



CONTOUR ARRAY™

MANUAL 1.4

ENGLISH
DEUTSCH
FRANÇAIS

IMPORTANT SAFETY INSTRUCTIONS

Before connecting, read instructions

- Read all of these instructions!
- Save these instructions for later use!
- Follow all warnings and instructions marked on the product!
- Do not use this product near water, i.e. bathtub, sink, swimming pool, wet basement, etc.
- Do not place this product on an unstable cart, stand or table. The product may fall, causing serious damage to the product or to persons!
- Slots and openings in the cabinet and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. This product should not be placed in a built-in installation unless proper ventilation is provided.
- This product should not be placed near a source of heat such as a stove, radiator, or another heat producing amplifier.
- Use only the supplied power supply or power cord. If you are not sure of the type of power available, consult your dealer or local power company.
- Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.
- Never break off the ground pin on the power supply cord.
- Power supply cords should always be handled carefully. Periodically check cords for cuts or sign of stress, especially at the plug and the point where the cord exits the unit.
- The power supply cord should be unplugged when the unit is to be unused for long periods of time.
- If this product is to be mounted in an equipment rack, rear support should be provided.
- This product should be used only with a cart or stand that is recommended by HK AUDIO®.
- Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in risk of fire or electric shock. Never spill liquid of any kind on the product.
- Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.
- Clean only with dry cloth.
- 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 the third prong are provided for the safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- Place the product always in a way that the mains switch is easily accessible.
- Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - When the power cord or plug is damaged or frayed.
 - If liquid has been spilled into the product.
 - If the product has been exposed to rain or water.
 - If the product does not operate normally when the operating instructions are followed.
 - If the product has been dropped or the cabinet has been damaged.
 - If the product exhibits a distinct change in performance, indicating a need of service!
- Adjust only these controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the product to normal operation.
- 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:

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 or less	115
- According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss.
- Ear plug protectors in the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss if exposure is in excess of 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.
- Fuses: Replace with IEC 127 (5x20 mms) type and rated fuse for best performance only.

TO PREVENT THE RISK OF FIRE AND SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO MOISTURE OR RAIN. DO NOT OPEN CASE; NO USER SERVICE-ABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

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IMPORTANT ADVICE ON SAFETY!

Please read before use and keep for later use!

- The unit has been built by HK AUDIO® in accordance with IEC 60065 and left the factory in safe working order. To maintain this condition and ensure non-risk operation, the user must follow the advice and warning comments found in the operating instructions. The unit conforms to Protection Class 1 (protectively earthed).
- HK AUDIO® ONLY GUARANTEE THE SAFETY, RELIABILITY AND EFFICIENCY OF THE UNIT IF:
 - Assembly, extension, re-adjustment, modifications or repairs are carried out by HK AUDIO® or by persons authorized to do so.
 - The electrical installation of the relevant area complies with the requirements of IEC (ANSI) specifications.
 - The unit is used in accordance with the operating instructions.
 - The unit is regularly checked and tested for electrical safety by a competent technician.
- **WARNING:**
 - If covers are opened or sections of casing are removed, except where this can be done manually, live parts can become exposed.
 - If it is necessary to open the unit this must be insulated from all power sources. Please take this into account before carrying out adjustments, maintenance, repairs and before replacing parts.
 - The appliance can only be insulated from all power sources if the mains connection is unplugged.
 - Adjustment, maintenance and repairs carried out when the unit has been opened and is still live may only be performed by specialist personnel who are authorized by the manufacturer (in accordance with VBG 4) and who are aware of the associated hazards.
 - Loudspeaker outputs which have the IEC 417/5036 symbol (Diagram 1, below) can carry voltages which are hazardous if they are made contact with. Before the unit is switched on, the loudspeaker should therefore only be connected using the lead recommended by the manufacturer.
 - Where possible, all plugs on connection cables must be screwed or locked onto the casing.
 - Replace fuses only with IEC127 type and specified ratings.
 - It is not permitted to use repaired fuses or to short-circuit the fuse holder.
 - Never interrupt the protective conductor connection.
 - Surfaces which are equipped with the "HOT" mark (Diagram 2, below), rear panels or covers with cooling slits, cooling bodies and their covers, as well as tubes and their covers are purposely designed to dissipate high temperatures and should therefore not be touched.
 - High loudspeaker levels can cause permanent hearing damage. You should therefore avoid the direct vicinity of loudspeakers operating at high levels. Wear hearing protection if continuously exposed to high levels.

MAINS CONNECTION:

- The unit is designed for continuous operation.
- The set operating voltage must match the local mains supply voltage.
- The unit is connected to the mains via the supplied power unit or power cable.
- Power unit: Never use a damaged connection lead. Any damage must be rectified by a competent technician.
- Avoid connection to the mains supply in distributor boxes together with several other power consumers.
- The plug socket for the power supply must be positioned near the unit and must be easily accessible.

PLACE OF INSTALLATION:

- The unit should stand only on a clean, horizontal working surface.
- The unit must not be exposed to vibrations during operation.
- Place the product always in a way that the mains switch is easily accessible.
- Keep away from moisture and dust where possible.
- Do not place the unit near water, baths, wash basins, kitchen sinks, wet areas, swimming pools or damp rooms. Do not place objects containing liquid on the unit - vases, glasses, bottles etc.
- Ensure that the unit is well ventilated.
- Any ventilation openings must never be blocked or covered. The unit must be positioned at least 20 cm away from walls. The unit may only be fitted in a rack if adequate ventilation is ensured and if the manufacturer's installation instructions are followed.
- Keep away from direct sunlight and the immediate vicinity of heating elements and radiant heaters or similar devices.
- If the unit is suddenly moved from a cold to a warm location, condensation can form inside it. This must be taken into account particularly in the case of tube units. Before switching on, wait until the unit has reached room temperature.
- Accessories: Do not place the unit on an unsteady trolley, stand, tripod, base or table. If the unit falls down, it can cause personal injury and itself become damaged. Use the unit only with the trolley, rack stand, tripod or base recommended by the manufacturer or purchased together with the unit. When setting the unit up, all the manufacturer's instructions must be followed and the setup accessories recommended by the manufacturer must be used. Any combination of unit and stand must be moved carefully. A sudden stop, excessive use of force and uneven floors can cause the combination of unit and stand to tip over.
- Additional equipment: Never use additional equipment which has not been recommended by the manufacturer as this can cause accidents.
- To protect the unit during bad weather or when left unattended for prolonged periods, the mains plug should be disconnected. This prevents the unit being damaged by lightning and power surges in the AC mains supply.

