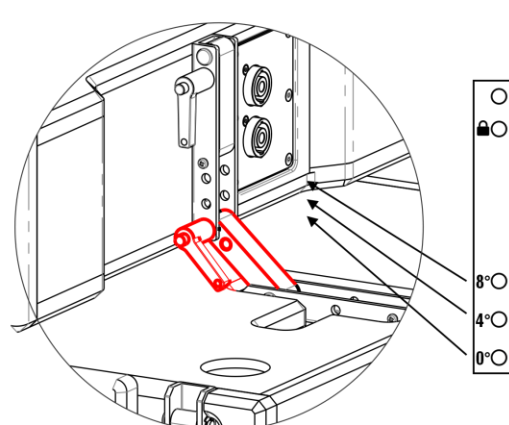
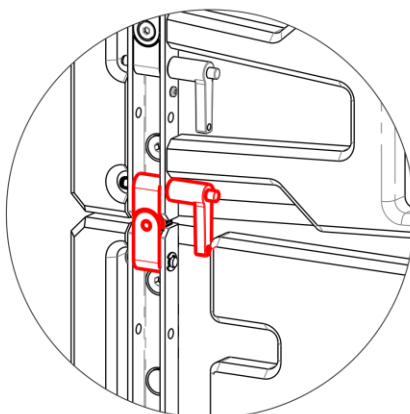
Push to release the locking pin on the sub and remove.

Rotate the pin mechanism to align with the mounting hole on the TNA-2051-G3

Press the locking pin button then insert into the bracket ensuring it is all the way home. Repeat with the remaining side locking pin.



Ensure the locking ball is fully on the outside of the extrusion and check it is secure. Pull to check.



Angle adjustment is achieved with the rear locking pin and location holes.

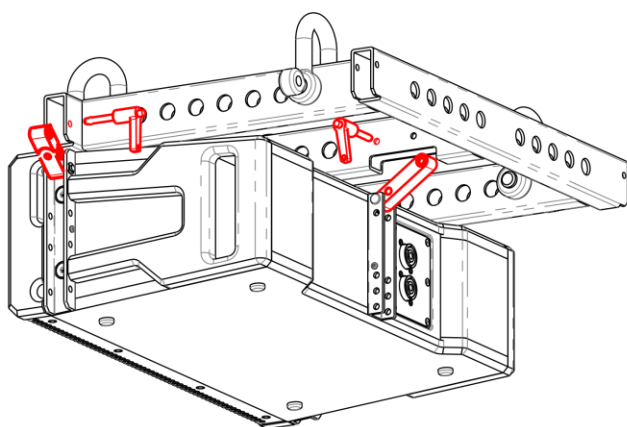


TNA-2051-G3 > TNA-BRK1-G3 FLOWN MOUNTING

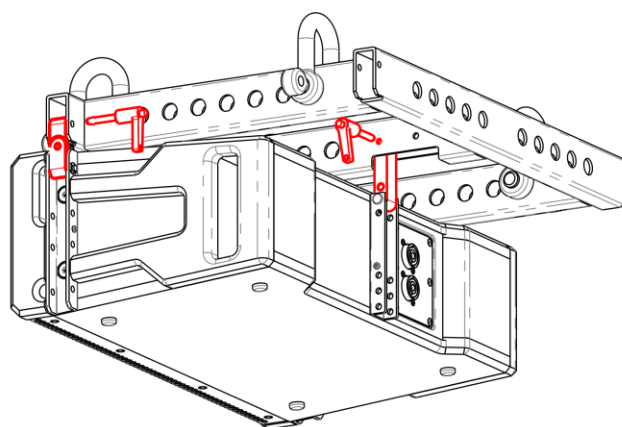
For a suspended setup, the TNA-2051-G3 may be attached to a TNA-BRK1-G3 Flying bracket as shown. The angle set which can be either 0° or 8 is determined by the chosen fixing position of the rear locking pin, as shown below.



