



User's Manual



UX-30A / UX-221A / UX-218A / UX-218A-R



Antes de utilizar el equipo, lea la sección "Precauciones de seguridad" de este manual. Conserve este manual para futuras consultas.

Before operating the device, please read the "Safety precautions" section of this manual. Retain this manual for future reference.

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El signo de exclamación dentro de un triángulo indica la existencia de importantes instrucciones de operación y mantenimiento en la documentación que acompaña al producto. Conserve y lea todas estas instrucciones. Siga las advertencias. **ATENCIÓN:** Es un producto clase A, por lo que en entornos domésticos puede causar radio-interferencias, en cuyo caso el usuario tendrá que tomar las medidas oportunas. De acuerdo con EN55103-2, usar el equipo sólo en entornos E1, E2, E3 ó E4.



The exclamation point inside an equilateral triangle is intended to alert the users to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product. Heed all warnings. Follow all instructions. Keep these instructions.

WARNING: This is a class A product. In a domestic environment this product may cause radio interferences in which case the user may be required to take adequate measures. Use this product only in E1, E2, E3 or E4 environments according to EN55103-2.

No desconecte la tierra en el conector de alimentación pues es peligroso e ilegal. Equipo de Clase I. El producto debe ser conectado a un enchufe con toma de tierra. Sólo use este equipo con el cable de red de alimentación adecuado para su país.

El signo del rayo con la punta de flecha, alerta contra la presencia de voltajes peligrosos no aislados. Para reducir el riesgo de choque eléctrico, no retire la cubierta.



Do not remove mains connector ground, it is dangerous and illegal. Class I device. The product must be connected to a mains socket outlet with protective earth connection. Only use this equipment with an appropriate mains cord for your country.

The lightning and arrowhead symbol warns about the presence of uninsulated dangerous voltage. To reduce the risk of electric shock, do not remove the cover.

No instale el aparato cerca de ninguna fuente de calor como radiadores, estufas u otros aparatos que produzcan calor. Debe instalarse siempre sin bloquear la libre circulación de aire por las aletas del radiador.

No exponga este equipo a la lluvia o humedad. No use este aparato cerca del agua (piscinas y fuentes, por ejemplo). No exponga el equipo a salpicaduras ni coloque sobre él objetos que contengan líquidos, tales como vasos y botellas. Equipo IP-20.

Este símbolo indica que el presente producto no puede ser tratado como residuo doméstico normal, sino que debe entregarse en el correspondiente punto de recogida de equipos eléctricos y electrónicos.



Do not install near any heat sources such as radiators, heat registers, stoves or other apparatus that produce heat. The circulation of air through the heatsink must not be blocked.

Do not expose this device to rain or moisture. Do not use this apparatus near water (for example, swimming pools and fountains). Do not place any objects containing liquids, such as bottles or glasses, on the top of the unit. Do not splash liquids on the unit. IP-20 equipment.

This symbol on the product indicates that this product should not be treated as household waste. Instead it shall be handed over to the applicable collection point for the recycling of electrical and electronic equipment.

Equipo diseñado para funcionar entre 15°C y 45°C con una humedad relativa máxima del 95%, con un rango de $\pm 10\%$ de la tensión nominal de alimentación indicada en la etiqueta trasera (según IEC 60065). Si debe sustituir un fusible preste atención al tipo y rango.

El cableado exterior conectado al equipo requiere de su instalación por una persona instruida o el uso de cables flexibles ya preparados.

Si el aparato es conectado permanentemente, la instalación eléctrica del edificio debe incorporar un interruptor multipolar con separación de contacto de al menos 3mm en cada polo.

Para desconectar el dispositivo debe usar el enchufe. Desconecte este aparato durante tormentas eléctricas, terremotos o cuando no se vaya a emplear durante largos periodos.

No emplace altavoces en proximidad a equipos sensibles a campos magnéticos, tales como monitores de televisión o material magnético de almacenamiento de datos.



Working temperature ranges from 15°C to 45°C with a relative humidity of 95%, with $\pm 10\%$ of the rated main voltage value indicated on the rear label (according to IEC 60065). If a fuse needs to be replaced, please pay attention to correct type and ratings.

The outer wiring connected to the device requires installation by an instructed person or the use of a flexible cable already prepared.

If the apparatus is connected permanently, the electrical system of the building must incorporate a multipolar switch with a separation of contact of at least 3mm in each pole.

To disconnect the device, you should use the mains plug. Unplug this apparatus during lightning storms, earthquakes or when unused for long periods of time.

Do not place loudspeakers in proximity to devices sensitive to magnetic fields such as television monitors or data storage magnetic material.

No emplace el producto sobre un carro, base trípode, soporte o mesa inestables. La unidad puede caer, causando serias heridas y dañándose gravemente.

El colgado del equipo sólo debe realizarse utilizando los herrajes de colgado recomendados y por personal cualificado. No cuelgue la caja de las asas.

No existen partes ajustables por el usuario en el interior de este equipo. Cualquier operación de mantenimiento o reparación debe ser realizada por personal cualificado. Es necesario el servicio técnico cuando el equipo se haya dañado de alguna forma, como que haya caído líquido o algún objeto en el interior del aparato, haya sido expuesto a lluvia o humedad, no funcione correctamente, haya recibido un golpe o su cable de red esté dañado.

Limpie con un paño seco. No use limpiadores con disolventes.

Do not place the product on an unstable platform of any kind. The unit may fall, causing serious injuries and causing serious damage.

The appliance should be flown only from the rigging points and by qualified personnel. Do not suspend the box from the handles.

No user serviceable parts inside. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as 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.

Clean only with a dry cloth. Do not use any solvent based cleaners.

GARANTÍA

Todos nuestros productos están garantizados por un periodo de 24 meses desde la fecha de compra.

Las garantías sólo serán válidas si son por un defecto de fabricación y en ningún caso por un uso incorrecto del producto.

Las reparaciones en garantía pueden ser realizadas, exclusivamente, por el fabricante o el servicio de asistencia técnica autorizado.

Otros cargos como portes y seguros, son a cargo del comprador en todos los casos.

Para solicitar reparación en garantía es imprescindible que el producto no haya sido previamente manipulado e incluir una fotocopia de la factura de compra.

WARRANTY

All our products are warranted against any manufacturing defect for a period of 2 years from date of purchase.

The warranty excludes damage from incorrect use of the product.

All warranty repairs must be exclusively undertaken by the factory or any of its authorised service centers.

To claim a warranty repair, do not open or intend to repair the product.

Return the damaged unit, at shippers risk and freight prepaid, to the nearest service center with a copy of the purchase invoice.



DECLARACIÓN DE CONFORMIDAD DECLARATION OF CONFORMITY

DAS Audio Group, S.L.

C/ Islas Baleares, 24 - 46988 - Pol. Fuente del Jarro - Valencia. España (Spain).

Declara que *UX-221A, UX-218A, UX-218RA* y *UX-30A*:

Declares that *UX-221A, UX-218A, UX-218RA* and *UX-30A*:

Cumple con los objetivos esenciales de las Directivas:

Abide by essential objectives relating Directives:

- | | |
|--|------------|
| ● de Baja Tensión (Low Voltage Directive) | 2014/35/UE |
| ● de Compatibilidad Electromagnética (EMC) | 2014/30/UE |
| ● RoHS | 2011/65/UE |
| ● RAEE (WEEE) | 2012/19/UE |

Y es conforme a las siguientes Normas Armonizadas Europeas:

In accordance with Harmonized European Norms:

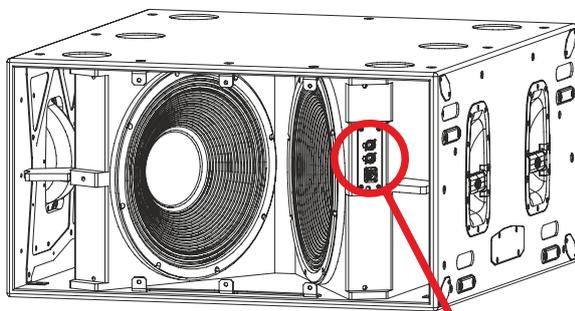
- EN 60065:2014.- Audio, video and similar electronic apparatus. Safety requirements.
- EN 55032:2012.- Electromagnetic compatibility of multimedia equipment. Emission requirements.
- EN 55103-2:2009.- Electromagnetic compatibility. Product family standard for audio, video, audio-visual and entertainment lighting control apparatus for professional use. Part 2:Immunity.
- EN 50581:2012.- Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

INTRODUCTION

The self-powered *UX* series is comprised of systems designed in response to demands for high-output ultra-low frequency solutions. *UX-30A*, *UX-218A* and *UX-221A* are self-powered versions of *UX* series models. In addition, *UX-218A-R* is a version with built-in rigging hardware, and derived model of *UX-218A*.

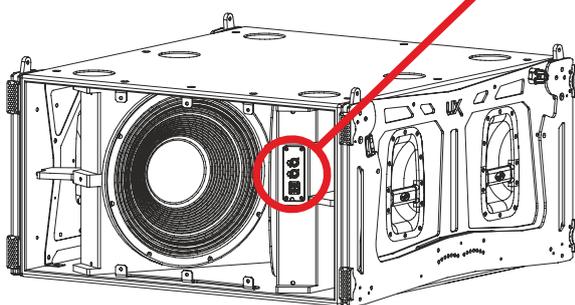
The enclosures incorporate front connectors which allow for easy installation when used in cardioid configurations.

FEATURES



UX-218A

**FRONT CONNECTORS FOR
CARDIOID CONFIGURATIONS**



UX-218A-R

UX-218A / UX-218A-R

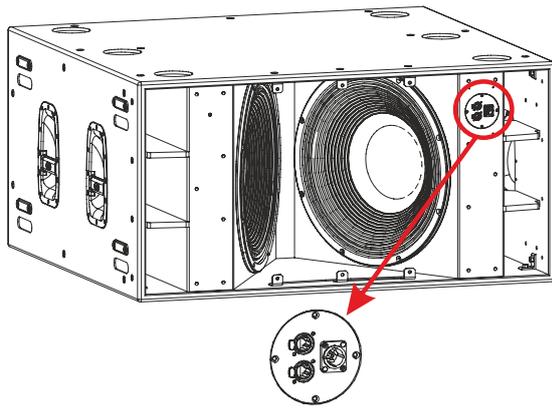
- High performance subwoofer system for external amplification
- Two *18UXN4* long-excursion loudspeakers (18" and 4 ohms)
- Front loaded cross-fire configuration
- Solid birch plywood construction

The *UX-218A / UX-218A-R* join the new range of *UX Series* subwoofer systems in self-powered versions. The *UX-218A*, or *UX-218A-R*, make use of two 18" *18UXN4* transducers. The new loudspeaker, designed and manufactured by **DAS**, offers impressive features such as a 4" sandwich split winding voice coil, a remarkable 52 mm peak-to-peak excursion, and a powerful FEA optimized neodymium magnet assembly. Thanks to the double silicon spider, the *18UXN4* controls the moving mass with high linearity. An aluminum demodulating ring reduces distortion, and effective ventilation of the voice coil gap provides for a high thermal rating and reduced power compression.

The enclosure is constructed using Birch plywood and makes use of extensive bracing to eliminate resonances. The woodwork is finished with the robust **DAS** ISO-flex protective coating for durability. A dolly platform with locking casters, *PL-UX218S* for *UX-218A* and *PL-UX218RS* for *UX-218A-R*, is available to stack and move the systems. Protection during transport is provided by the optional covers available from **DAS**

UX-218A-R is the flying version with built-in rigging.

UX-221A



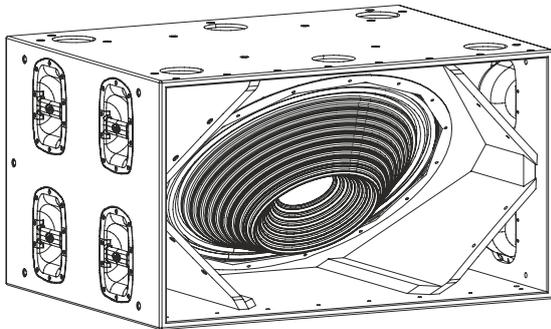
**FRONT CONNECTORS FOR
CARDIOID CONFIGURATIONS**

- High power ultra-low frequency subwoofer system
- Twin 21" Neodymium loudspeakers with 6" voice coils
- Solid 21 mm birch plywood construction
- Impressive 60 mm peak-to-peak excursion

The *UX-221A* includes two *21UXN* loudspeakers, 21" and 8 ohms, equipped with 6" voice coils and offers a power handling capacity of 8000 W_{peak} for each loudspeaker. The impressive 60 mm peak-to-peak excursion, powerful neodymium magnet assembly and double silicone spider with optimized compliance provide for commanding low frequency response.