Diagram 1



Diagram 2



WICHTIGE SICHERHEITSHINWEISE!

Bitte vor Gebrauch lesen und für späteren Gebrauch aufbewahren!

- Das Gerät wurde von HK AUDIO® gemäß IEC 60065 gebaut und hat das Werk in sicherheitstechnisch einwandfreiem Zustand verlassen. Um diesen Zustand zu erhalten und einen gefahrlosen Betrieb sicherzustellen, muss der Anwender die Hinweise und die Warnvermerke beachten, die in der Bedienungsanleitung enthalten sind. Das Gerät entspricht der Schutzklasse I (schutzgeerdet).
- DIE SICHERHEIT, ZUVERLÄSSIGKEIT UND LEISTUNG DES GERÄTES WIRD VON HK AUDIO® NUR DANN GEWÄHRLEISTET, WENN:
 - Montage, Erweiterung, Neueinstellung, Änderungen oder Reparaturen von HK AUDIO® oder von dazu ermächtigten Personen ausgeführt werden.
 - die elektrische Installation des betreffenden Raumes den Anforderungen von IEC (ANSI)-Festlegungen entspricht.
 - das Gerät in Übereinstimmung mit der Gebrauchsanweisung verwendet wird.

WARNUNG:

- Wenn Abdeckungen geöffnet oder Gehäuseeile entfernt werden, außer wenn dies von Hand möglich ist, können Teile freigelegt werden, die Spannung führen.
- Wenn ein Öffnen des Gerätes erforderlich ist, muss das Gerät von allen Spannungsquellen getrennt sein. Berücksichtigen Sie dies vor dem Abgleich, vor einer Wartung, vor einer Instandsetzung und vor einem Austausch von Teilen.
- Ein Abgleich, eine Wartung oder eine Reparatur am geöffneten Gerät unter Spannung darf nur durch eine vom Hersteller autorisierte Fachkraft (nach VBG 4) geschehen, die mit den verbundenen Gefahren vertraut ist.
- Lautsprecher-Ausgänge, die mit dem IEC 417/5036-Zeichen (Abb.1, s.unten) versehen sind können berührungsfähige Spannungen führen. Deshalb vor dem Einschalten des Gerätes Verbindung nur mit dem vom Hersteller empfohlenen Anschlusskabel zum Lautsprecher herstellen.
- Alle Stecker an Verbindungskabeln müssen mit dem Gehäuse verschraubt oder verriegelt sein, sofern möglich.
- Es dürfen nur Sicherungen vom Typ IEC 127 und der angegebenen Nennstromstärke verwendet werden.
- Eine Verwendung von geflickten Sicherungen oder Kurzschließen des Halteres ist unzulässig.
- Niemals die Schutzleiterverbindung unterbrechen.
- Oberflächen, die mit dem "HOT"-Zeichen (Abb.2, s.unten) versehen sind, Rückwände oder Abdeckungen mit Kühlschlitzen, Kühlkörper und deren Abdeckungen, sowie Röhren und deren Abdeckungen können im Betrieb erhöhte Temperaturen annehmen und sollten deshalb nicht berührt werden.
- Hohe Lautstärkepegel können dauernde Gehörschäden verursachen. Vermeiden Sie deshalb die direkte Nähe von Lautsprechern, die mit hohen Pegeln betrieben werden. Verwenden Sie einen Gehörschutz bei dauernder Einwirkung hoher Pegel.

NETZANSCHLUSS:

- Das Gerät ist für Dauerbetrieb ausgelegt.
- Die eingestellte Betriebsspannung muss mit der örtlichen Netzspannung übereinstimmen.
- Der Anschluss an das Stromnetz erfolgt mit dem mitgelieferten Netzteil oder Netzkabel.
- Netzteil: Eine beschädigte Anschlussleitung kann nicht ersetzt werden. Das Netzteil darf nicht mehr betrieben werden.
- Vermeiden Sie einen Anschluss an das Stromnetz in Verteilerboxen zusammen mit vielen anderen Stromverbrauchern.
- Die Steckdose für die Stromversorgung muss nahe am Gerät angebracht und leicht zugänglich sein.

AUFSTELLUNGORT:

- Das Gerät sollte nur auf einer sauberen, waagerechten Arbeitsfläche stehen.
- Das Gerät darf während des Betriebs keinen Erschütterungen ausgesetzt sein.
- Feuchtigkeit und Staub sind nach Möglichkeit fernzuhalten.
- Das Gerät muss immer so aufgestellt werden, dass der Netzschalter frei zugänglich ist.
- Das Gerät darf nicht in der Nähe von Wasser, Badewanne, Waschbecken, Küchenspüle, Nassraum, Swimmingpool oder feuchten Räumen betrieben werden. Keine mit Flüssigkeit gefüllten Gegenstände-Vase, Gläser, Flaschen etc. auf das Gerät stellen.
- Sorgen Sie für ausreichende Belüftung der Geräte.
- Eventuelle Ventilationsöffnungen dürfen niemals blockiert oder abgedeckt werden. Das Gerät muss mindestens 20 cm von Wänden entfernt aufgestellt werden. Das Gerät darf nur dann in ein Rack eingebaut werden, wenn für ausreichende Ventilation gesorgt ist und die Einbauanweisungen des Herstellers eingehalten werden.
- Vermeiden Sie direkte Sonneneinstrahlung sowie die unmittelbare Nähe von Heizkörpern und Heizstrahlern oder ähnlicher Geräte.
- Wenn das Gerät plötzlich von einem kalten an einen warmen Ort gebracht wird, kann sich im Geräteinnern Kondensfeuchtigkeit bilden. Dies ist insbesondere bei Röhrengeräten zu beachten. Vor dem Einschalten solange warten bis das Gerät Raumtemperatur angenommen hat.
- Zubehör: Das Gerät nicht auf einen instabilen Wagen, Ständer, Dreifuß, Untersatz oder Tisch stellen. Wenn das Gerät herunterfällt, kann es Personenschäden verursachen und selbst beschädigt werden. Verwenden Sie das Gerät nur mit einem vom Hersteller empfohlenen oder zusammen mit dem Gerät verkauften Wagen, Rack, Ständer, Dreifuß oder Untersatz. Bei der Aufstellung des Gerätes müssen die Anweisungen des Herstellers befolgt und muss das vom Hersteller empfohlene Aufstellzubehör verwendet werden. Eine Kombination aus Gerät und Gestell muss vorsichtig bewegt werden. Plötzliches Anhalten, übermäßige Kraftanwendung und ungleichmäßige Böden können das Umkippen der Kombination aus Gerät und Gestell bewirken.
- Zusatzvorrichtungen: Verwenden Sie niemals Zusatzvorrichtungen, die nicht vom Hersteller empfohlen wurden, weil dadurch Unfälle verursacht werden können
- Zum Schutz des Gerätes bei Gewitter oder wenn es längere Zeit nicht beaufichtigt oder benutzt wird, sollte der Netzstecker gezogen werden. Dies verhindert Schäden am Gerät aufgrund von Blitzschlag und Spannungstößen im Wechselstromnetz.