For safe loading and further information on suspended mounting, please read the TNA-BRK1-G3 manual available at HHAUDIO.com, or by scanning the QR Code

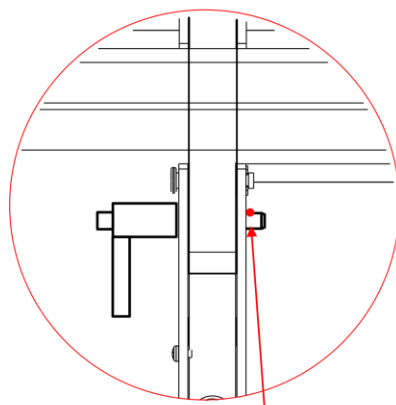
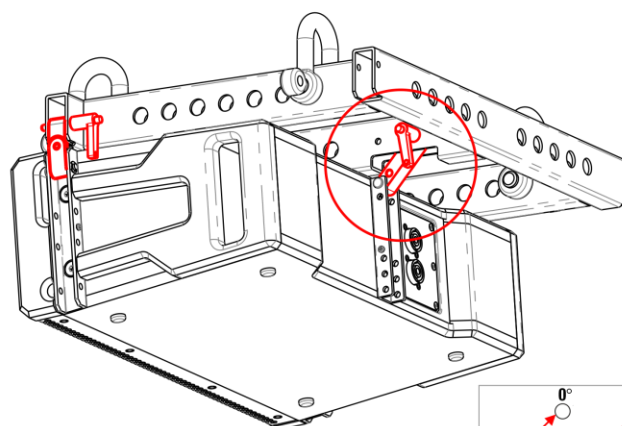
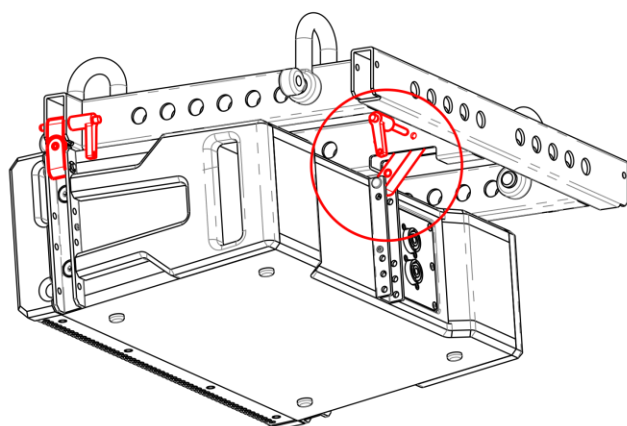


Push to release the locking pin on the sat and remove.

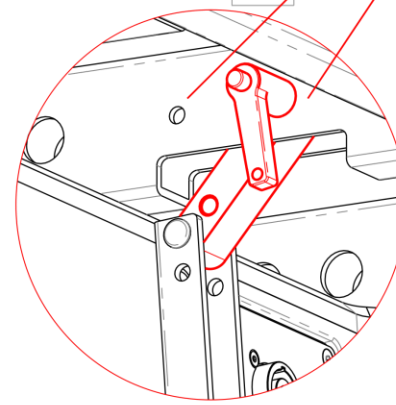
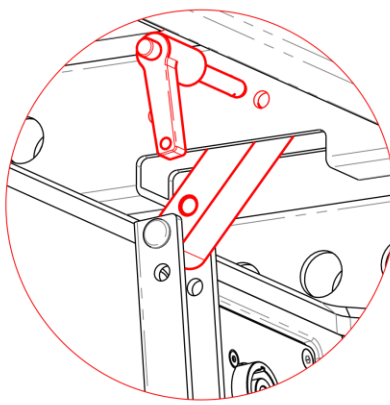


Rotate the pin mechanism to align with the mounting hole on the TNA-BRK1-G3

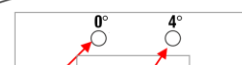
Press the locking pin button then insert into the bracket ensuring it is all the way home. Repeat with the remaining side locking pin.



Ensure the locking ball is fully on the outside of the extrusion and check it is secure. Pull to check.

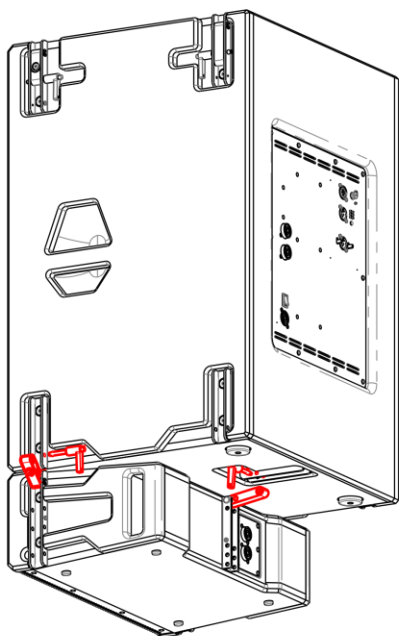


Angle adjustment is achieved with the rear locking pin and location holes. Typically the first sat cab is set for 0 degrees

