



User's Manual



UX-221 / UX-218 / UX-218-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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UX-221 / UX-218 / UX-218-R

Cajas acústicas pasivas / Passive loudspeaker enclosures

Precauciones de Seguridad Safety Precautions

Conserve y lea todas estas instrucciones.

Siga todas las advertencias.

El signo de exclamación dentro de un triángulo indica la existencia de componentes internos cuyo reemplazo puede afectar a la seguridad.



Keep these instructions.

Heed all warnings. Follow all instructions.

The exclamation point inside an equilateral triangle indicates the existence of internal components whose substitution may affect safety.

El doble cuadrado indica equipo de Clase II.



The double square indicates Class II device.

Las especificaciones se encuentran en la etiqueta de la parte posterior del producto.

The specifications can be found on the rear label of the product.

El colgado del equipo sólo debe realizarse utilizando los herrajes de colgado recomendados y por personal cualificado.

The appliance should be flown only from the rigging points and by qualified personnel.

No exponga este equipo a la lluvia o humedad. No exponga el equipo a salpicaduras ni coloque sobre él objetos que contengan líquidos, tales como vasos y botellas. Equipo IP-20.

Do not expose this device to rain or moisture. 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.

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.



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%.

Working temperature ranges from 15°C to 45°C with a relative humidity of 95%.

El cableado exterior conectado al equipo requiere de su instalación por una persona instruida.

The outer wiring connected to the device requires installation by an instructed person.

El equipo cuenta con dos conectores de entrada en paralelo para facilitar la conexión de varias cajas en paralelo.

Note that the two Speakon input connectors are wired in parallel to provide easy parallel connection of several enclosures.

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



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

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 aparato se haya dañado de alguna forma, tal como que haya caído líquido o algún objeto en el interior del aparato, haya sido expuesto a lluvia o humedad, no funcione correctamente o haya recibido un golpe.

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.

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

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-221, UX-218 y UX-218-R*:

Declares that *UX-221, UX-218 and UX-218-R*:

Cumple con los objetivos esenciales de las Directivas:

Abide by essential objectives relating Directives:

- De Baja Tensión / Low Voltage 2014/35/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 50581:2012.- Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

INTRODUCTION

The *UX series* is comprised of systems designed in response to demands for high-output ultra-low frequency solutions. *UX-218* and *UX-221* are versions of *UX series* models that have been designed for external amplification. In addition, model *UX-218-R* is a version with built-in rigging hardware.

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

FEATURES

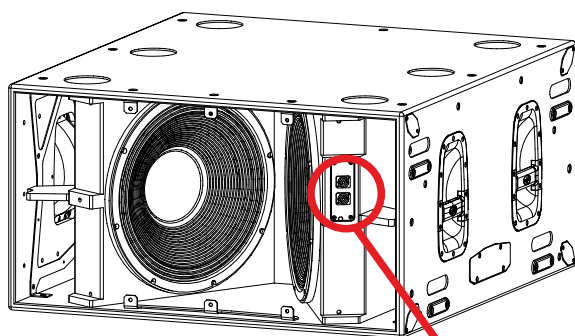
UX-218 / UX-218-R

- High performance subwoofer system for external amplification
- Two **18UXN** long-excursion loudspeakers
- Front loaded cross-fire configuration
- Solid birch plywood construction

The *UX-218 / UX-218-R* join the new range of *UX Series* subwoofer systems in passive versions. The *UX-218*, or *UX-218-R*, make use of two 18" **18UXN** 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 **18UXN** 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.

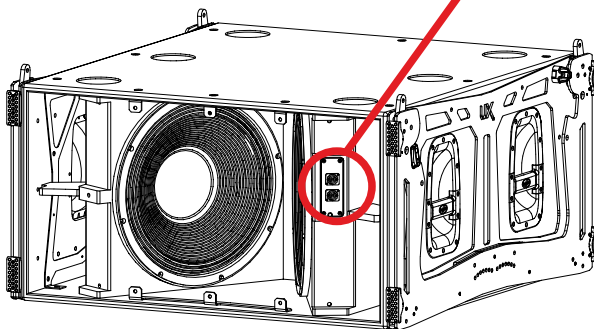
The enclosure is constructed using Birch plywood and makes use of extensive bracing to eliminate resonances. The woodwork is finished with the robust **DAS** ISO-flex protective coating for durability. A dolly platform with locking casters, *PL-UX218S* for *UX-218* and *PL-UX218RS* for *UX-218-R*, is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