Abb.1



Abb.2



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A. NOTES ON RIGGING SAFETY

Please read these instructions carefully before you begin setting up the system!

1 USE

1.1 INTENDED USE

Specifications for intended use include the following:

- When rigging enclosures, make sure that the load is centered directly under the suspension point on the rigging frame.
- The rigging frame may be tilted (not to be confused with curved!) no more than 10% (6°). Note that the specifications for intended use require you to read and heed all of the operating instructions and comply with inspection and maintenance requirements.

Any use other than specified is unintended. The manufacturer shall not be liable for damages resulting from unintended use.

1.2 UNINTENDED USE

Improper use of rigging frames and incorrect handling of this load-carrying equipment can pose a serious danger. Never

- use rigging frames to exert diagonal force or tension on loads,
- use a crane to dislodge stuck or immovable loads,
- lift people,
- strike, knock or dent rigging frames,
- heat-treat or weld rigging frames,
- exceed the truss's maximum load-carrying capacity

Note that in addition to the above specifications, the operational safety regulations of VBG 9 (accident prevention regulations of the German employers' liability insurance association) apply.

2 WARRANTY AND LIABILITY

HK AUDIO is not responsible for damages caused by improper use or non-compliance with setup and operating safety specifications. HK AUDIO excludes all warranty and liability claims for personal injury and property damages attributable to one or several of the following:

- non-compliance with manual's instructions, invalidating all product liability and warranty claims
- unintended use of rigging frames
- non-compliance with operating manual instructions on transport, storage, first setup, operation, maintenance and repair
- unauthorized structural modifications performed on rigging hardware
- unauthorized changes made to parameters indicated in the operating manual
- inadequate or improper repairs

3. NOTES ON SAFETY FOR THE HK AUDIO CONTOUR ARRAY™

The HK AUDIO ConTour Array™ Rigging System's terms for use require you to install it according to the following specifications. Before you begin installation, ensure the pick-points (for example, a chain hoist) on the stage roof or the venue's ceiling comply with BGV-C1 accident prevention rules and the safety standards authority TÜV has certified them for the full load. Before every installation, inspect all parts to ensure they are in good working order. Take particular care to confirm that all Aeroquip tracks and connecting parts (cables, fittings) are free of damage.

Use only parts named in these instructions! Be sure to protect cabinets used outdoors against rain and moisture. Mount these enclosures according to the instructions in this installation manual. Keep all documents on the system in a safe place.

A thorough understanding of fundamental operating safety and safety rules is essential for handling and operating this rigging system safely. This operating manual contains key instructions on handling enclosures safely.

3.1 RESPONSIBILITIES OF THE OPERATOR

As the operator, allow only people to work with rigging frames who are

- 16 or older,
- physically and mentally able, familiar with the basic rules of industrial safety and accident prevention, and trained in handling rigging systems.

Be sure to review and confirm regularly your personnel's working safety awareness. In addition, task individuals with specific responsibilities for setting up, putting into service, operating, maintaining, and repairing equipment. Ensure a skilful and experienced technician supervises personnel training to handle the rigging system. Also ensure defects, flaws and other damages that could impede safety are repaired immediately.

3.2 MAINTENANCE, INSPECTION AND REPAIR OF HK AUDIO CONTOUR ARRAY™ RIGGING HARDWARE

Inspections

§ 39, VBG 9a of the German employers' liability insurance association's accident prevention rules requires a qualified expert to inspect load-bearing equipment and repair potential defects before you first commission it.

§ 40, VBG 9a requires load-bearing equipment to be inspected at least yearly for cracks. Inspect equipment used in dynamic applications for cracks every six months.

Maintenance

You may replace easily serviceable wearing or standard parts according to the manufacturer's instructions. Use original replacement parts only. Tighten screws and bolted connections whenever necessary.

Repair

If parts of the load-bearing equipment become deformed, it is up to the manufacturer to decide if they are repairable. Only the manufacturer may weld and repair load-bearing equipment.

3.3 TECHNICAL SPECIFICATIONS OF HK AUDIO CONTOUR ARRAY™ RIGGING HARDWARE

Load-carrying capacity: 150 kg/ 330 lbs.
Ambient temperature when in operation:
min -10° C, max + 60° C

3.4 MAXIMUM NUMBER OF FLOWN CONTOUR ARRAY™ ENCLOSURES

Fly no more than five (5) ConTour Array™ CTA 208 mid-/high-range units in stacked array from a rigging frame.

Caution: Flying more than five CTA 208 cabinets in stacked array voids the operating license!

3.5 PICK-POINTS FOR FLYING CONTOUR ARRAY™ ENCLOSURES

Use only the rigging frame's shackles in combination with the holes in the center rail to attach motors, chain hoists and straps!

- Clear the area immediately below arrays of people before raising or lowering loads.
- Lift and lower flown mid/high enclosures smoothly, avoiding abrupt stops or jerky motions.
- Secure the flown array with straps to prevent it from moving, for example, in case of wind.

3.6 STRUCTURAL MODIFICATIONS OF CONTOUR ARRAY™ RIGGING HARDWARE

Do not modify the structure without the manufacturer's consent. This also applies to welding supporting parts. Structural changes require the manufacturer's written approval. Use original replacement and wearing parts only.

3.7 ORIGINAL HK AUDIO ACCESSORIES

Use original HK AUDIO parts only! The safety standards authority TÜV has not certified any other parts for use! Always install parts according to these installation instructions! Store all documents on the system in a safe place!

3.8 INITIATION AND OPERATION

§ 39, VBG 9a of the German employers' liability insurance association's accident prevention rules requires a qualified expert to inspect load-carrying equipment and repair potential defects before you first commission it.