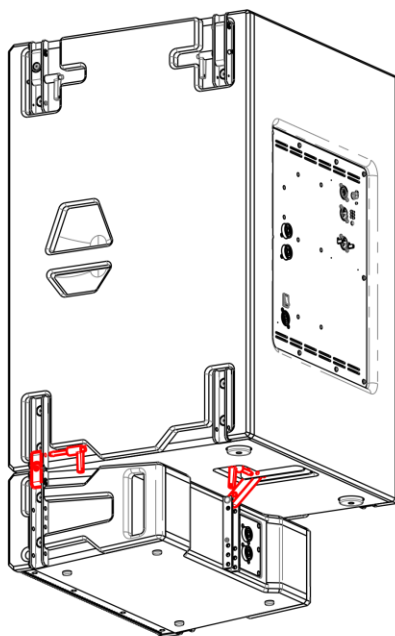


TNA-2051-G3 > Sub (TNA-1200S-G3 OR TNA-2120SA-G3) SUSPENDED

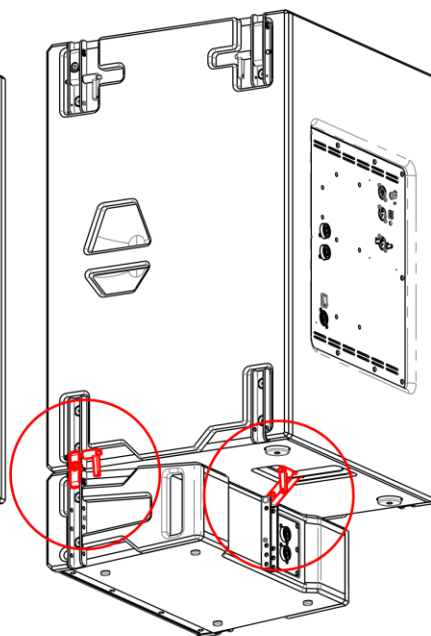
In a flown configuration, the bottom fixings are used. First connect the front two supports, then use these to pivot the rear and set the desired angle.



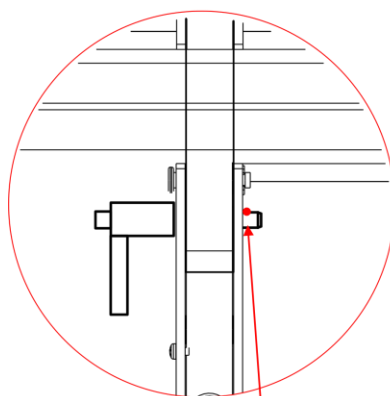
Push to release the locking pin on the sub and remove.



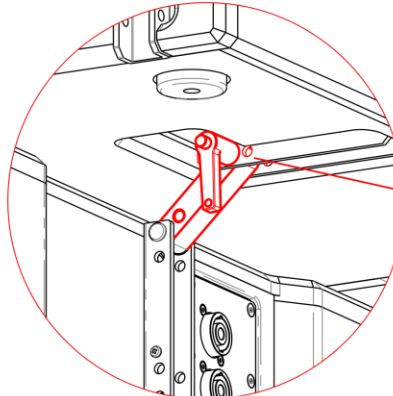
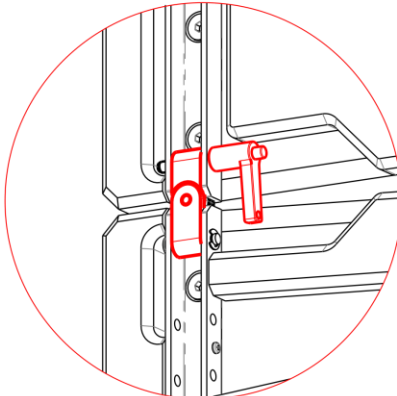
Rotate the pin mechanism to align with the mounting hole on the TNA-2051-G3



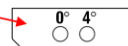
Press the locking pin button then insert into the bracket ensuring it is all the way home. Repeat with the remaining side locking pin.



Ensure the locking ball is fully on the outside of the extrusion and check it is secure. Pull to check.