The enclosure is constructed using 21 mm Birch plywood and makes use of extensive bracing to eliminate resonances. The woodwork is finished with the robust **DAS** ISO-flex protective coating for durability. A dolly platform with locking casters, *PL-221S*, is available to stack and move the systems. Protection during transport is provided by the optional covers available from **DAS**

UX-30A



- Powered subwoofer system
- Single 30" high density polyethylene cone
- Unique moving magnet linear motor design
- Ultra high power amplifier design
- Differential Pressure Control (DPC®)
- Highly reinforced cabinet design
- Unmatched performance compared to conventional systems

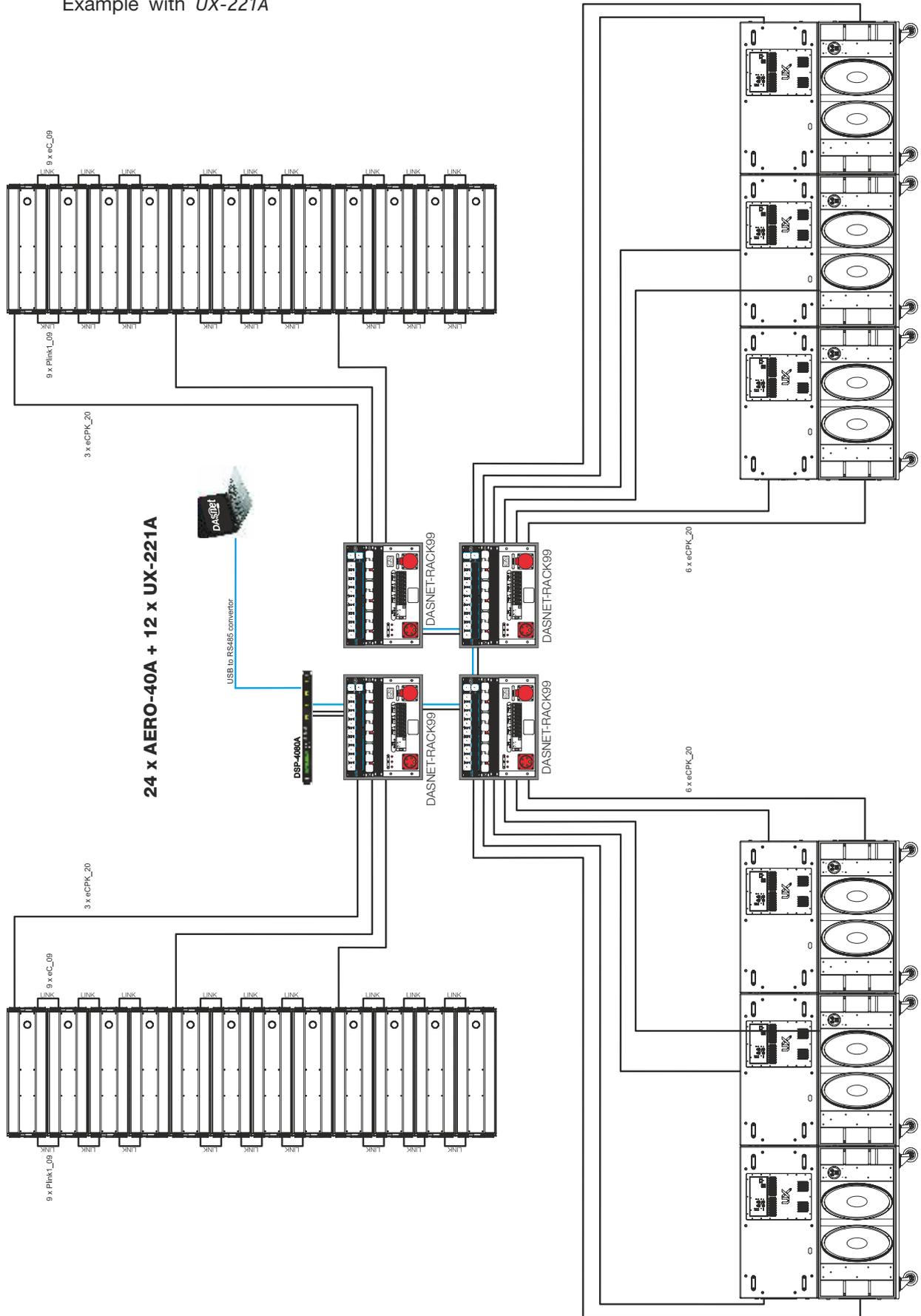
The *UX-30A* makes use of an innovative and unique transducer based on the patented M-Force® moving magnet linear motor structure. Unparalleled performance in terms of power handling, electromagnetic conversion, reliability and maximum SPL are a few of the innovative features and improvements with respect to the conventional moving coil arrangement.

The motor system is driven by an ultra high power Class D amplifier module which is no less impressive than the motor design. Amazing figures in terms of both output voltage (310 V_{peak}) and current capabilities (200 A_{peak}), the M-Drive® amplifier is capable of exploiting the full potential of the M-Force®. The DPC® (Differential Pressure Control) is a powerful active acoustic processing tool which controls and enhances the performance of the system.

M-Force®, M-Drive® and DPC® are registered trademarks of Powersoft S.p.A.

CONFIGURATIONS (cont'd)

Example with UX-221A



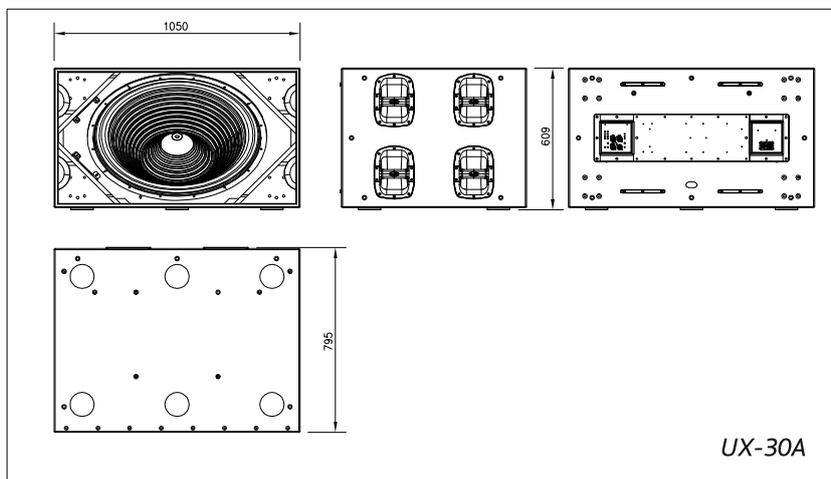
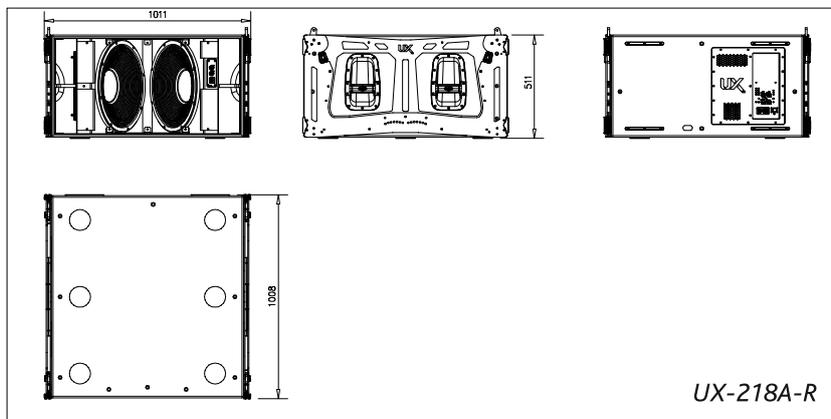
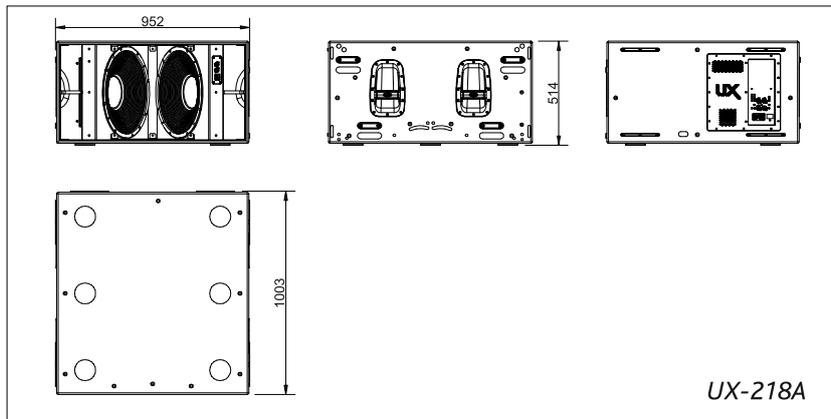
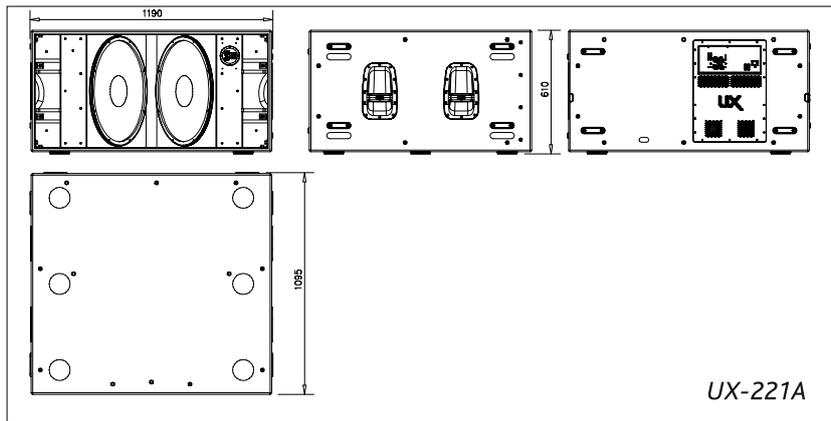
SPECIFICATIONS

Model	UX-221A	UX-218A/UX-218A-R	UX-30A	
Nominal LF Power Amplifier	2x 6800 Wpeak - 2x 3400 Wcontinuous	2x 3400 Wpeak - 2x 1700 Wcontinuous	15000 Wpeak - 7500 Wcontinuous	
Input Type	Balanced Differential Line			
Input Impedance	Line: 20kohms			
Sensitivity	Line: 4.9V (+16 dBu)			
Frequency Range (-10 dB)	28 Hz – 125 Hz			
Rated Maximum Peak SPL at 1 m	145 dB	143 dB	145 dB	
Transducers / Replacement Parts	LF: 2 x 21UXN / GM-21UXN	LF: 2 x 18UXN4 / GM-18UXN4	LF: 1 x M-FORCE-M	
Enclosure Geometry	Rectangular			
Enclosure Material	Birch Plywood			
Color / Finish	Black / ISO-flex Paint			
Stacking System	Ground Stackable			
Rigging System	Not Available	Integrated in box design (R)	Not Available	
Connectors	Audio Input: Female XLR			
	LOOP THRU: Male XLR			
	Audio+Data Input: EtherCon			
	Audio+Data Output: EtherCon			
	AC Input: PowerCon TRUE1			
	Not Available	AC Output: PowerCon TRUE1	Not Available	
AC Voltage Requirements	AC 90 - 264 V			
Current Consumption	18.4A@115V, 9.2A@230V	9A@115V, 4.5A@230V	12.4A@115V, 6.2A@230V	
Dimensions (H x W x D)	60 x 120 x 110 cm	51.4 x 95.2 x 101 cm	61 x 105 x 79.5 cm	
	23.6 x 47.2 x 43.3 in	20.1 x 37.4 x 39.7 in	24 x 41.3 x 31.3 in	
Weight	130 kg (286 lb)	51.4 x 101 x 101 cm (R)	111 kg (244 lb)	
		20.1 x 39.7 x 39.7 in (R)		
Accessories	ANL-2 Eye Bolt	ANL-2 Eye Bolt	AX-SF2 Joining Plate	
	FUN-2-UX221 Cover	AX-UX218 Rigging System (R)	FUN-2-UX30 Cover	
	PL-221S Stacking Dolly	FUN-2-UX218 Cover	FUN-3-UX218 Cover	PL-30S Stacking Dolly
		PL-UX218S Stacking Dolly	PL-UX218RS Stacking Dolly (R)	

DAS Audio Group, S.L. continuously strives to enhance its products through investigation and development. All specifications are subject to changes without prior notice.