§ 41 VBG 9a requires a non-routine inspection on load-carrying equipment after damage, repair work and other incidents that can affect load-carrying capacity.

This is to certify that

**HK AUDIO® CONTOUR ARRAY™
CTA 208 MID/HIGH UNIT**

**HK AUDIO® CONTOUR ARRAY™
CTA 118 SUB ACTIVE SYSTEM BASS**

complies with the provisions of the Directive of the Council of the European Communities on the approximation of the laws of the Member States relating to electromagnetic compatibility (EMC Directive 89/336/EEC) and the low voltage Directive (73/23/EEC).

This declaration of conformity of the European Communities is the result of an examination carried out by the Quality Assurance Department of STAMER GmbH in accordance with European Standards EN 50081-1, EN 50082-1 and EN 60065 for low voltage, as laid down in Article 10 of the EMC Directive.

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To the best of our knowledge, our products do not contain any substances in concentrations or applications the placing on the market of which is banned under the applicable requirements of the directive 202/95/EC (RoHS).

B. CONTOUR ARRAY™ SPEAKERS



Fig. 1: CTA 208

1. THE CTA 208 MID/HIGH UNIT

Design and Construction

The CTA 208 Mid/High unit's top and bottom panels slope at an angle of 4.5°. Water-repellent, black PU lacquer coats the enclosure made of 18 mm, 13-ply birch plywood. Your choices of array curving angles (or splay) are 0°, 3°, 6° and 9°. The baffle board cover consists of a metal grille; found behind it are two CD horns equipped with acoustical lens for the four 1" drivers.

The CTA 208 weighs 29 kg. It is 51 cm wide, 52.5 cm high and 34.6 cm deep (including rigging attachments). Two grips on the side panels simplify transport and set-up.

Fully integrated rigging attachments comprising three quick-release pins and three rigging connectors, two mounted on the sides and one in the rear, serve to fly the mid/high units.

Electrical and Acoustical Data

The CTA 208 enclosure features two 8" cone chassis speakers and four 1" B&C high frequency drivers with a front-mounted acoustical lens in a CD horn configuration. An internal passive crossover with a crossover frequency of 2 kHz addresses the drivers via a special acoustic lens. The CTA 208 enclosure's nominal electrical power-handling is 500 watts RMS at 8 ohms impedance. It produces 105 dB (1W@1m) sound pressure, measured under half-space conditions. Maximum SPL measured under the same conditions at one meter is 134 dB at 10% THD. The CTA 208 radiates at a horizontal angle of 100°. Frequency response ranges from 95 Hz to 19 kHz (± 3 dB).

Connections

The ports are out of harm's way on a recessed connector panel on the CTA 208's back. It offers two Speakon® NL 4 connectors. Pin assignments are pin 1+ = mid/high +, 1- = mid/high-.

Caution: Please connect just one CT 208 to each CTA 118 Sub enclosure. The second port serves to connect a power amp in parallel (up to two CTA 208 at 4 ohms).

1.1 SPECIFICATIONS, CTA 208

A professional two-way system featuring cylindrical wave technology, this cabinet serves to set up vertical line arrays and project a coherent wavefront across the entire frequency range. The precision-tuned enclosure sports two 8" midrange speakers. Four 1" high-frequency drivers address two constant directivity horns with 100° horizontal directivity via a special acoustic lens. Vertical directivity depends on the number of CTA 208s in use.

The housing is made of 15/18 mm birch plywood coated with black PU varnish. Its fully integrated rigging hardware adjusts to four 0°, 3°, 6° and 9° angles for setting up line arrays. An integrated pole mount offers two tilt angles of 3° and 11°. An impact-resistant steel grille covers the front.

The active CTA 118 Sub system subwoofer with an integrated DDO-Pro™ Controller drives the enclosure. CTA 208's frequency response (± 3 dB) ranges from 95 hertz to 19 kHz. Axial sensitivity is 105 dB, measured under half-space conditions at @ 1W / 1m. Maximum SPL measured under the same conditions with two CTA 208s is 134 dB at 10% THD. Each unit's nominal power handling is 500 watts RMS at 8 ohms.

Connectors: 1 Neutrik NL 4 Speakon®.

Dimensions (W x H x D): 51 x 52.5 x 34.6 cm

Weight: 29 kg

Model: HK AUDIO CTA 208

1.2 THE CTA 208 ENCLOSURES' TECHNICAL DATA

Nominal power handling/program/peak:	500 W RMS /1000 W/ 1500 W
Frequency response -10 dB 3):	80 Hz - 20 kHz
Frequency response +/-3 dB 3):	95 Hz - 19 kHz
Directivity:	100° horizontal
Sensitivity 1W@1m 1):	105 dB
Max. SPL calculated 1):	138 dB 2)
Max. SPL peak 1):	136 dB 3)
Max. SPL 1):	134 dB @ 10% THD (200 Hz- 5 kHz) 3)
Nominal impedance:	8 ohms
Woofer/midrange speaker:	2x 8"
High-frequency driver:	4x 1", 2" voice coil
Crossover frequency:	2 kHz, 12 dB/ octave
Connectors:	2x Speakon® NL 4
Housing (birch):	15/18 mm (1/2"), 9/13-ply
Angles up:	2x 4.5°
Finish:	Black 2-component PU lacquer
Grille:	Metal grille with black acoustic foam
Handles:	Two slot grips routed into the side panels
Rigging hardware:	DualCurve™, integrated with quick-release pins
Pole mount:	HK AUDIO DuoTilt™
Weight:	29 kg/ 63.8 lbs.
Dimensions (W x H x D):	51 x 52.5 x 34.6 cm; 20" x 20 2/3" x 13 2/3"
Accessories:	Touring flight case (2 CTA 208), rigging frame

1) Measured under half-space conditions 2) Based on peak power handling 3) Measured with 2 CTA 208s

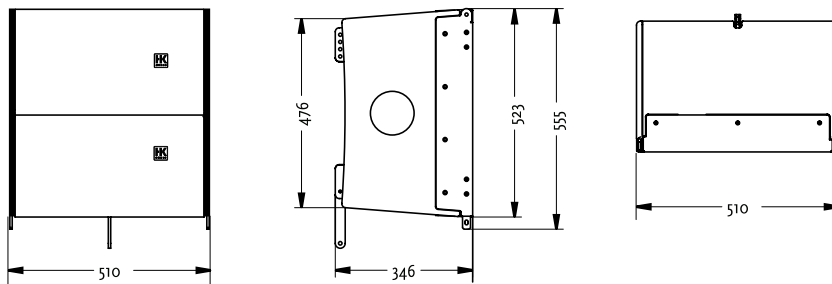


Fig. 2: CTA 208 housing dimensions in mm



Fig. 3: CTA 118 Sub

2. CTA 118 SUB

Design and Construction

Made of 18 mm 13-ply birch plywood, water-repellent, black PU lacquer coats the CTA 118 Sub enclosure. A robust metal grille backed with laminated acoustic foam rubber covers the baffle board.