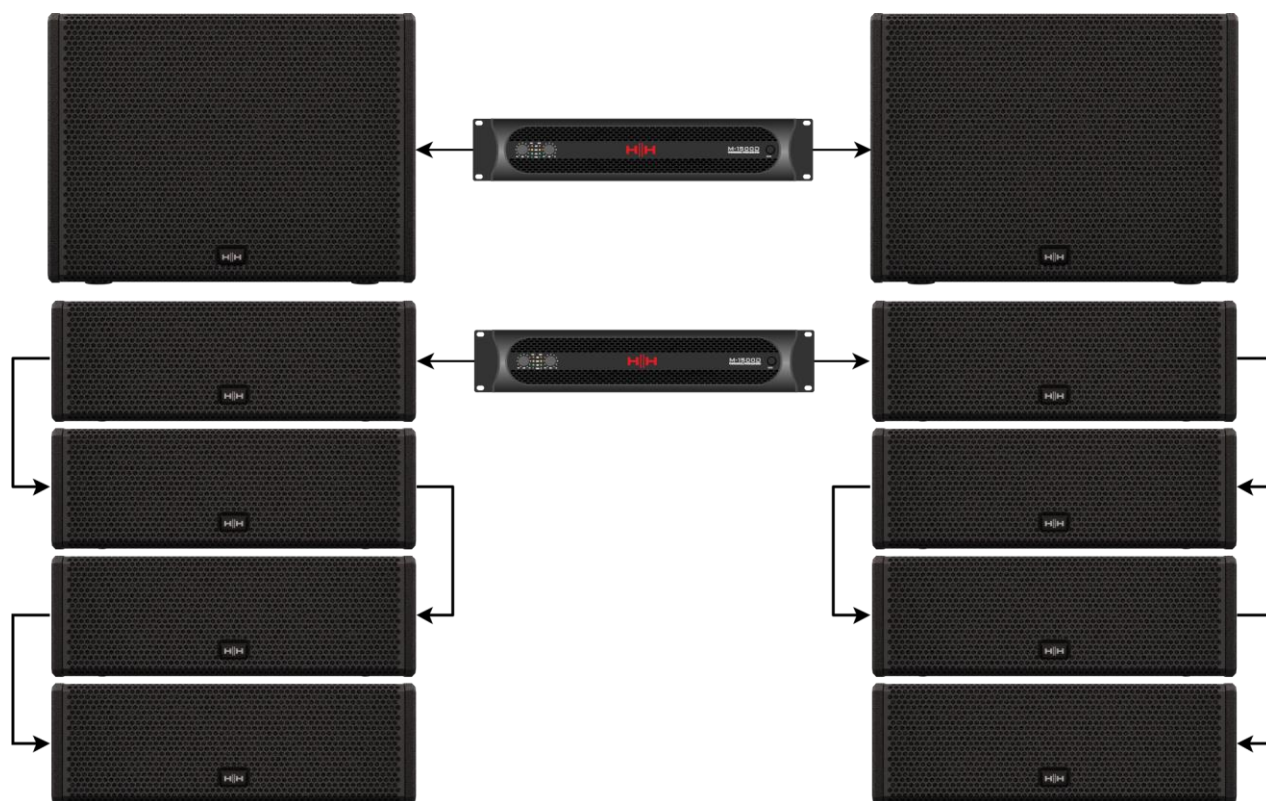


Angle adjustment is achieved with the rear locking pin and location holes. Typically the first sat cab is set for 0 degrees