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



UX-218

FRONT CONNECTORS FOR
CARDIOID CONFIGURATIONS



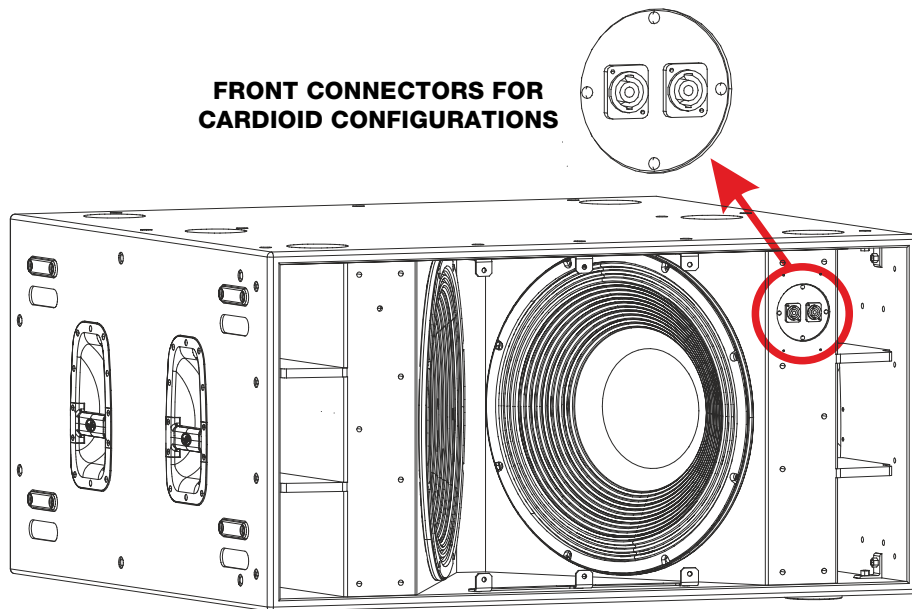
UX-218-R

UX-221

- 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-221** includes two 21" loudspeakers 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**