The CTA 118 Sub weighs 59 kg. It is 51 cm wide, 73 cm high and 71 cm deep. Three slot grips routed into the side panels enable easy transport and set-up; a recessed handle is on the lid. The active circuitry resides in a separate chamber at the back of the enclosure. A removable dolly protects the electronic components and simplifies transport.

Electrical and Acoustical Data

The CTA 118 Sub enclosure features an 18" woofer. The CTA 118 Sub enclosure's nominal electrical power-handling is 700 W RMS at 8 ohms impedance. It produces 101 dB (1W@1m) sound pressure, measured under half-space conditions. Maximum SPL measured under the same conditions at one meter is 130 dB at 10% THD. The CTA 118 Sub's frequency response ranges from 42 Hz to fx (+/-3 dB). The two integrated PWM power amps for the subwoofer and the mid/high output deliver 1000 W EIAJ @ 4 ohms each.

Connections

Ports are out of harm's way on a recessed connector panel on the CTA 118 Sub's back. It offers two Speakon® NL 4 connectors. Pin assignments are pin 1+ = mid/high +, 1- = mid/high. A Powercon mains socket with another Powercon output connects to the power supply. A female XLR and a male XLR port serve to route signals. Two Neutrik Ethercon ports serve to network several CTA 118 Subs.

2.1 SPECIFICATIONS, CTA 118 SUB

A professional active subwoofer equipped with a DDO-Pro™ Controller and a 1000 W EIAJ PWM power amp, the CTA 118 Sub delivers excellent impulse response and exceedingly dynamic low-frequency response. It features an 18" woofer mounted in a precision-tuned bass reflex enclosure. Another 1000 W PWM power amp drives HK AUDIO CTA 208 or ConTour Series™ speakers. The rectangular block housing is made of 18 mm birch plywood coated with black PU lacquer. An impact-resistant steel grille covers the front. A removable dolly protects the electronic components and simplifies transport.

Its frequency response ranges from the crossover frequency down to 42 Hz (-3 dB) and 36 Hz (-10 dB). Maximum SPL under half-space conditions is 130 dB at 10% THD.

Connectors: 1 Neutrik NL 4 Speakon® output, 1 XLR female, 1 XLR male, 2 Powercon, 2 RJ45 Ethercon

Dimensions (W x H x D): 51 x 73 x 71 cm

Weight: 59 kg

Model: HK AUDIO CTA 118 Sub

2.2 TECHNICAL DATA, CTA 118 SUB

Integrated Power Amps:	
Output power, Subwoofer:	1000 W EIAJ, Class D @ 4 ohms
Output power, Mid/High:	1000 W EIAJ, Class D @ 4 ohms
Protection circuits:	DDO Pro™ Limiter, thermal protect, short-circuit
Line In/ Through:.....	Female XLR, electronically balanced & floating
Mid/High Out:	1 Speakon® NL 4
Mains In/ Out:	2 Powercon
Networking/ Communication:	DDO Pro™ Net/RS 485 Ethercon
Woofers:	18"
Frequency response - 10 dB:	36 Hz - fx
Frequency response +/- 3 dB:	42 Hz - fx
Sensitivity 1W@1m 1):	101 dB
Max. SPL calculated 1):	134 dB 2)
Max. SPL peak 1):	133 dB
Max. SPL 1):.....	130 dB @ 10% THD (50 Hz- 200Hz)
Housing (birch):.....	18 mm (3/4"), 13-ply
Surface coating:.....	Black 2-component PU lacquer
Grille:	Metal grille with black acoustic foam
Handles:	6 slot grips routed into the side panels, 1 on the lid
Pole mount:.....	M20
Weight:	59 kg/ 129.8 lbs.
Dimensions (W x H x D):	51 x 73 x 71 cm, 20" x 28 3/4" x 27 7/8"
Accessories:.....	Protective cover, stack base plate

1) Measured under half-space conditions 2) Based on peak power handling

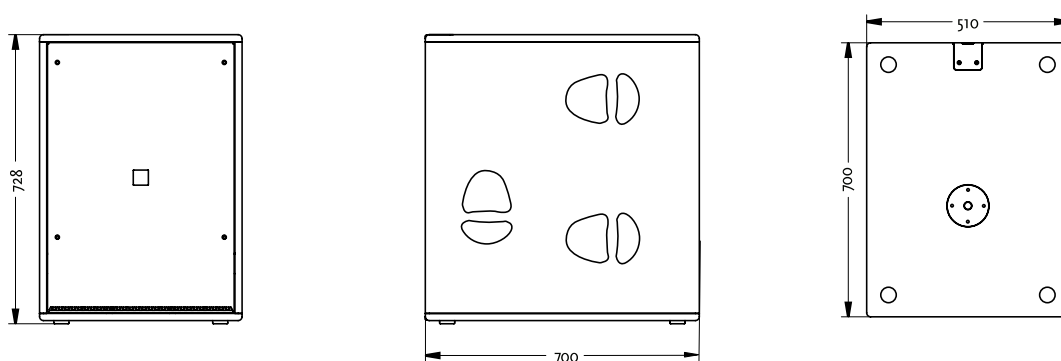


Fig. 4: CTA 118 Sub housing dimensions in mm

C. RIGGING CONTOUR ARRAY™ ENCLOSURES

PLEASE ALSO READ THE NOTES ON RIGGING SAFETY IN CHAPTER A OF THIS MANUAL.

1. COMPONENTS AND APPLICATIONS OF CONTOUR ARRAY™ RIGGING HARDWARE



Fig. 5: Integrated rigging attachments

ConTour Array™ rigging hardware consists of the following parts:

- a rigging frame with two shackles for attaching motors or chain hoists.
- integrated rigging points on the side and back for flying ConTour Array™ CTA 208 Mid/High units.
- three quick-release pins per CTA 208 for connecting the enclosure to the rigging frame.