LINE DRAWINGS

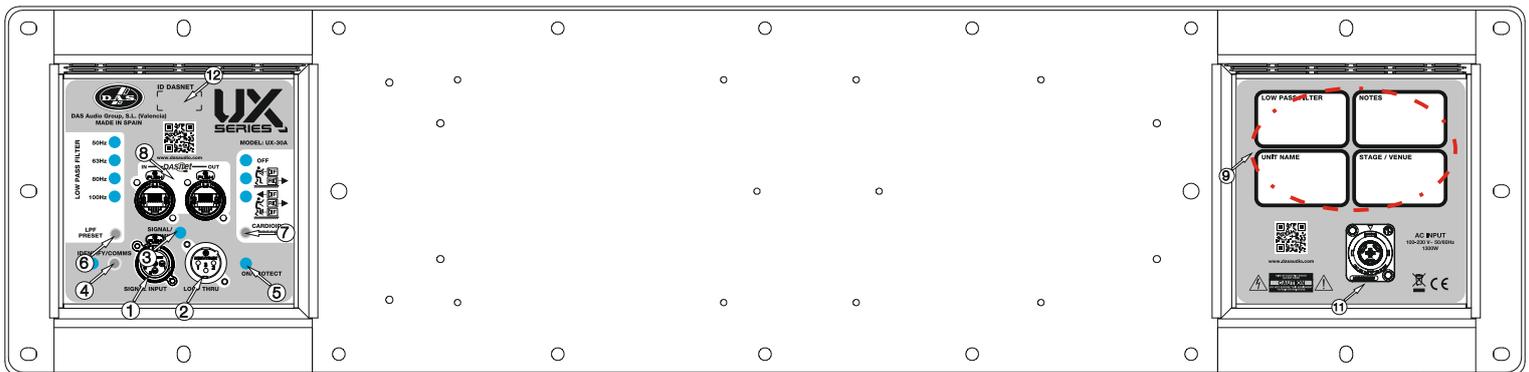
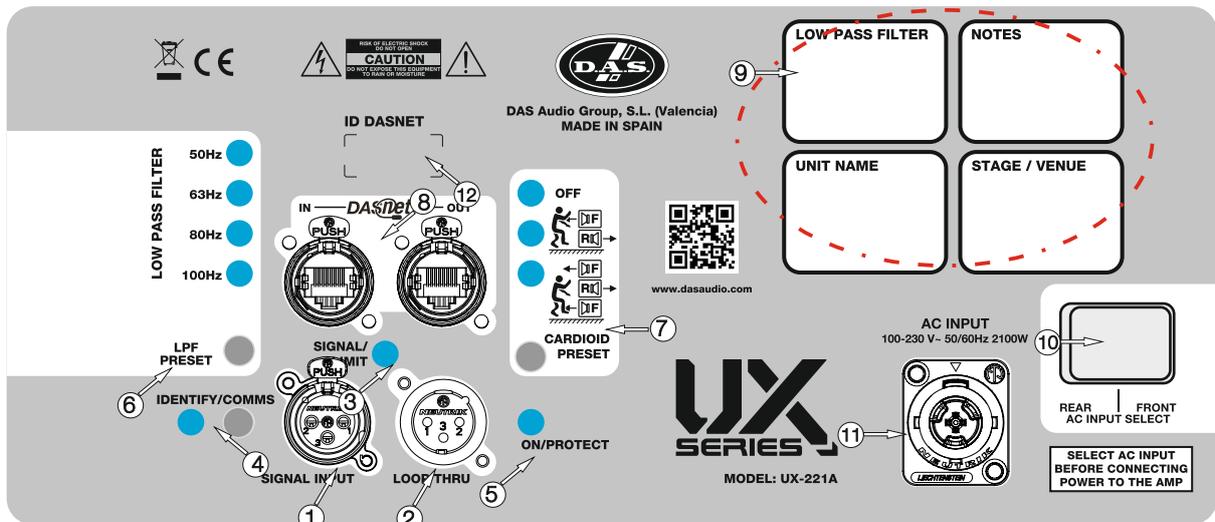
ALL DIMENSIONS IN MILLIMETERS



AMPLIFIERS

DESCRIPTION

- 1) SIGNAL INPUT :**
XLR type input signal connectors. As the LOOP THRU connector, they are balanced with the following pin assignments:
1=GND (Ground).
2=(+) Non inverted input.
3=(-) Inverted input.
- 2) LOOP THRU :**
XLR type output signal connector for connecting several units together and sending them all the same input signal.
- 3) SIGNAL / LIMIT :**
Two color LED which indicates that there is signal presence if it shines green or indicates amplifier saturation and the amplifier limiter is activated, if it shines red.
- 4) IDENTIFY / COMMS :**
Orange LED that shines flashing when we push IDENTIFY (to identify the unit) or blink faster if there is communication with *DASnet™*.
- 5) ON / PROTECT :**
Two color LED indicates that the unit is ON if it shines green and protection if it shines red.
- 6) LPF PRESET :**
This push button allows the "LOW PASS FILTER" selection. The LED shining indicates the selected value.
- 7) CARDIOID PRESET :**
This push button allows the "CARDIOID PRESET" selection. The LED shining indicates the selected value: OFF, 2 units and 3 units.



8) IN/OUT :

Neutrik EtherCon connectors for audio+data input/output with *DASnet™*. With the output connector we can interconnect several units.

9) Zone for user notes.

10) AC INPUT SELECT :

This switch activates, or not, the mains connector at the front side of the enclosure. When we use a cardioid configuration, we should connect the mains at the front side of the turned enclosure for wires' grouping. **Select before connecting power to the unit.**

11) AC INPUT :

Neutrik PowerCon TRUE1 mains connector. **Only use this equipment with an appropriate mains cord.**

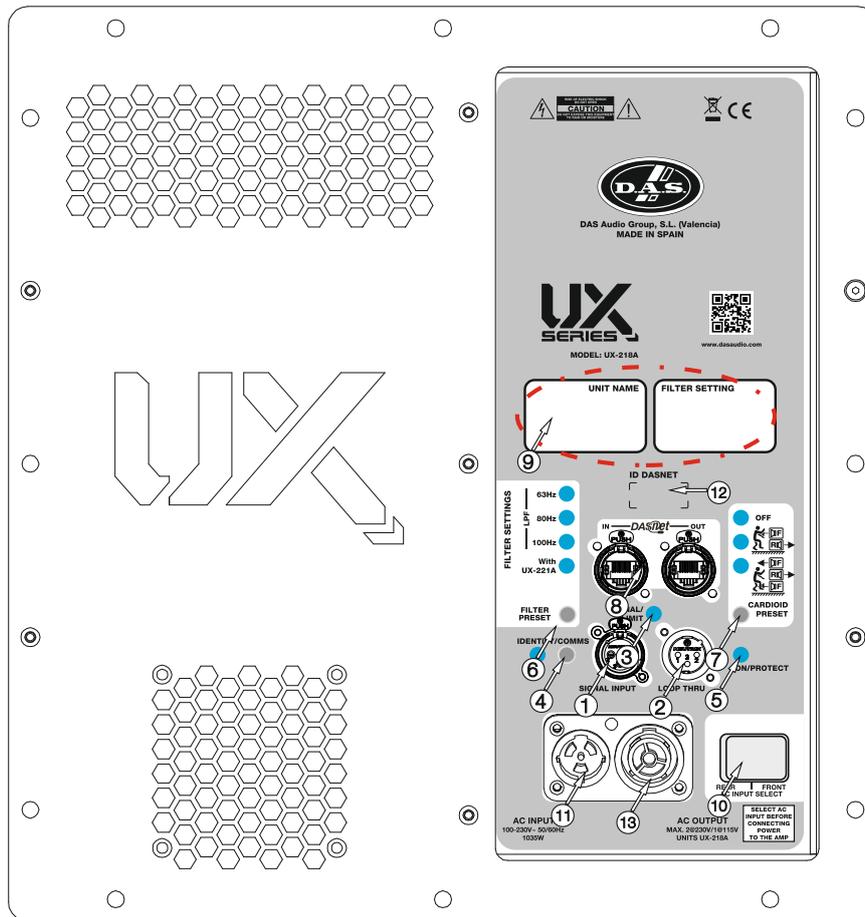
12) ID DASNET :

Label with identification number for *DASnet™*.

13) AC OUTPUT (only UX-218A):

Neutrik PowerCon TRUE1 mains connector for connecting one or two units more of *UX-218A*, according the mains (please, see the maximum value on the label).

Note: To "reset" without using *DASnet* press and hold the "CARDIOID PRESET" button, while turning the PowerCon and turn on the power.



UX-218A and UX-218A-R amplifier

ON/OFF

A sound system should be switched on sequentially. Switch on the self-powered units last in your sound system (switch on the subwoofer before the mid-high system). Switch on the sound sources such as CD players or turntables, then the mixer, then the processors, and finally the self-powered unit. If you have several units, it is recommended that you switch them on sequentially one at a time.

Follow the inverse order when switching off, turning self-powered units off before any other element in the sound system.

Disconnect the device by removing the mains connector from the mains socket. The mains connector and mains socket must always be freely accessible and never covered or blocked in any way.

The models use a power cable equipped with a Neutrik PowerCon TRUE1 connector. Power can be daisy chained via the TRUE1 output connector (see details on product label).

IMPORTANT: Do not disconnect the unit while in use.

Ensure that the device is disconnected from the mains by observing that the ON LED is turned off. Please note that the ON LED can stay on for several seconds after the mains power has been disconnected.

Overload indicator

This device has a SIGNAL/LIMIT indicator. The red light indicates the signal is excessive.

The indicator should not be lit continuously. This distorts the signal (quickly fatiguing your ears) and may damage the speakers.

Equalisation

The unit does not need extreme settings of equalisation to produce quality sound. Avoid high levels of gain on the equalisers. Gain values above +3 dB on a console's EQ are not recommended.

Overheating

This equipment does not normally overheat during normal conditions of use. When overheating occurs, the unit protects itself. You should then find out why and if necessary contact an authorised dealer for technical assistance.

Normally it is enough just to let the unit cool down after you have corrected the problem so that the system functions properly again.

Low mains voltage

If mains voltage falls below the shutdown voltage for the unit, it will stop playing. When acceptable levels are regained, the unit will switch back on automatically.

The unit recognised the value of mains automatically. The unit works from 80V to 260V (both rms).

Cardioid Preset

This unique feature facilitates the configuration of two or three units to create a cardioid response pattern. This is useful in situations where on-stage bass level projected from the subs needs to be kept to a minimum.

To set-up a cardioid configuration with two stacked units, place the bottom unit facing the audience and the top box facing the stage. Set the controls for level, polarity and cut-off frequency identically on both units. Daisy-chain the signal from one unit to the other (do not activate the satellite output high-pass filter). Activate the Cardioid Preset button on the box facing the stage. This provides the level and phase adjustments necessary to cancel the rear projected sound waves "cleaning" the stage of unwanted bass.

To assemble a cardioid configuration with three stacked units, the procedure is basically the same. Place the lower and top boxes facing the audience, the middle box facing the stage. Daisy-chain the signal, make sure the level, polarity and cut-off frequency are the same on all the boxes and lastly, activate the Cardioid Preset button on the box facing the stage.