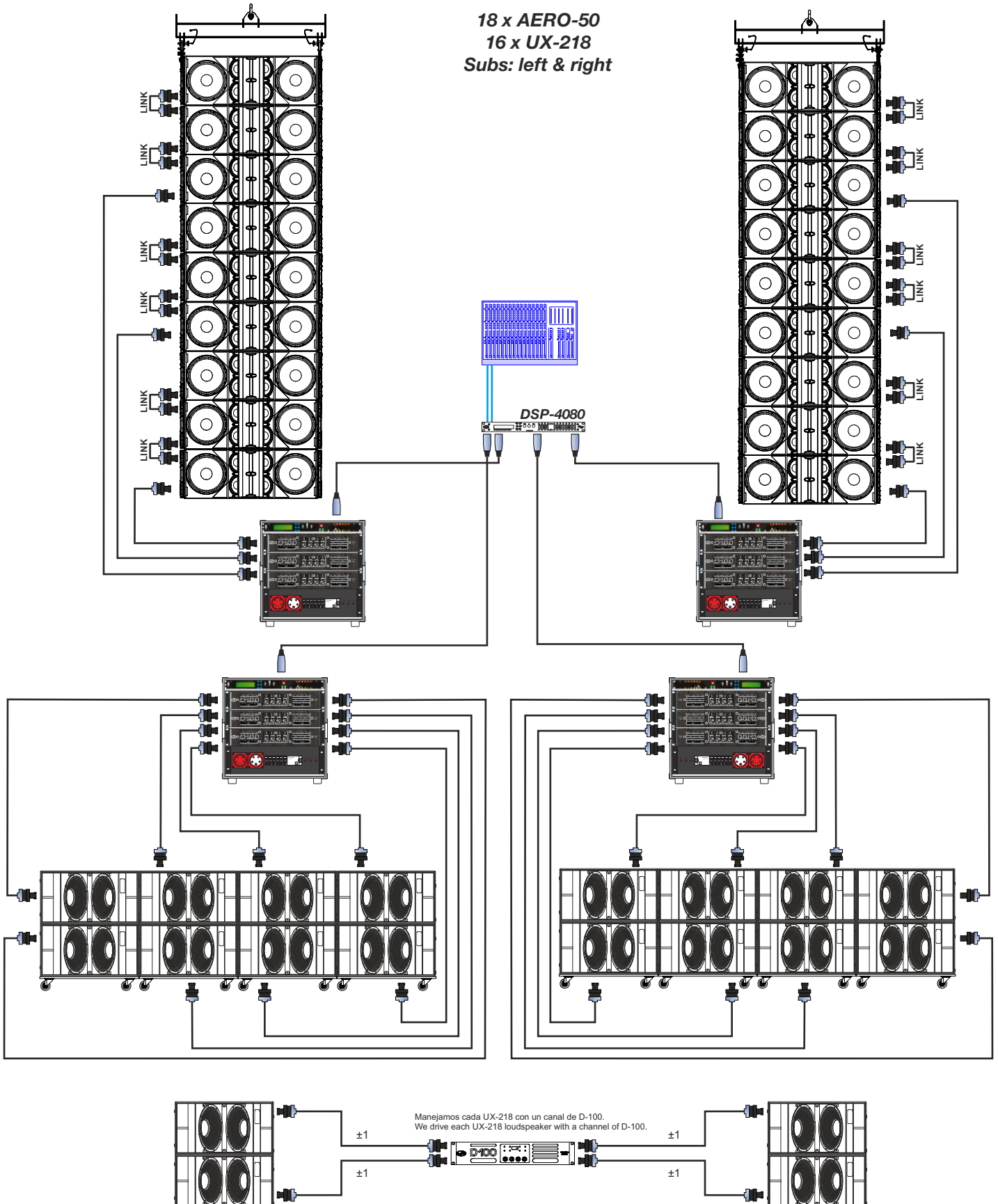
UX-221

CONFIGURATIONS

Next, find two examples. You will find more configurations on our website.

Example with UX-218

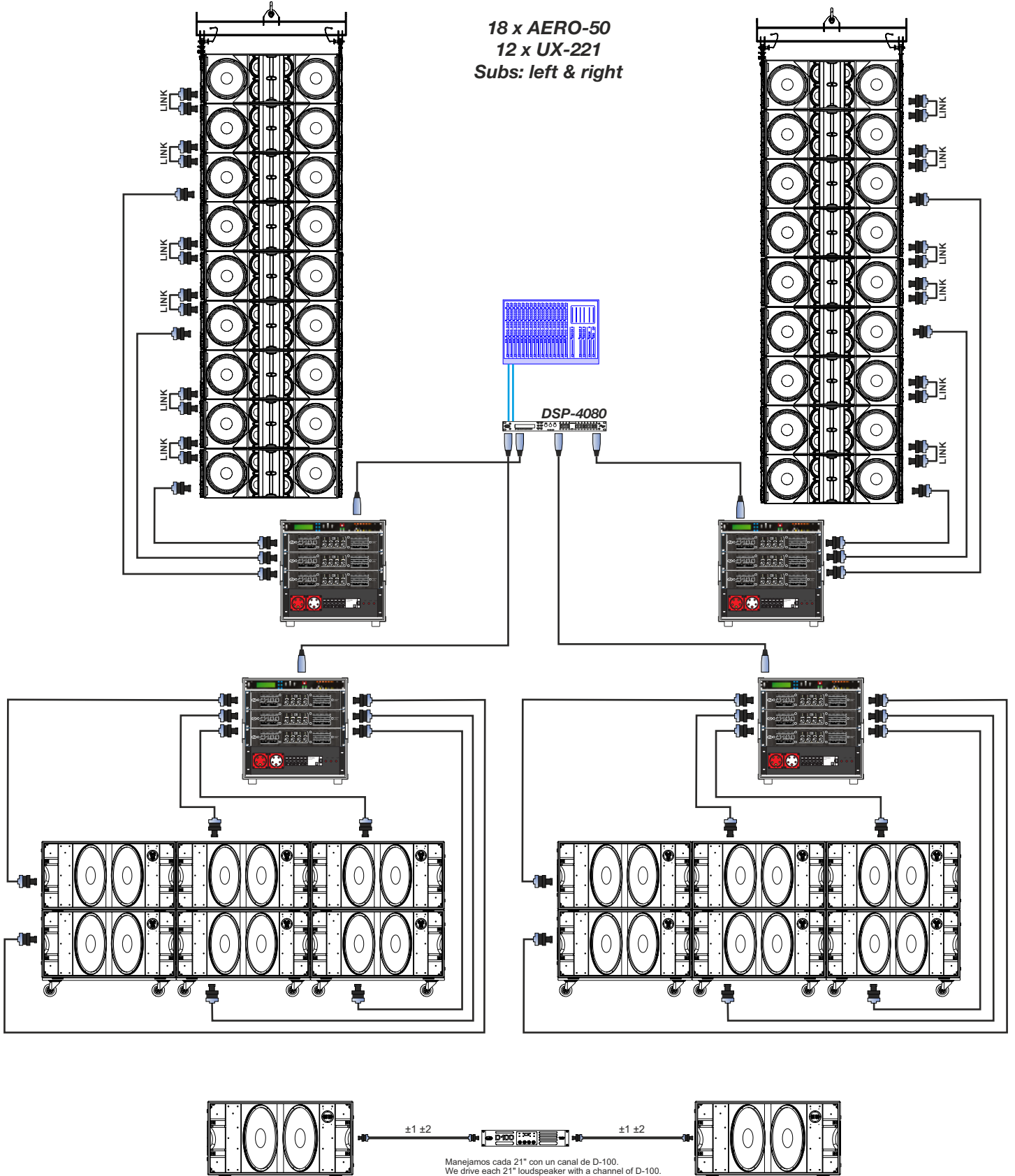
18 x AERO-50
16 x UX-218
Subs: left & right