Tip: If you intend to rig additional enclosures, we recommend that you attach all the required speaker cords to the rigging frame now because this task becomes more difficult as the array grows higher. Be sure to use cords of sufficient length!

1.2 SETTING THE DUALCURVE™ ANGLE

Curve the two CTA 208 cabinets using the rear connector component. You have four angles to choose from, 0°, 3°, 6° and 9°. Remove the pin on the rear, insert lead the connector into the rigging track and secure the connector component with the pin as pictured.

1.3 RIGGING ADDITIONAL CTA 208 MID/HIGH ENCLOSURES

Hoist the mounted CTA 208 Mid/High cabinets to a height that allows you to roll a second case holding two enclosures under the array. Remove the two front pins from the enclosure you wish to mount. Move the second case with two additional CTA 208s into position. Slowly lower the top two cabinets until the two front connectors engage. Insert the two front pins first, ensuring they engage fully and securely (see Figure 11 a). You may have to shift the two enclosures slightly to ease the pins into position. To attach the rear connector component, you must swivel it out of the track and ensure it faces down (see Figure 11 b). Insert the pin through the hole labeled 0°, 3°, 6° or 9° as required.

Hoist the array consisting of four CTA 208 enclosures high enough to remove it fully from the case. Secure the hoisted array against blasts of wind or unintentional twisting to prevent it from moving.



Fig. 6: ConTour Array™ rigging frame

Important note on pins: Quick-release pins connect rigging hardware and speaker enclosures, and their proper function must be tested and verified. Pins must always engage fully in the (fitted) hole. Under no circumstances may these pins release on their own when subjected to tractional forces. The nib in the center of the pinhead must always be depressed to insert pins; it releases the ball detents in front. Once the pin engages in the hole, the nib must ease back to its initial position.

1.1 MOUNTING THE RIGGING FRAME

It takes two people to perform these tasks. Remove the quick-release pins from the enclosure. Set the rigging frame on the enclosure. First attach the two front connectors. Turn the rigging frame's connector component down and slide it into the rear rigging connector.

Insert the rear pin through the hole labeled 0°. Attach to the rigging frame the shackle that accepts the motor hook. Your choice of pick point depends on how sharply you aim to curve the array later.

Note: Depending on application, you may not be able to select a pick point with a shackle. In this case, use two shackles and a suitable O-ring as shown in Figure 9.

Check all pins on the top rigging frame to ensure they seat firmly. Attach the motor to the shackle.

Important: Ensure the motor's chain bag hangs freely and does not rest on the rigging frame!

Engage the motor to lift the cabinet from the case. Roll the case off to the side. Remove the two front pins from the enclosure you wish to mount and fold down its connector component. Now you can rig further cabinets.



Fig. 7: Shackles for attaching motors, chain hoists



Fig. 8: Mounting the rigging frame



Fig. 9: Setting an intermediate angle



Fig. 10: Hoisting the mounted CTA 208 enclosure



Fig. 11 a, b, c, d, e: Rigging additional CTA 208 enclosures

2. GROUND STACKING

Depending on application, use two or three ConTour Array™ subwoofers as the stack's base. Set the desired number of subwoofers on top of one another.

Caution:
Secure the ground stack to prevent it from tipping! Use the M10 bushings on the back of the CTA 118 subwoofer and the ground-stack connectors to do this.

Mount mid/high units individually, one after another, on the top CTA 118 Sub. Use the ConTour Array™ stack plate as the base and connector to the subwoofer. Attach it to the CTA 118 Sub's pole mount using the M20 thumb screw. The stack plate lets you easily adjust mid/high units without having to move the subwoofer. On this stack plate, you can freely select the desired down-tilt between 0° and 9° in 1.5° increments.

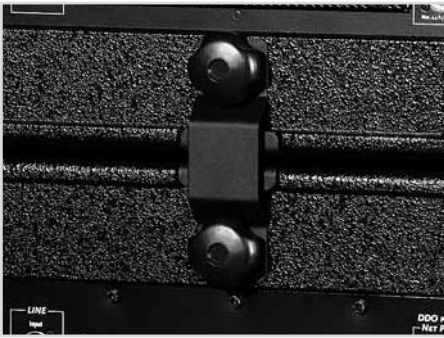


Fig. 12 a, b: ConTour Array™ ground stack connectors



Fig. 13: ConTour Array™ stack plate



Fig. 14 a, b: Attaching the stackplate to the CTA 118 Sub

3. MAINS AND GENERATOR POWER SUPPLY

Connect no more than two CTA 118 Subs to one mains phase (16 A). If you use the Powercon Link port, connect no more than one further CTA 118 Sub. The 13 A limit on maximum input current (see label) applies to Great Britain because UK power cables are approved to 13 A only. 16 A current is permissible in other countries using EU power cables.

Caution: If you must power the CTA 118 Sub with a generator, ensure the generator is running before you switch the system on. Never switch systems off and on with the help of the generator! This can damage the PWM power amps' switching power supply!

Note: The Powercon Link is not available for 100-120-volt units.



Fig. 15 a,b,c: CTA 208 Mid/High stack

D. THE CONTOUR ARRAY™ DDO-PRO™ CONTROLLER

1. THE DDO-PRO™ NET PORT

Net Ports link several CTA 118 Subs in a communication network. Use CAT 5 network cables or professional Ethercon cables with a metal plug to do this. Connect the first CTA 118 Sub's output to the next unit's input, and so forth.

Note: This is purely a data interface. The DDO-Pro™ Net Port does not send audio signals.

If you wish to adjust controller settings (for example, filter, gain or delay), you can do this on any CTA 118 Sub's control panel. Automatically, the unit becomes the master controller and sends parameter changes to all networked CTA 118 Subs (up to 32 units).

Note: It does not send "Utilities" menu settings.

Caution: If you wish to use another CTA 118 Sub and a ConTour Series™ cabinet (CT 108, CT 112, CT 115) for near-fill or in-fill applications alongside CTA 208 speakers in a larger rig, DO NOT network it! Otherwise the connected CT 108, CT 112 or CT 115 will adopt the settings entered for the mid/high array.

2. AUDIO SIGNAL ROUTING

Use an XLR cord to connect the signal source to the first CTA 118 Sub's signal input. If you wish to connect further CTA 118 Subs to the source, do this using the Signal Through ports. The XLR port's pin assignments are: pin 1 = ground, 2=+, 3=-. Be sure to read section 3.1 covering maximum input signal level and digital clip error and heed these guidelines.