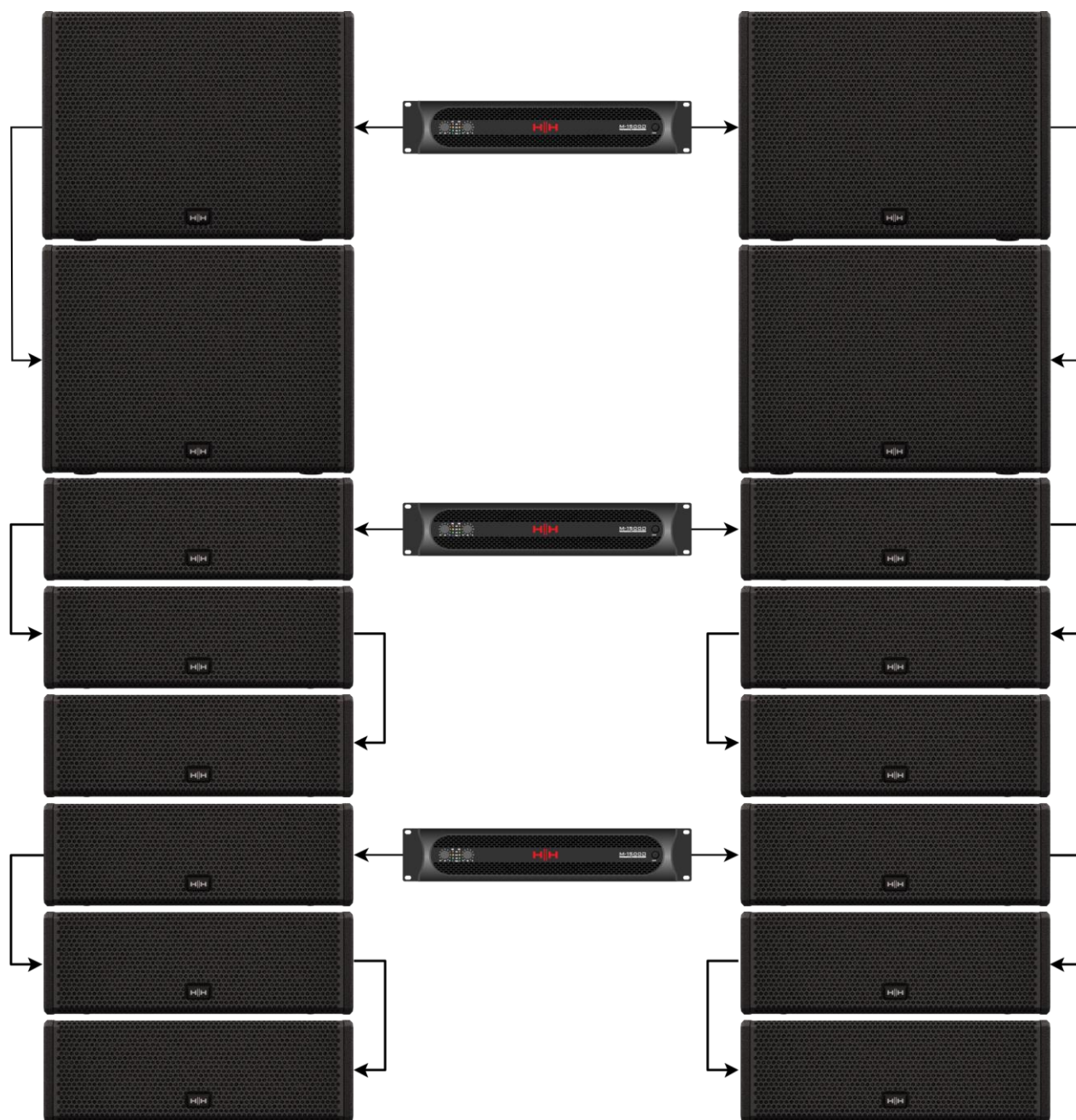


EXAMPLE SETUPS

EXAMPLE SETUP 1



EXAMPLE SETUP 2



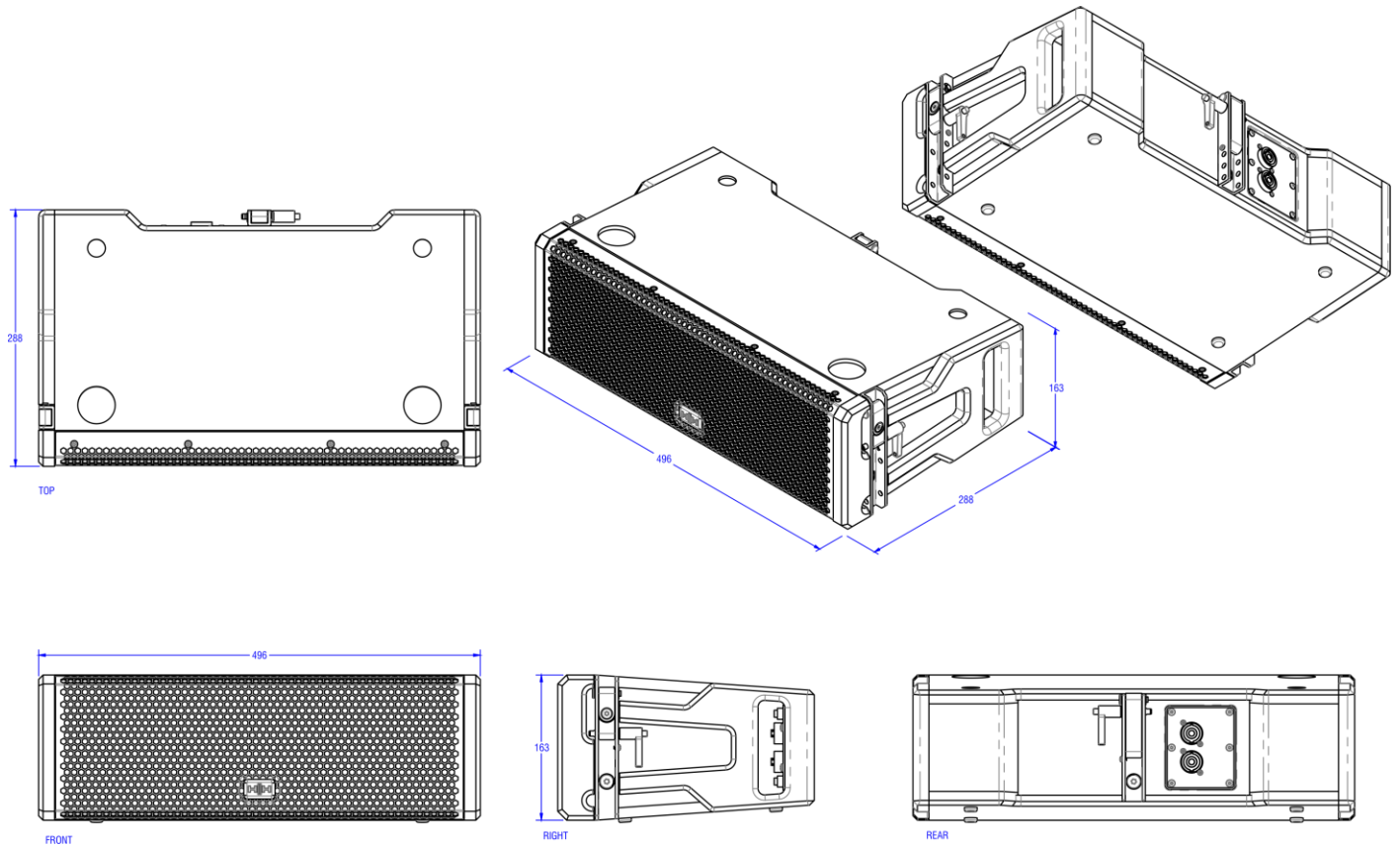
SPECIFICATIONS

Model	TNA-2051-G3
System type	2-way line array loudspeaker
Frequency Response	65Hz - 20KHz (-10dB)
	100Hz - 18KHz (-3dB)
System Power Rating	200W AES, 800W Peak
Sensitivity (1W/1m)	94 dB SPL
Max SPL 1m	123dB SPL
System Max SPL 1m	132 dB SPL
Nominal System Impedance	16 ohms
Input Connector	NL4 ±1 Twist Lock Connector.
Link Connector	NL4 ±1 Twist Lock Connector.
Speaker	
HF Driver	1 x 1.33-inch Celestion Compression Driver, mounted to Celestion Designed waveguide and horn.
LF Driver	2 x 5-inch HH-designed driver.
Internal Crossover Frequency	2000Hz
Nominal dispersion	120° x 8° Single Box.
Recommended HPF Frequency	100Hz
Enclosure	
Cabinet	15mm/18mm Plywood.
Finish	Painted Black.
Mounting Bracket	TNA-BRK1-G3 for suspended mounting.
Mounting Points	6 x M8 mounting points for integrated rigging system.
Rigging System	3-point rigging system w/removable locking pin for linking and adjusting splay angle.
Rigging/Splay Angle Settings	0°, 4° and 8° (between enclosures).
Grille	1.5mm Thickness Steel, Hexagonal mesh, acoustic foam lined.
Unit dimensions (HWD)	163 x 496 x 288mm, 6.4" x 19.5" x 11.3"
Unit weight	9Kg, 19.8 lbs (each)
Carton dimensions (HWD)	585 x 445 x 405mm, 23" x 17.5" x 15.9"
Packed weight	21.7Kg, 47.8 lbs (2pcs per carton)
EAN Code	5060109459678 As Shipped 2 pcs

- In the interest of continued development, HH Audio reserves the right to amend product specification without prior notification.

DIMENSIONS

Note: All dimensions shown are in millimetres.









SAFETY AND WARNINGS

To take full advantage of your new product and enjoy long and trouble-free performance, please read this owner's manual carefully, and keep it in a safe place for future reference.