In the next figure, we can view this menu of the UX-221A units.



View of DASnet™ with the cardioid presets

Low Pass Filter

As example of available low pass filters we will view the *UX-221A* units case, with 4 cut available frequencies: 50, 63, 80 and 100 Hz (see the labels).

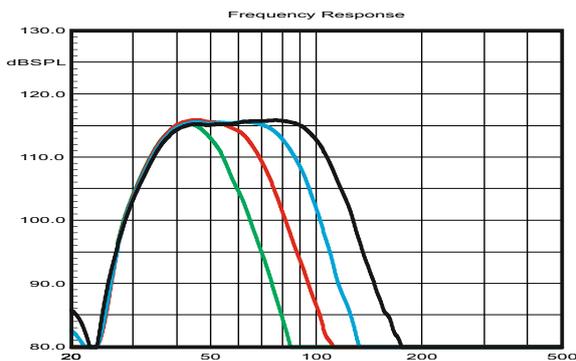
To use *UX-221A* onto *Aero 20A*, you must select the 80Hz and the cardioid preset OFF. This preset is appropriate for aligning with *Aero 20A*.

Note: DO NOT APPLY high pass filter IN ANY *Aero 20A*! The power in the low frequency of the *Aero 20A* must be added to the power of the *UX-221A* and if we apply a High Pass filter to the *Aero 20A*, you will loose too much energy. Remember that the *Aero 20A* has an internal High Pass at 60Hz.

In the next figures we will view this example.



View of *DASnet™* with LowPass Filter presets



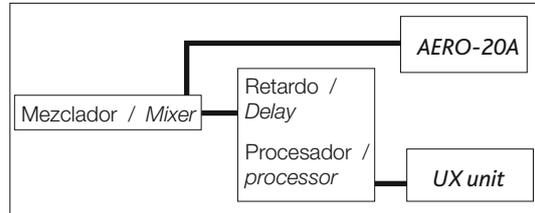
Current consumption: AC input =230 Vrms

Remember: the consumption at 115Vac is double than that at 230Vac

Model	UX-221A	UX-218A / UX-218A-R	UX-30A
Full power	9,2	6,25	7,5
1/3 power	9,2	4,5	5,5
1/8 power	5,7	1,9	3,7
Idle	0,4	0,4	0,6

Connections

The most common use will be combined with the satellite system. The use of an **external delay** to control and adjust the phase of the subs is recommended (with a digital processor, for example). The SUB units are linked with the THRU option setting.



The OUTPUT and LOOP THRU connectors are output XLR type connectors and are useful for daisy chaining the same signal to a number of boxes, connecting them in parallel.

The number of units that can be linked this way depends on the output impedance of the equipment driving the enclosure, such as the mixer or processor. Typically, to avoid signal degradation, the maximum number that can be daisy chained is given by the formula $Z_c > 10Z_s$, where Z_c is the load impedance and Z_s is the output impedance of the equipment driving the enclosure (mixer, console, etc). For instance, a mixing console with 100 ohm output impedance allows daisy chaining 20 boxes, when the input impedance of the cabinets is 20K ohm.

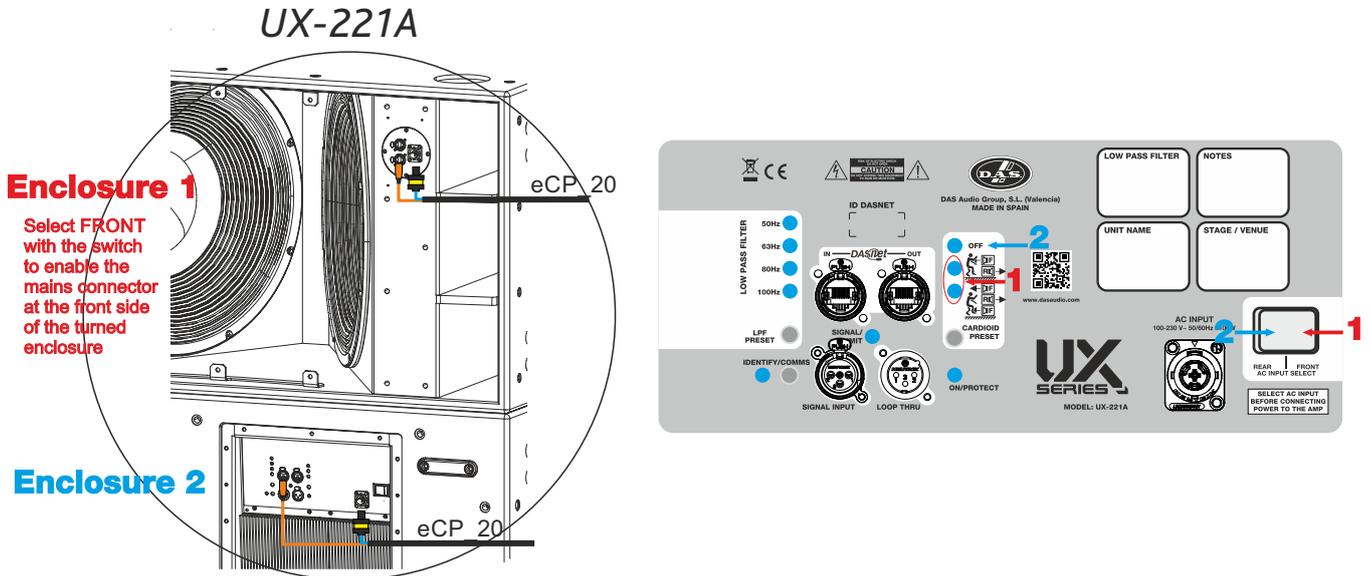
Troubleshooting

PROBLEM	CAUSE	SOLUTION
No sound from the unit. The SIGNAL LED does not light up.	<p>1 – The signal source is sending no signal.</p> <p>2 – Defective cable.</p>	<p>1 – Check that the mixer or sound source is sending signal to the UNIT.</p> <p>2 – Check that the cable from the sound source to the UNIT is connected correctly. Replace the cable if defective.</p>
Full power cannot be obtained. The LIMIT LED never lights up.	<p>1 - The signal source does not have a hot enough output.</p> <p>2 - If the connections are correct, it might be overheating</p>	<p>1 - If using a mixer, use the balanced output if available. Use a professional mixer with a hotter output.</p> <p>2 - Try to cool the unit turning down the master of the mixer.</p>
Sound is distorted. The LIMIT LED is not on, or only lights up occasionally.	<p>1 - The mixer or signal source is distorting.</p>	<p>1 - Turn mixer channel gains down. Check that none of your signal sources are distorting.</p>
Sound is distorted and very loud and LIMIT LED lights up.	<p>1 - The system is overloaded and has reached maximum power.</p>	<p>1 - Turn down the mixer's output.</p>
Hum or buzz when a mixer is connected to the unit.	<p>1.- The console probably has un-balanced outputs. You may be using an incorrect un-balanced to balanced cable.</p> <p>2.- The mixer and the powered speaker are not plugged into the same mains outlet.</p> <p>3.- The audio signal cable is too long or too close to an AC cable.</p> <p>4 - DASnet ecP_xx cable is defective.</p> <p>5 - Error in DASnet Patch panel 485 net connection.</p>	<p>1.- Read the appendix of this manual to make a correct un-balanced to balanced cable.</p> <p>2.- Connect the mixer and the unit to the same mains outlet.</p> <p>3.- Use a cable that is as short as possible and/or move the audio signal cable away from the mains cables.</p> <p>4 - Check that there aren't pins crossed in CAT7 cable. Possible short between audio par and DASnet signal.</p> <p>5 - Make sure that Audio INPUT is not connected in DASnet INPUT and vice versa.</p>
Hum or buzz when using lighting controls in the same building.	<p>1.- The audio signal cable is too long or too close to the lighting cable.</p> <p>2.- In a sound system with three-phase AC, the lighting equipment and the UNIT are connected to the same phase.</p>	<p>1.- Move the audio signal cable away from lighting cables. Try to find out at what point the noise is leaking into the system.</p> <p>2.- Connect the sound system to a different phase than the lights. You may need the help of an electrician.</p>
The ON LED does not light up when the mains connector is connected and the unit is switched to ON.	<p>1.- Bad or loose AC connection to the UNIT or the mains outlet.</p> <p>2 – Faulty AC cable.</p> <p>3 - Internal fuse blown</p>	<p>1.- Check your connections.</p> <p>2.- Check the cables, connectors and AC power with a suitable mains tester.</p> <p>3 - Replace the fuse for another of the same size and type.</p>

INSTALLATION AND ACCESSORIES

CARDIOID INSTALLATION

When boxes are flown in cardioid configuration the turned units must be fed by the front for wires' grouping. In the next figures we can view two *UX-221A* units in this configuration, rear views, as example.



With *UX-221A* units, select FRONT with this switch to enable the mains connector at the front side of the turned enclosure (enclosure **1**), while select REAR for the enclosure **2**.

The only case in which this way of connecting the units will not be possible is when the cardioid configuration is made with *UX-30A* units, since these lack front connectors.

RAIN PROTECTOR

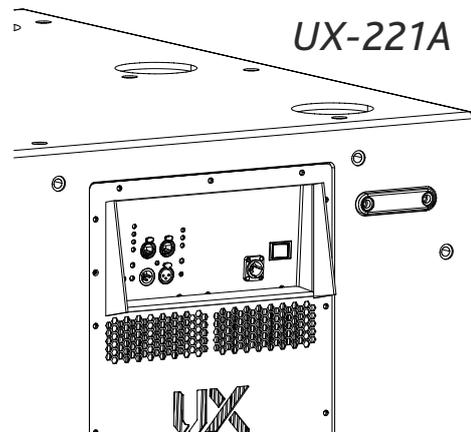
Electronic devices can be damaged when exposed to water or moisture. The *UX* amplifiers must be protected when installed outdoors. A rain protector is supplied with each self powered *UX* unit.

The rain protector is specially designed to withstand soft rain and other meteorological conditions for short periods of time. In the case of heavy rains, storms or permanent outdoor installations the sound system must be protected with additional elements.

The rain protectors supplied with each unit have been manufactured with fireproof materials.

The rain protector features several small holes on the top side to allow convection cooling of the amplifier.

In the attached figure, we can view the rain protector of *UX-221A* units, as example.



ACCESSORIES

To perform any operations related to flying the system, read the present document first, and act on the warnings and advice given.

The goal is to allow the user to become familiar with the mechanical elements required to fly the acoustic system, as well as the safety measures to be taken during set-up and teardown.

Only experienced installers with adequate knowledge of the equipment and local safety regulations should fly speaker boxes.

It is the user's responsibility to ensure that the systems to be flown (including flying accessories) comply with state and local regulations.

The working load limits in this manual are the results of tests by independent laboratories. It is the user's responsibility to stay within safe limits. It is the user's responsibility to follow and comply with safety factors, resistance values, periodical supervisions and warnings given in this manual.

Product improvement by means of research and development is on going at DAS. Specifications are subject to change without notice.

To this date, there is no international standard regarding the flying of acoustic systems. However, it is common practice to apply 5:1 safety factors for enclosures and static elements.

For slings and elements exposed to material fatigue due to friction and load variation the following ratios must be met; 5:1 for steel cable slings, 4:1 for steel chain slings and 7:1 polyester slings.

Thus, an element with a breaking load limit of 1000 kg may be statically loaded with 200 kg (5:1 safety factor) and dynamically loaded with 142 Kg (7:1 safety factor).

The load capacity, of each lift motor, should correspond to a safety factor of 10:1.

When flying a system, the working load must be lower than the resistance of each individual flying point in the enclosure, as well as each box.

Hanging hardware should be regularly inspected and suspect units replaced if in doubt.

This is important to avoid injury and absolutely no risks should be taken in this respect. It is highly recommended that you implement an inspection and maintenance program on flying elements, including reports to be filled out by the personnel that will carry out the inspections.

Local regulations may exist that, in case of accident, may require you to present evidence of inspection reports and corrective actions after defects were found.

Absolutely no risks should be taken with regards to public safety.