3. HANDLING THE DDO-PRO™ CONTROLLER

Four keys operate the device - Menu, Enter, Up and Down.

Menu/ Esc:

This key accesses the controller's menu structure and exits a menu level.

Enter:

This key confirm changes and access menu levels.

Up and Down:

These keys navigate within a menu level and increase and decrease displayed values. Please refer to the menu structure quick guide at the end of the chapter to learn more.

3.1 LEVEL

You can adjust input levels from -96 dB to +6 dB in 0.5 dB steps. Use the Up or Down keys to select the gain setting and confirm your selection with Enter.

Note: The Level parameter adjusts the level after the analog-to-digital converter to balance out varying (system) levels. Level does not influence the input signal's volume in front of the analog-to-digital converter. If the display reads "Digital Clip?! Check Input!" be sure to reduce the level at the mixing console. In this case, the signal is saturating the analog-to-digital converter, distorting the signal's rectangular waveform to create square waves. This sounds extremely annoying and will eventually destroy the power amp and speakers.

Tip: If you wish to reduce the volume of the lower mid/high unit in the array - say, because it hangs low and listeners are close to this unit - you can use Level to do this. However, Level also affects the subwoofer's volume. Increase Sub Level by the same value to compensate for the difference.

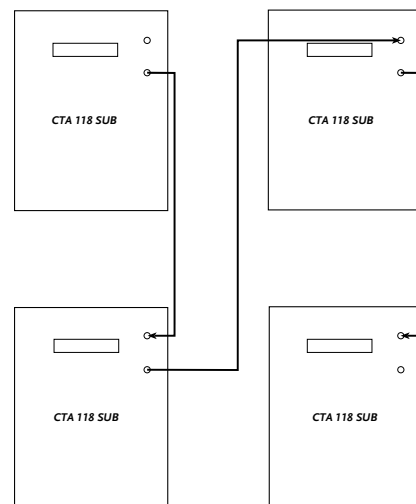


Fig. 16: DDO-Pro™ network



Fig. 17: DDO-Pro™ Controller panel

Digital Clip?!
Check Input!

The AD converter's Digital Clip indicator



2 x CT 108



1 x CT 112



1 x CT 115



1 x CTA 208



4 x CTA 208

3.2 KEY LOCK – PREVENTING UNAUTHORIZED ACCESS

Locking Keys

You can lock the CTA 118 Sub's keys to prevent unauthorized or unintentional access. To lock keys, press the MENU key, use the arrow up and down keys to select the menu option Keylock (if not already selected) and press the ENTER key. The LCD now reads Are you sure? Press the ENTER key again to lock keys.

Unlocking Keys

To unlock keys, press the MENU key, use the arrow up and down keys to select the menu option Keylock (if not already selected), and press the ENTER key. The LCD now reads Are you sure? Press the ENTER key again to unlock keys.

3.3 UTILITIES

Sync Remote

When you confirm the Sync Remote command, the unit sends the current settings to all networked controllers. The control panel currently in use is the master. This feature comes in handy if the network connection fails.

Noise Reduction

You can activate Noise Reduction on demand. It mutes signal paths when the rig is off-line. The unit ships with this feature deactivated.

LCD Contrast

Adjust the display's contrast to taste using the Up or Down keys. Confirm your selection with Enter.

Factory Reset

When you confirm this function, ALL settings reset to their factory defaults. For example, you could use it to set all delays to 0 ms and levels to 0 dB.

Delay Base

Select the preferred delay display reading - meters (m), feet (ft) or milliseconds (ms). Select the option with the Up or Down keys and confirm your selection with Enter.

3.4 SUB DELAY

Sub Delay is a time alignment tool, that is, it compensates differences in mid/high units' and subwoofers' response times. Like Sub Level, Sub Delay controls subwoofers' and mid/high units' relative delay.

For example, if you place subwoofers well in front of mid/high units, you must delay the subwoofers accordingly. Do this by adjusting a positive delay value in the Sub Delay menu. If you place subwoofers well behind mid/high units, you must enter negative values to compensate.

Caution: Negative Sub Delay values delay the signal path from the subwoofer to the mid/high unit, causing overall system latency! Experience has shown that this method compensates differences of 15 ms or 5 m without latency problems. The control range sweeps from -30 ms to 29.6 ms.

3.5 DELAY

Delay controls the overall delay of a system comprised of subwoofers and mid/high units. The highest setting is 72.6 ms.

3.6 SUB LEVEL

You can adjust the balance of volumes between the subwoofer and mid/high unit from -12 dB to +6 dB in 0.5 dB steps. Use the Up or Down keys to select the Sub Level and confirm your selection with Enter.

3.7 SYSTEM SETUP

A special filter preset is available for each configuration (see fig. 19 a-f). Be sure to assign the same preset to each DDO-PRO™ controller for every configuration (1 to 4 CTA 208s). Use the Up or Down keys to select the right preset and confirm your selection with Enter.