MANUFACTURER: HEADSTOCK DISTRIBUTION LTD. STEELPARK ROAD,
COOMBS WOOD BUSINESS PARK WEST, HALESOWEN, B62 8HD, UK

- 1) Unpacking: On unpacking your product, please check carefully for any signs of damage that may have occurred whilst in transit from the HH factory to your dealer. In the unlikely event that there has been damage, please re-pack your unit in its original carton and consult your dealer. We strongly advise you to keep your original transit carton, since in the unlikely event that your unit should develop a fault, you will be able to return it to your dealer for rectification securely packed.
- 2) Amplifier Connection: To avoid damage, generally it is advisable to establish and follow a pattern for turning on and off your system. With all system parts connected, turn on source equipment, mixers, effects processors etc, BEFORE turning on your amplifier. Many products have large transient surges at turn on and off which can cause damage to your speakers. By turning on your amplifier LAST and making sure its level control is set to a minimum, any transients from other equipment should not reach your loudspeakers. Wait till all system parts have stabilised, usually a couple of seconds. Similarly, when turning off your system always turn down the level controls on your amplifier and then turn off its power before turning off other equipment.
- 3) Cables: Never use shielded or microphone cable for any speaker connections as this will not be substantial enough to handle the amplifier load and could cause damage to your complete system. Use good quality shielded cables everywhere else.
- 4) Servicing: The user should not attempt to service these products. Refer all servicing to qualified service personnel.
- 5) Heed all warnings.
- 6) Follow all instructions.
- 7) Do not use this apparatus near water.
- 8) Clean only with a dry cloth.
- 9) Do not block any of the ventilation openings. Install in accordance with manufacturer's instructions.
- 10) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 11) An apparatus with Class I construction shall be connected to a mains socket outlet with a protective connection. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 12) Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point they exit from the apparatus.
- 13) Only use attachments/accessories provided by the manufacturer.
- 14) Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 15) The mains plug or appliance coupler is used as the disconnect device and shall remain readily operable. The user should allow easy access to any mains plug, mains coupler and mains switch used in conjunction with this unit thus making it readily operable. Unplug this apparatus during lightning storms or when unused for long periods of time.
- 16) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
- 17) Never break off the ground pin. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
- 18) If this product is to be mounted in an equipment rack, rear support should be provided.
- 19) Note for UK only: If the colours of the wires in the mains lead of this unit do not correspond with the terminals in your plug, proceed as follows:
 - o The wire that is coloured green and yellow must be connected to the terminal that is marked by the letter E, the earth symbol, coloured green or coloured green and yellow.
 - o The wire that is coloured blue must be connected to the terminal that is marked with the letter N or the colour black.
 - o The wire that is coloured brown must be connected to the terminal that is marked with the letter L or the colour red.
- 20) This electrical apparatus should not be exposed to dripping or splashing and care should be taken not to place objects containing liquids, such as vases, upon the apparatus.
- 21) Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures: According to OSHA, any exposure more than the above permissible limits could result in some hearing loss. Earplugs or protectors to the ear canals or over the ears must be worn when operating this amplification system to prevent a permanent hearing loss, if exposure is more than the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.
- 22) If your appliance features a tilting mechanism or a kickback style cabinet, please use this design feature with caution. Due to the ease with which the amplifier can be moved between straight and tilted back positions, only use the amplifier on a level, stable surface. DO NOT operate the amplifier on a desk, table, shelf or otherwise unsuitable non-stable platform.
- 23) Symbols & nomenclature used on the product and in the product manuals, intended to alert the operator to areas where extra caution may be necessary, are as follows:

Duration Per Day in Hours	Sound Level dBA, slow response
8	90
6	92
4	95
3	97
2	100
1 1/2	102
1	105
1/2	110
1/4 ou inférieur	115