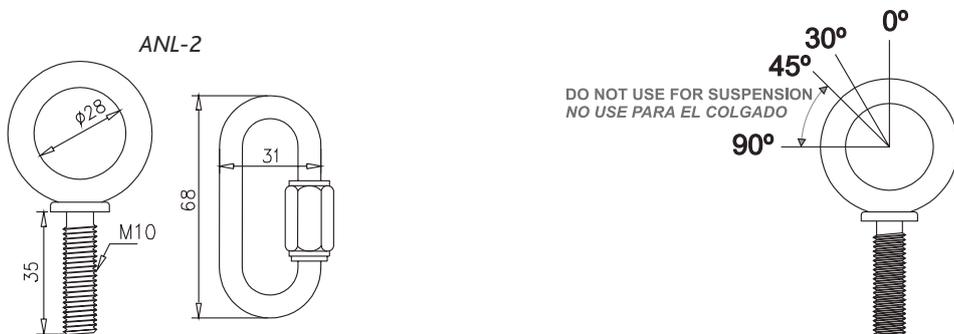
When flying enclosures from ceiling support structures, extreme care should be taken to assure the load bearing capabilities of the structures so that the installation is absolutely safe.

Do not fly enclosures from unsafe structures.

Consult a certified professional if needed.

All flying accessories that are not supplied by DAS Audio are the user's responsibility. Use at your own risk.

ANL-2



	0 degrees	30 degrees	45 degrees	> 45 degrees
% Working Load	100%	65%	30%	25%

The *ANL-2* is an optional accessory of four eyebolts and four carabiners for rigging.

To hang the units, the Allen-head screws must be removed and replaced by M10 eyebolts on one side of the enclosure. Each rigging point has 200 kg (440 lb) working load limit.

Then choose the slings or chains of required load resistance and length, bearing in mind that the length difference between the front and back slings or chains will determine the vertical orientation. Alternatively, the back bottom eyebolt points can be used to provide vertical orientation.

The *ANL-2* set is an optional set of four eyebolts and four carabiners. (Dimensions are in millimetres).

Each *ANL-2* eyebolt has a rated working load of 200 kg. (440 lb). Each *ANL-2* carabiner has a working load of 330 kg (726 lb). If using other hardware, make sure it is rated to handle the required load.

When using eyebolts it is important to bear in mind that the rated working load is only true for a load applied in the plane of the eye, and is significantly reduced for other angles. The drawing illustrates the concept.

The table shows the variation of the working load as a function of the load angle. In the case of the *ANL-2* eyebolt, this means that the 200 kg working load becomes 60 kg at 45 degrees. Do not use eyebolt flying if the load angle is higher than 45 degrees.

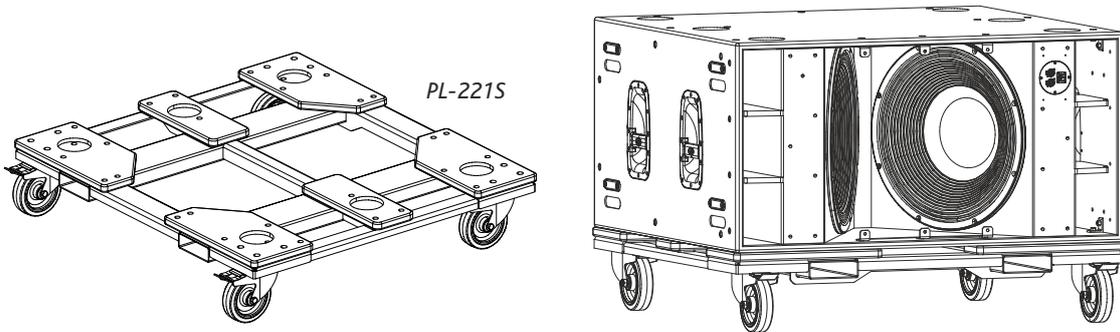
Note: As always, when we handle heavy loads, we should wear appropriate clothing and protective elements such as gloves, safety shoes, etc.

PL-221S

Even though it features integrated rigging points for threaded eyebolts (*ANL-2*), the most practical use of *UX-221A* is stacked. Using the *PL-221S* dolly platform (WLL = 450 kg), we can stack and transport up to three *UX-221A* units; and care should be taken to avoid roll over when moving them, preventing injuries.

As an example, the *PL-221S* platform, with one *UX-221A* on top, can be seen in the figure below.

Note: when handling heavy loads, always wear appropriate clothing and protective elements such as gloves, safety shoes, etc.

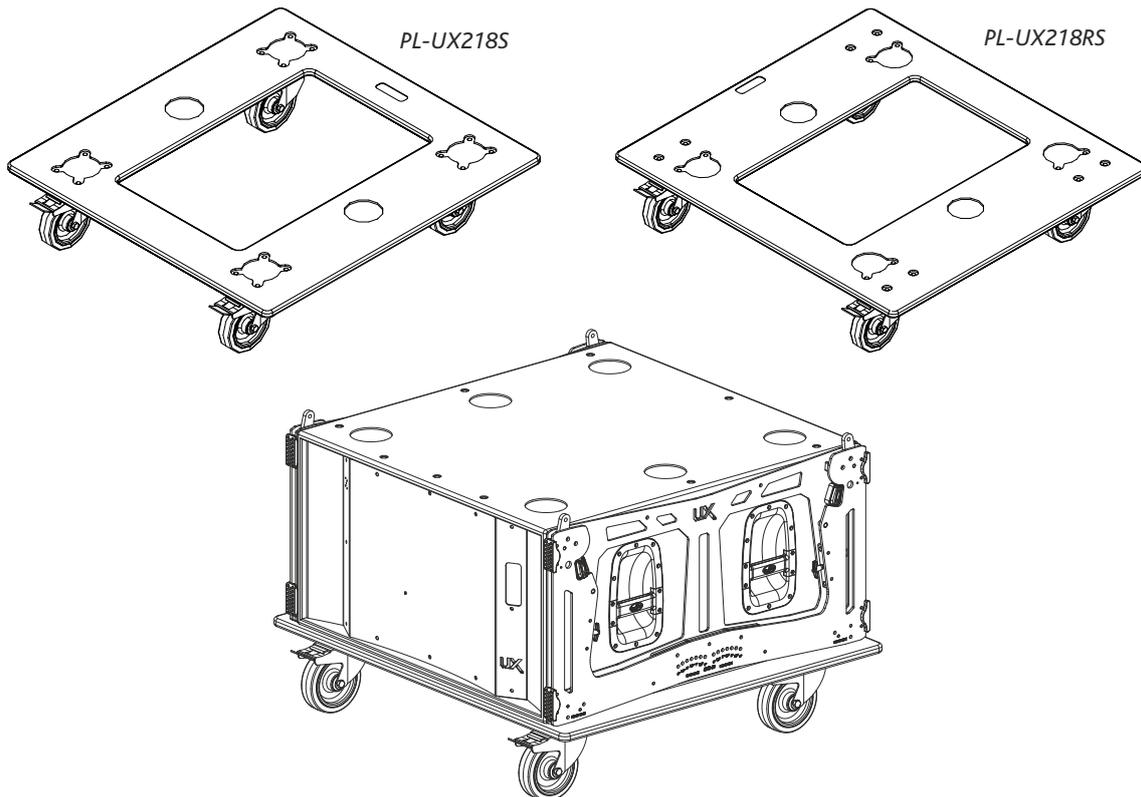


PL-UX218S / PL-UX218RS

As for *UX-221A*, a dolly platform is available for transporting and stacking *UX-218A* units (*PL-UX218S*, with WLL = 300 kg), and its rigging version, *UX-218A-R* (*PL-UX218RS*, with WLL = 400 kg). Using these dolly platforms we can stack and transport up to three units; and care should be taken to avoid roll over when moving them.

As an example, these platforms can be seen in the next figures.

Note: when handling heavy loads, always wear appropriate clothing and protective elements such as gloves, safety shoes, etc.

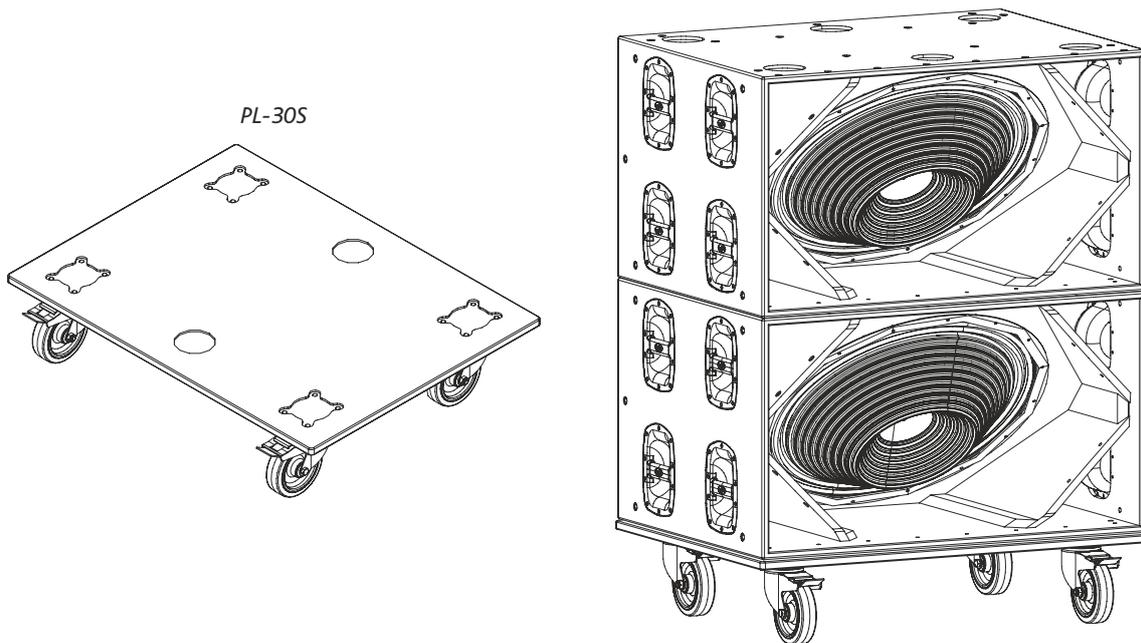


PL-30S

Also a dolly platform is available for transporting and stacking *UX-30A* units (*PL-30S*, with WLL = 250 kg). Using this dolly platform we can stack and transport up to two units; and care should be taken to avoid roll over when moving them.

As an example, these platforms can be seen in the next figures.

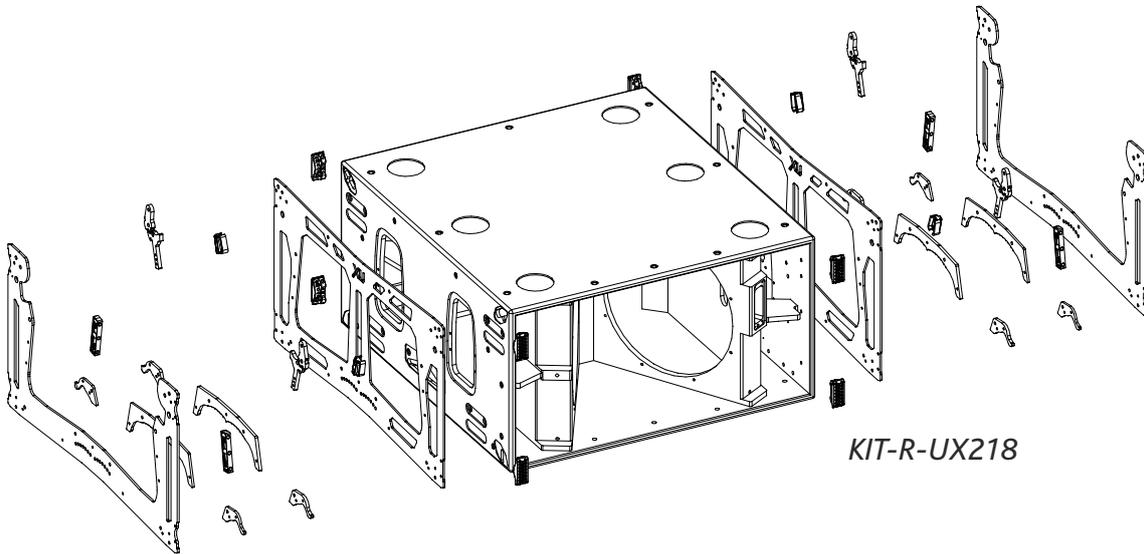
Note: when handling heavy loads, always wear appropriate clothing and protective elements such as gloves, safety shoes, etc.