Fig. 18 a, b, c, d, e, f: System Setups

3.8 QUICK GUIDE TO THE V1.01 CONTROLLER'S MENU STRUCTURE

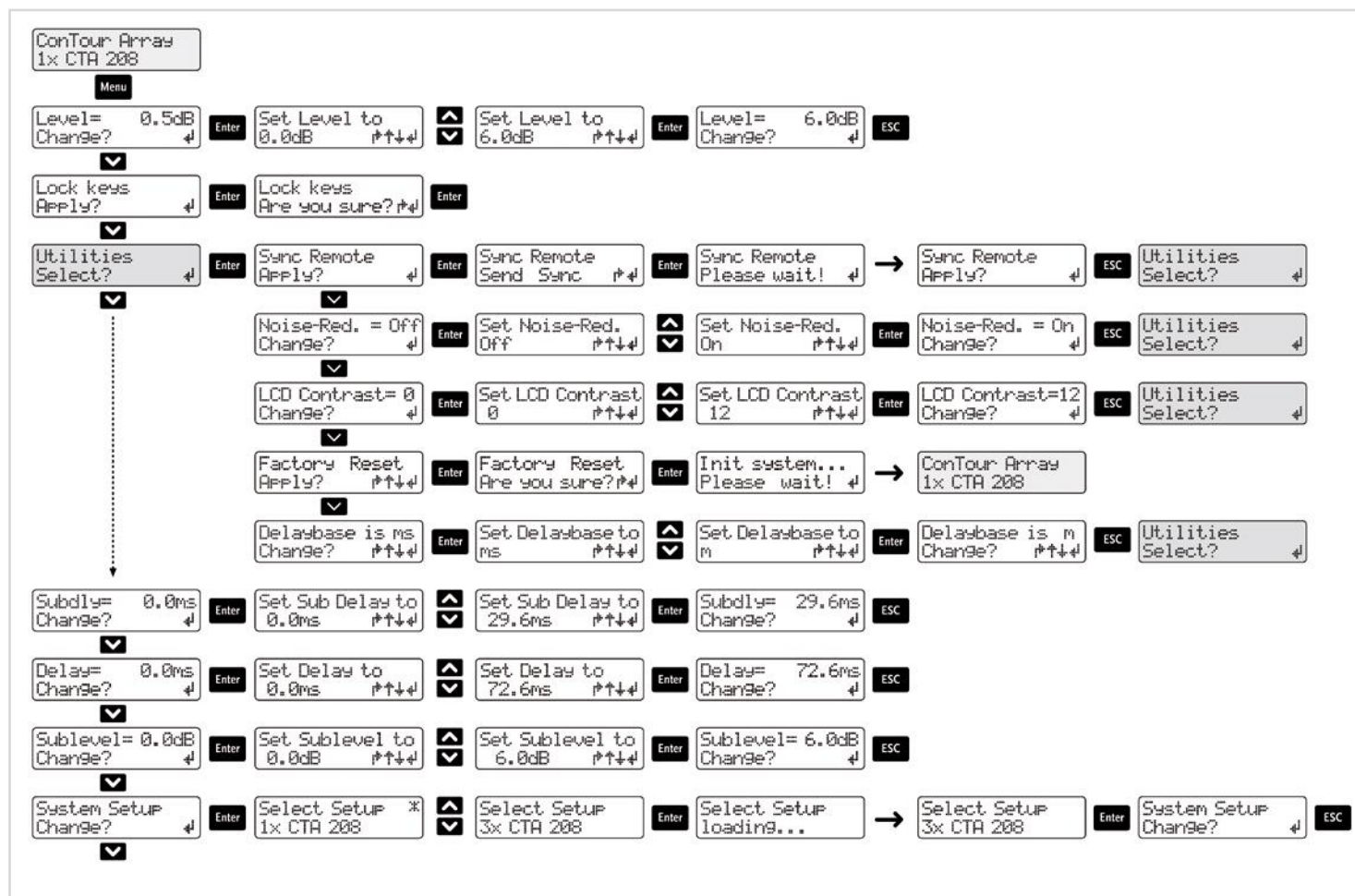


Fig. 19: Menu structure of the DDO-PRO™ Controller

4. TECHNICAL SPECIFICATIONS

DDO-PRO™ CONTROLLER:

Display:	2x 16 text display
Inputs / outputs:	1 / 2
Sampling frequency:	48 kHz
Bandwidth:	56 bits
Frequency range:	20 Hz to 20 kHz, +/- 0.5 dB
Dynamic range:	>112 (A-weighted, 22 kHz bandwidth)
Interface:	RS 485 Ethercon
Gain:	-96 dB to +6 dB in 0.5 dB steps
Sub Level:	-12 dB to +6 dB in 0.5 dB steps
Delay:	Up to 72 ms
Limiter:	HK AUDIO DDO™ Multi-Band Limiter

E. SERVICE

1. MAINTENANCE

Regularly check the vents to ensure air flows freely in and out. Clean the foam rubber filters whenever necessary. Remove the vent grille on the back to do this.

2. CONTOUR ARRAY™ SPARE PARTS

Note:

- If your equipment needs service, please turn to your HK AUDIO dealer or the HK AUDIO distributor in your country. They stock the required spare parts.
- In the event of a defect, always indicate the defective device's serial number. This way the HK AUDIO service team can immediately find out if an update is available for your product.
- Use only original HK AUDIO replacement speakers and parts! Most were developed especially for HK AUDIO products and are not available direct from speaker manufacturers!

3. REPLACING LOUDSPEAKERS AND VOICE COILS

3.1 1", 8" AND 18" SPEAKERS

Proceed as follows to replace the given speaker:

- Unfasten and remove the Phillips screws holding the grille in place. Remove the grille. These screws are on the CT 118 Sub's front panel and the CTA 208's side and bottom panels.
- Unfasten and remove the hex head bolts holding the speaker in place.
- The speaker is now detached. Disconnect the speaker wires.

Caution: When installing and connecting a replacement speaker, ensure the polarity is correct! Red= positive, black = negative

3.2 THE DRIVERS' VOICE COILS

Proceed as follows to replace the drivers' voice coils:

- Remove the front grille as described above.
- Unfasten the four screws holding the horn yoke and remove the horn and driver from the baffle. Disconnect the wires connecting the driver. Ensure correct polarity when installing and connecting a replacement speaker! Red= positive, black = negative
- Unfasten the voice coil housing's hex head bolts using a 3 mm wrench.
- Take the lid off the voice coil housing.
- Replace the voice coil.

Important note: Replace the voice coil in a clean working environment only. Be sure to keep dust and dirt out of the open driver. If despite your precautions particles manage to get in, use a strip of adhesive tape to remove them or carefully blow compressed air into the back of the driver to whisk the particles out. When installing the new voice coil, ensure it is centered properly. Proceed as follows to check this:

Close the cover of the voice coil housing and reconnect the cords (red = positive, black = negative). Feed a sine wave signal with a frequency between 1000 Hz and 1500 Hz into the mid/high enclosure's input. Sweep through the frequency. If you hear abrasive noises like crackling or scratching, the voice coil is not centered properly. Reopen the voice coil chassis and turn the voice coil a bit until it renders the signal cleanly!

4. CHECKING SPEAKERS' PHASE

As a precaution, always check the components' phase using a suitable phase-checker after replacing speakers. To do this, connect the CTA 208 mid/high unit to the CTA 118 Sub using a Speakon® cord.

Note: If you are checking the CTA 208 mid/high unit in passive mode with an external power amp, you will get a different phase reading! Therefore always use the CTA 118 Sub for phase checks.

Connect the phase-checker to the CTA 118's signal input. It may be advisable to lower the input level on the DDO-Pro™ Controller!

The speakers' phases should read as follows:

With CTA 118 Sub:

18" woofer:	In phase (+)
8" speaker:	Out of phase (-)
1" driver:	In phase (+)

CTA 208 passive:

8" speaker:	In phase (+)
1" driver:	Out of phase (-)



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