 CAUTION:	<p>Intended to alert the user to the presence of uninsulated 'Dangerous Voltage' within the products enclosure that may be sufficient to constitute a risk of electrical shock to persons.</p> <p>Ce symbole est utilisé pur indiquer a l'utilisateur de ce produit de tension non-isolée dangereuse pouvant être d'intensité suffisante pour constituer un risque de choc électrique.</p> <p>Este símbolo tiene el propósito de alertar al usuario de la presencia de '(voltaje) peligroso' que no tiene aislamiento dentro de la caja del producto que puede tener una magnitud suficiente como para constituir riesgo de corrientazo.</p> <p>Dieses Symbol soll den Anwender vor unisolierten gefährlichen Spannungen innerhalb des Gehäuses warnen, die von ausreichender Stärke sind, um einen elektrischen Schlag verursachen zu können.</p>
 WARNING:	<p>Intended to alert the user of the presence of important operating and maintenance (Servicing) instructions in the literature accompanying the product.</p> <p>Destiné à alerter l'utilisateur de la présence d'instructions importantes d'exploitation et de maintenance (entretien) dans la documentation accompagnant le produit.</p> <p>Este símbolo tiene el propósito de la alertar al usuario de las presencias de instrucciones importantes sobre la operación y mantenimiento en la literatura que viene con el producto.</p> <p>Dieses Symbol soll den Benutzer auf wichtige Instruktionen in der Bedienungsanleitung aufmerksam machen, die Handhabung und Wartung des Produkts betreffen.</p>
<p>CAUTION:</p> <p>ATTENTION :</p> <p>PRECAUCION:</p> <p>VORSICHT:</p>	<p>Risk of electrical shock - DO NOT OPEN. To reduce the risk of electrical shock, do not remove the cover. No user serviceable parts inside. Refer servicing to qualified personnel.</p> <p>Risques de choc électrique - NE PAS OUVIRIR. Afin de réduire le risque de choc électrique, ne pas enlever le couvercle. Il ne se trouve a l'intérieur aucune pièce pouvant être réparée par l'utilisateur. Confier l'entretien a un personnel qualifié.</p> <p>Riesgo de descarga eléctrica - NO ABRIR. Para reducir el riesgo de descarga eléctrica, no quite la cubierta. No hay piezas reparables por el usuario en el interior. Remita el servicio a personal calificado.</p> <p>Risiko - Elektrischer Schlag! Nicht offen! Um das Risiko eines elektrischen Schlages zu vermeiden, nicht die Abdeckung entfernen. Es befinden sich keine Teile darin, die vor Anwender repariert werden konnten. Reparaturen nur von qualifiziertem Fachpersonal durchführen lassen.</p>
<p>WARNING:</p> <p>ADVERTISSEMENT :</p> <p>ADVERTENCIA:</p> <p>ACHTUNG:</p>	<p>To prevent electrical shock or fire hazard, do not expose this appliance to rain or moisture. Before using this appliance, please read the operating instructions for further warnings.</p> <p>Afin de prévenir les risques de décharge électrique ou de feu, n'exposez pas cet appareil a la pluie ou a l'humidité. Avant d'utiliser cet appareil, lisez les avertissements supplantais situés dans le guide.</p> <p>Para evitar descargas eléctricas o peligro de incendio, no exponga este aparato a la lluvia ni a la humedad. Antes de usar este aparato, lea las instrucciones de funcionamiento para conocer más advertencias.</p> <p>Um einen elektrischen Schlag oder Feuergefahr zu vermeiden, sollte dieses Gerät nicht dem Regen oder Feuchtigkeit ausgesetzt werden. Vor Inbetriebnahme unbedingt die Bedienungsanleitung lesen.</p>
	<p>This device complies with Part 15 of the FCC rules Operation is subject to the following two conditions:</p> <ol style="list-style-type: none"> 1) This device may not cause harmful interference. 2) This device must accept any interference received, that may cause undesired operation. <p>Warning: Changes or modification to the equipment not approved by HH can void the user's authority to use the equipment.</p> <p>Note: This equipment has been tested and found to comply with the limits for Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try and correct the interference by one or more of the following measures. Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help.</p>
	<p>This product conforms to the requirements of the following European Regulations, Directives & Rules: CE Mark (93/68/EEC), Low Voltage (2014/35/EU), EMC (2014/30/EU), RoHS (2011/65/EU), ErP (2009/125/EU)</p> <p>SIMPLIFIED EU DECLARATION OF CONFORMITY</p> <p>Full text of the EU declaration of conformity is available at the following internet address:</p> <p>http://support.hhaudio.com/approvals</p>
	<p>The object of the declaration described above is in conformity with the relevant statutory requirement Electrical Equipment (Safety) Regulations 2016, Electromagnetic Compatibility Regulations 2016, The Restriction of the use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012, The Ecodesign for Energy-Related Products and Energy Information, (Amendment) (EU Exit) Regulations 2012</p>
	<p>In order to reduce environmental damage, at the end of its useful life, this product must not be disposed of along with normal household waste to landfill sites. It must be taken to an approved recycling centre according to the recommendations of the WEEE (Waste Electrical and Electronic Equipment) directive applicable in your country.</p>



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HH AUDIO PART OF HEADSTOCK GROUP
FOR THE LATEST INFORMATION PLEASE VISIT

WWW.HHAUDIO.COM

IN THE INTEREST OF CONTINUED DEVELOPMENT, HH RESERVES THE RIGHT TO
AMEND NOTIFICATION

V1.0