RIGGING

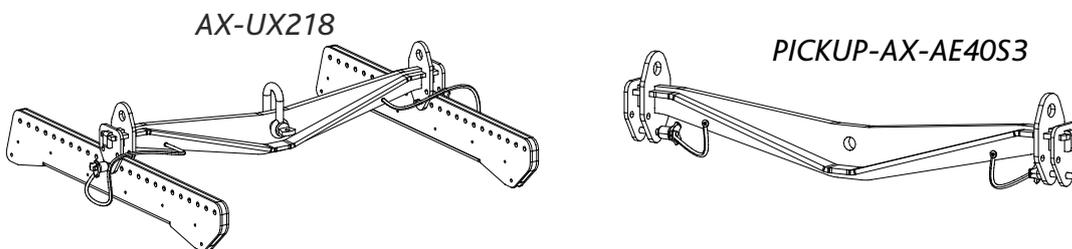
Out of the subwoofers in this manual, only *UX-218A-R* can use a frame designed specifically for flying. *UX-218A* can be converted to *UX-218A-R* by means of the *KIT-R-UX218* accessory kit. Only in this way will the enclosure be safely suspended.

Note: when handling heavy loads, always wear appropriate clothing and protective elements such as gloves, safety shoes, etc.



Therefore, only *UX-218A-R* can combine with the *AX-UX218* accessory frame so that enclosures can be flown safely. If an extra pick-up point was needed, a *PICKUP-AX-AE40S3* center bar could be added. This is shared with *AERO-40A* systems, so that *PICKUP-AX-AE40S3* allows for easy combining with these line array systems.

These accessories can be seen in the figures below.

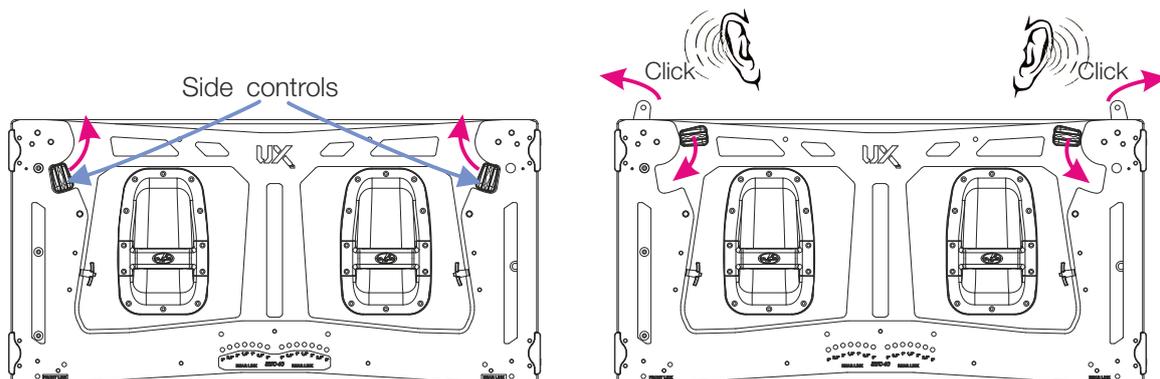


Next, we'll show an example of a line array system, with the steps on how to assemble it.

The attachment point system is similar to that of the *AERO-40A*, so, if unfamiliar with it, we suggest you go through the rigging manual for these systems (**RM_AE40_03**).

Looking at the enclosure from the side, it can be seen that the frame is symmetrical to optimise a cardioid arrangement.

Acting on the side controls, the attachment parts will release. We'll know that they are locked into place once we hear a click, like the front attachment points on *AERO-40A*, while the side controls will automatically go back to the initial position when released.



Unless it has already been done, place the enclosure on top of a *PL-UX218RS* platform.

Note: Bear in mind that the unit is not attached to the platform via quick release pins like other models.

It is in these preparation steps that you need to take into account which units go forward and which ones go backwards in cardioid configurations.

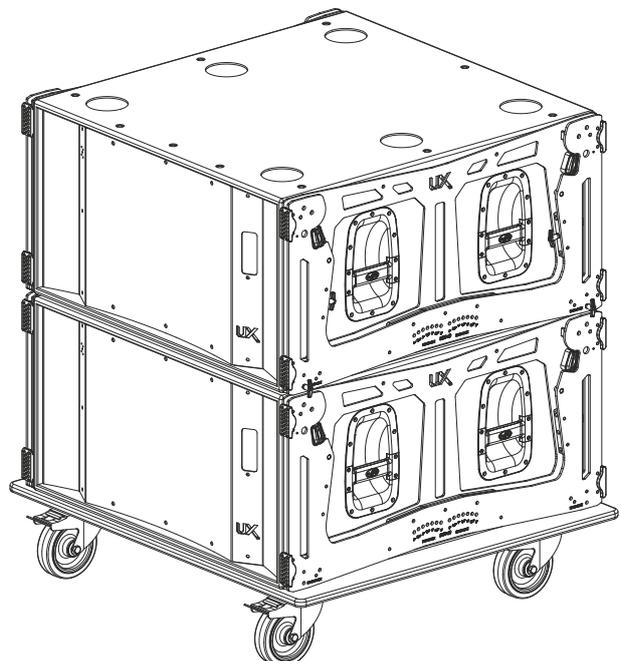
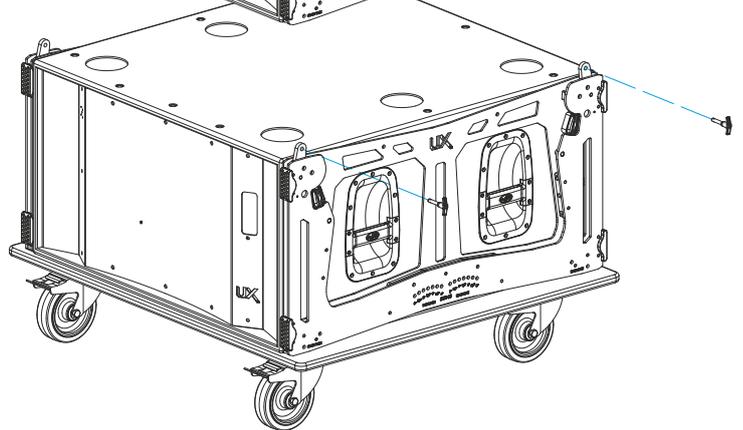
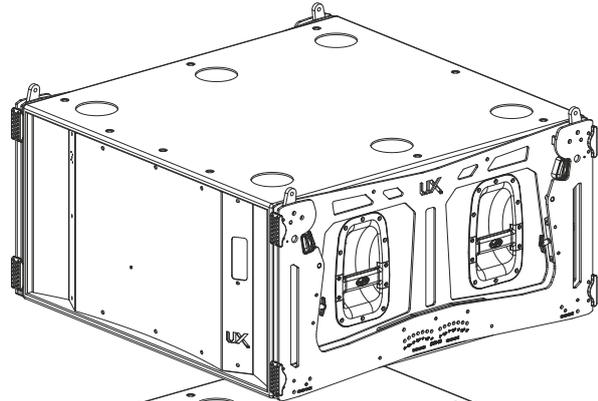
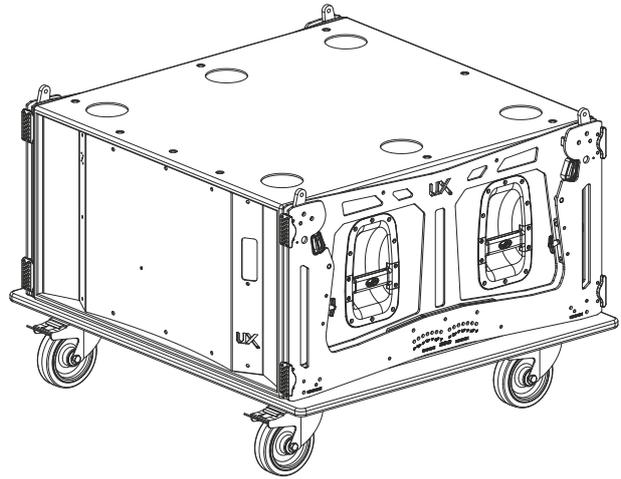
In our example, since it is not a cardioid configuration, all units go forward.

We'll place another unit on top of the one we already had with the guides exposed.

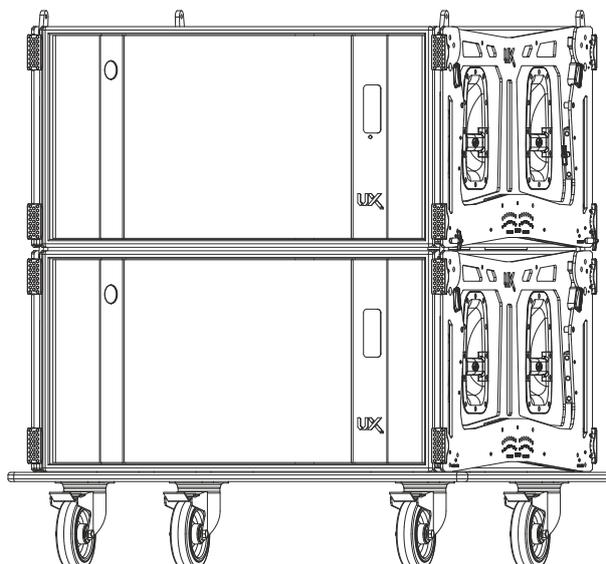
Align the holes and engage the quick release pins on both sides of the enclosures as indicated in the attached figure.

The result can be seen in the attached figure.

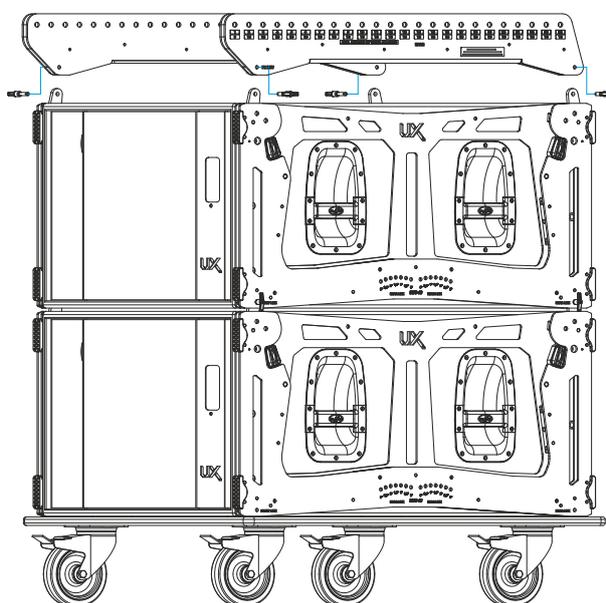
In our examples we will only stack two units, but, as you may remember, the platform allows for stacking up to three units.



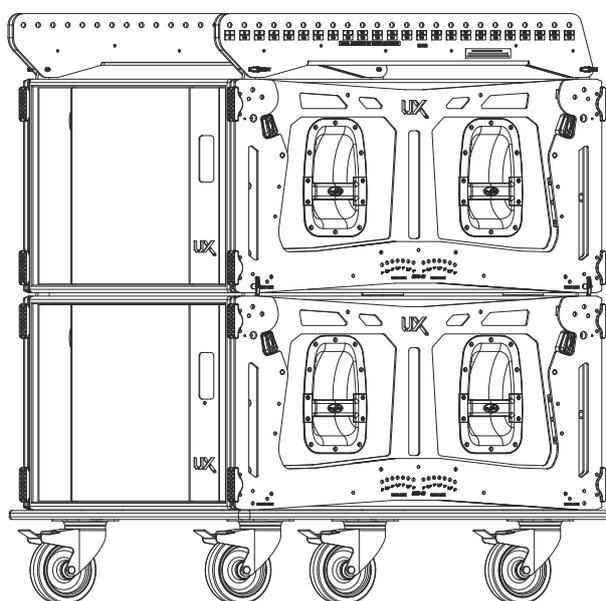
Expose the upper guides of the units like we previously did with the lower unit.



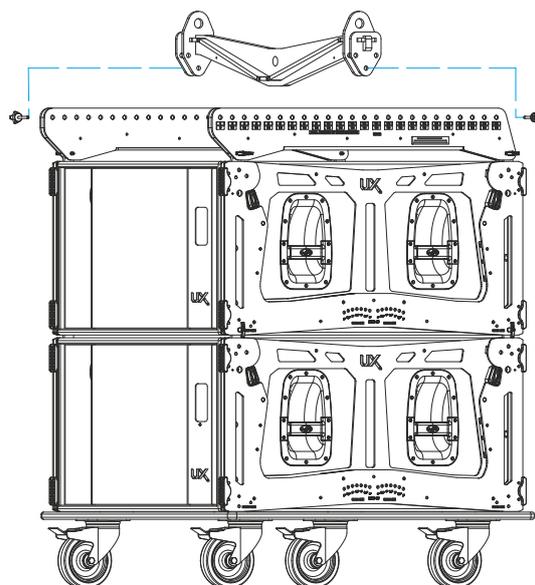
Place the side parts of the AX-UX218, each on its correct side (check the silk screening), lining up holes of the quick release pins, as shown.



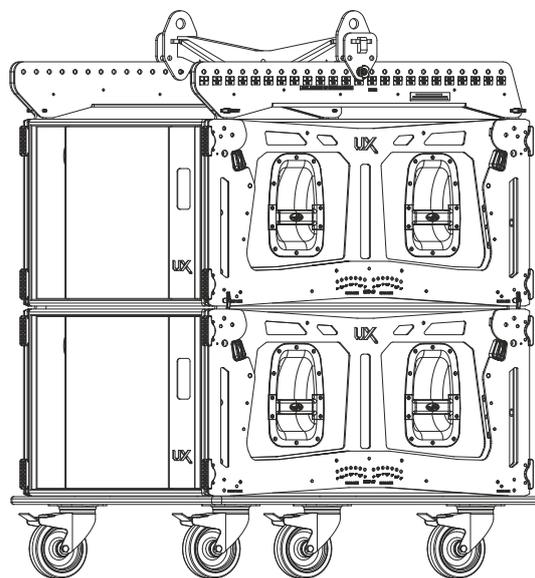
Next, engage the quick release pins to attach the AX parts to the stacked units, on both sides of the units.



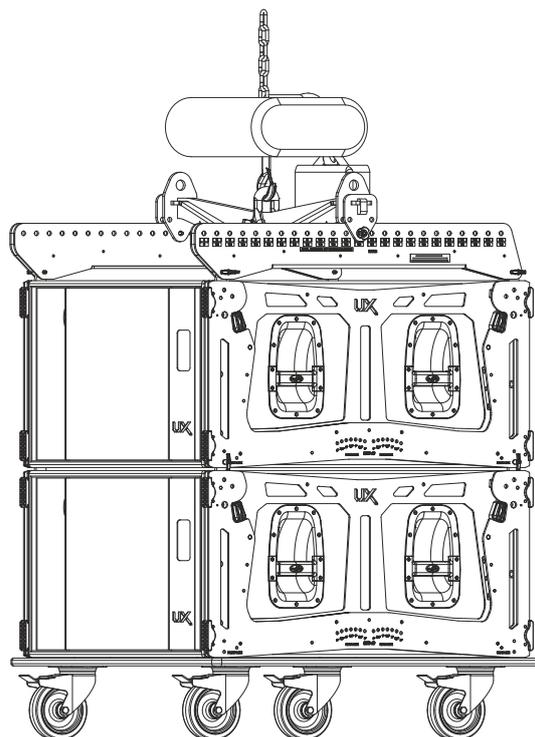
Attach the pick-up point, or pick-up points, to the holes in the side of the AX parts indicated by *Ease Focus*, using the quick release pins.



Remember that one pick-up bar only provides a single pick-up point. If another pick-up point is required, an additional pick-up bar is needed.

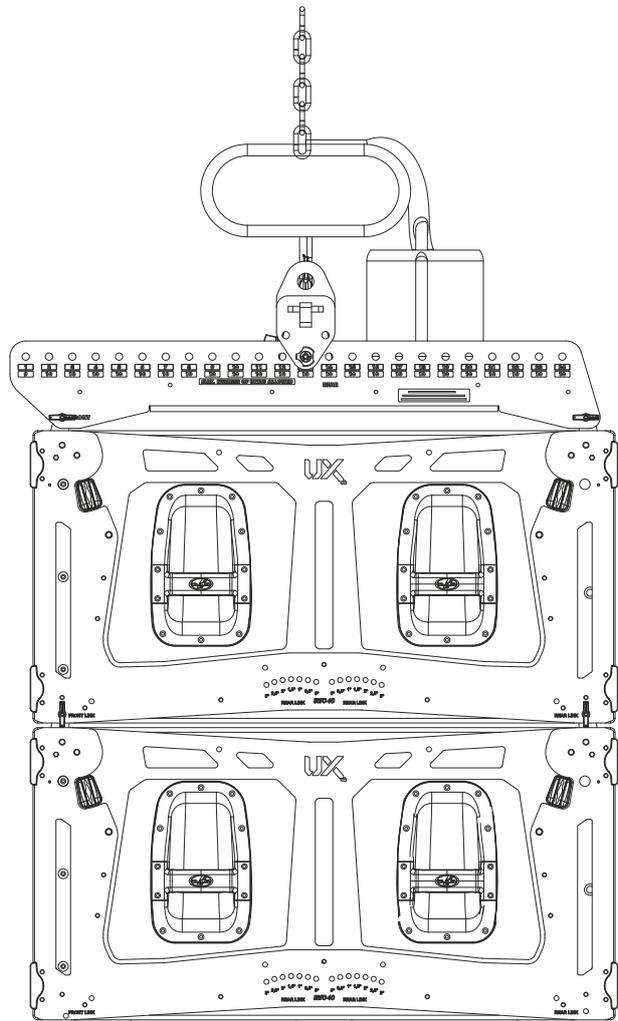


Proceed to hook the assembly to the motor (or motors, if using two pick-up points).

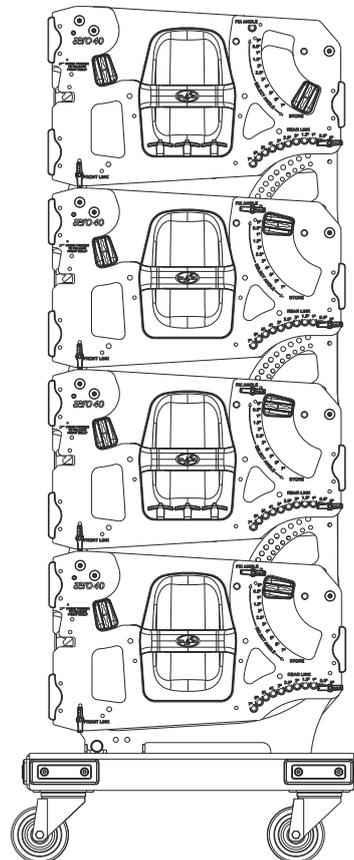


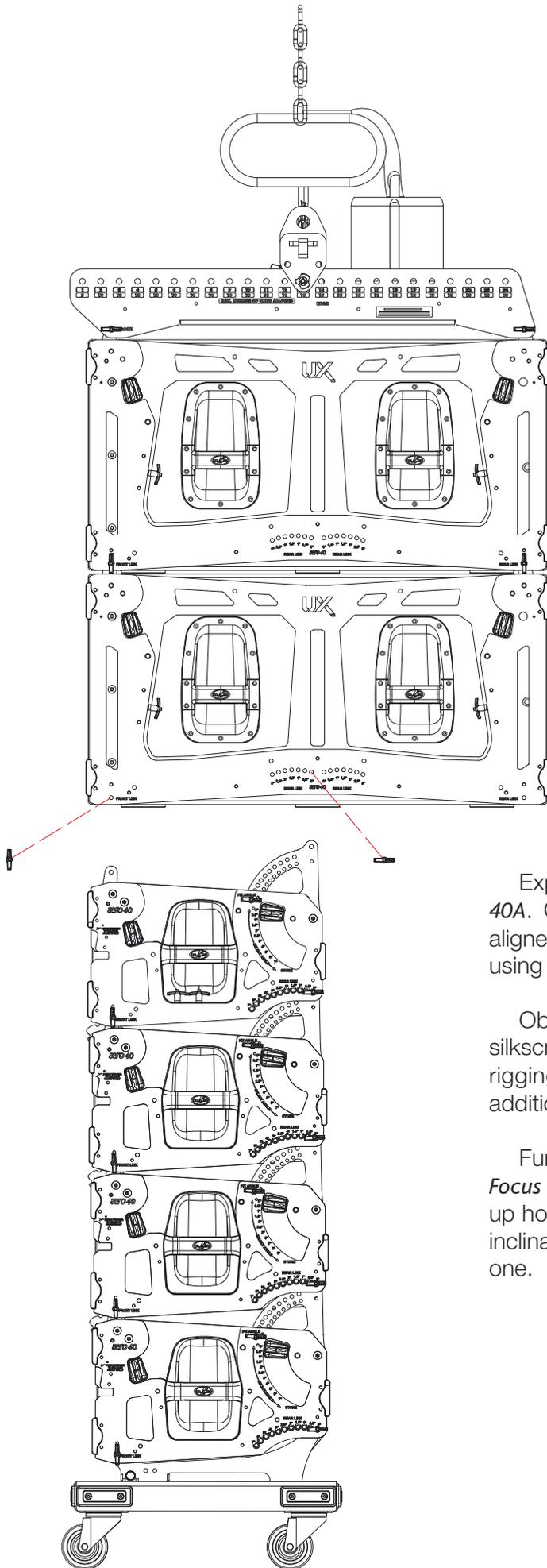
Lift the assembly slightly and remove the dolly platform so as to be able to add **AERO-40A** enclosures.

To prepare groups of 4 **AERO-40A** units on **PL-40S** platforms, and select inter-box angles, consult the rigging manual for **AERO-40A (RM_AE40_03)**, which can be found on our website. This manual will let you become familiar with the use of the side controls and guides in the enclosures.



Next, place the first group of **AERO-40A** below the group of **UX-218A-R**. In this example, two groups of 4 **AERO-40A** will be attached.

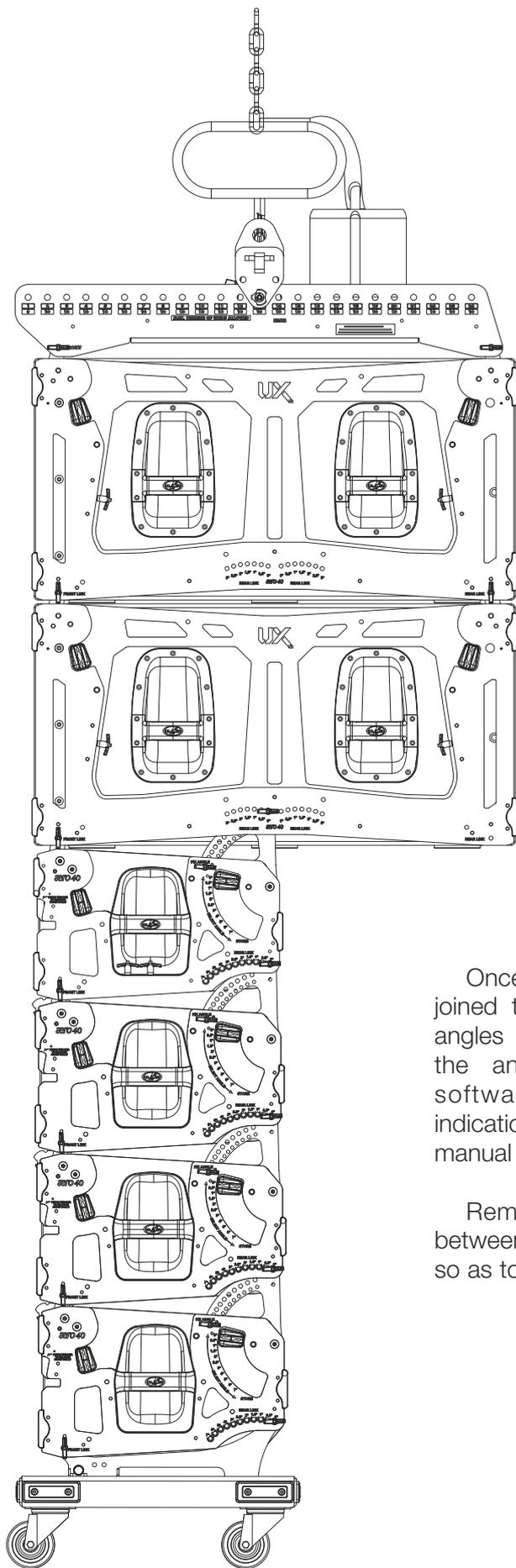




Expose the guides in the upper *AERO-40A*. Once the guides are prepared and aligned, link the two groups together using quick release pins.

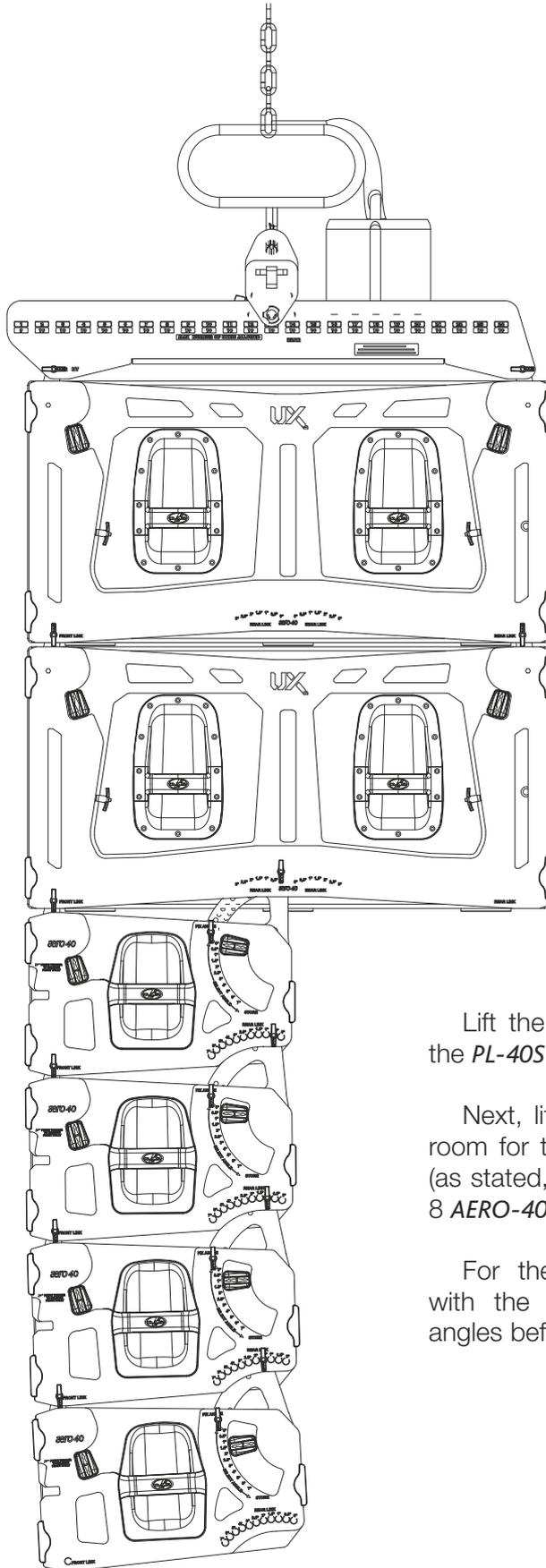
Observe the indications present in the silkscreen lettering and use the *AERO-40A* rigging manual (**RM_AE40_03**), as additional information.

Furthermore, with the help of *Ease Focus* software, you will know which pick-up holes need to be used so that the final inclination of the system is the required one.



Once the two groups have been joined together, you can start selecting angles for *AERO-40A* units according to the angles indicated by *Ease Focus* software, and according to the indications in the *AERO-40A* rigging manual (**RM_AE40_03**).

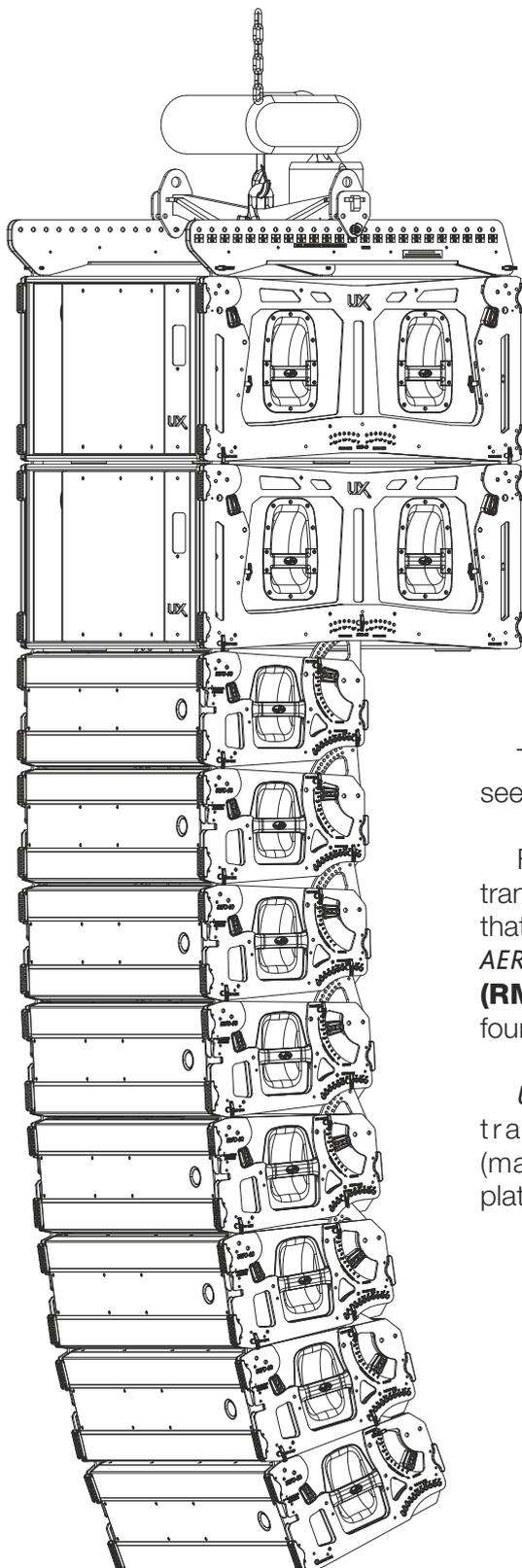
Remember that inter-box angles between *AERO-40A* units have been 0° , so as to allow for a safe transport.



Lift the assembly slightly and remove the *PL-40S* dolly platform.

Next, lift the assembly so as to leave room for the second group of *AERO-40A* (as stated, our example will use a total of 8 *AERO-40A*).

For the second group, proceed as with the first group, setting enclosure angles before removing the platform.



The final result can be seen in the attached figure.

For disassembly and transport, it is again advisable that you go through the *AERO-40A* rigging manual (**RM_AE40_03**), that can be found on our website.

UX-218A-R units can be transported in threes (maximum) using their platform.

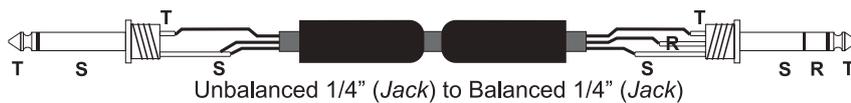
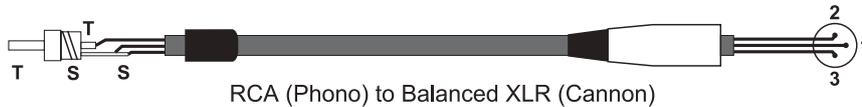
ANNEX I : Unbalanced and balanced connections

There are two basic ways to transport an audio signal with microphone or line level:

Unbalanced line: Utilising a two conductor cable, it transports the signal as the voltage between them. Electromagnetic interference can get added to the signal as undesired noise. Connectors that carry unbalanced signals have two pins, such as RCA (Phono) and ¼" (6.35mm, often referred to as jack) mono. 3 pin connector such as XLR (Cannon) may also carry unbalanced signals if one of the pins is unused.

Balanced line: Utilising a three conductor cable, one of them acts as a shield against electromagnetic noise and is the ground conductor. The other two have the same voltage with respect to the ground conductor but with opposite signs. The noise that cannot be rejected by the shield affects both signal conductors in the same way. At the device's input the two signals get summed with opposite sign, so that noise is cancelled out while the programme signal doubles in level. Most professional audio devices use balanced inputs and outputs. Connectors that can carry balanced signal have three pins, such as XLR (Cannon) and ¼" (6.35mm) stereo.

The graphs that follow show the recommended connection with different types of connectors to balanced processor or amplifier inputs. The connectors on the left-hand side come from a signal source, and the ones on the right hand side go to the inputs of the processor or amplifier. Note that on the unbalanced connectors on the left-hand side, two terminals are joined inside the connector. If hum occurs with balanced connections, try disconnecting the sleeve (ground) on the input connector. Note that the illustrations show what should be connected to what, but that pin locations on an actual XLR connector are different. Also, pin 2 hot is assumed on XLR connectors.

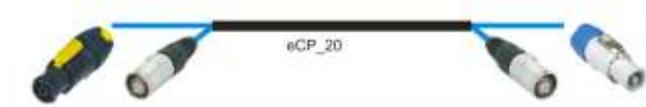


ANNEX II : DASnet cables

With each system, **cabling and patch panels are provided**. It is very important to use the system with the intended cables to prevent electromagnetic interferences between the analog audio signal, the DASnet data and the power. Be sure to check the specifications provided by the cable manufacturer. It is also especially important when installing connectors yourself, to note that when termination is not accurate, a cable will be unable to achieve its maximum performance and could have interferences.

There are 4 different types of cables:

- The main feeds which include power and a STP, CAT7 cable. These cables are named **eCP_xx** (xx refers to cable length, and the standard values are 3m or 20m).



- The links between cabinets (aero40A/Convert15A/LX-218CAnet), which are STP CAT7 cables. Cable code **eC_09**



- Power Links between cabinets. Cable code **Plink1_09**



- Links for RoadNet series. Power+STP CAT7. eCPk_1/eCPk_5



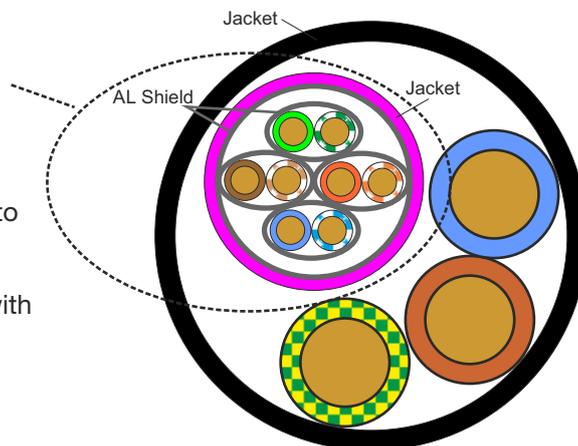
Important

The main feed cable eCP_xx has the following structure:

STP CAT 7 cable with Aluminium Shield for each individual pair and a main aluminium Shield.

The main Shield has to be soldered to the etherCon housing.

The eC_09 cable is a CAT5e cable with global Aluminium Shield.



ecP_xx: Power cable $3 \times 2,5\text{mm}^2$ + CAT7 $4 \times (2 \times 0,14\text{mm}^2)$

The pin out of the EtherCon to XLR is the following on the eCP cables:

etherCon	XLR
1 Orange-White	Audio+ 2
2 Orange	Audio- 3
3 Green-White	Audio Earth 1
4 Blue	
5 Blue-White	
6 Green	Data Earth 1
7 Brown-White	Data- (A) 3
8 Brown	Data+ (B) 2



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