CONFIGURATIONS (cont'd)

Example with UX-221

**18 x AERO-50
12 x UX-221
Subs: left & right**

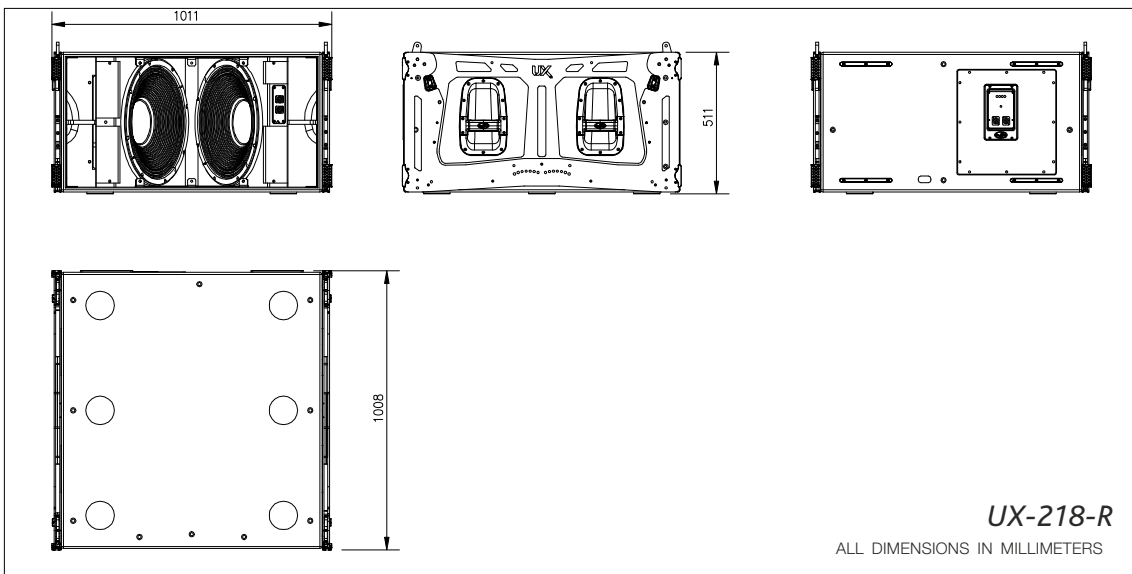
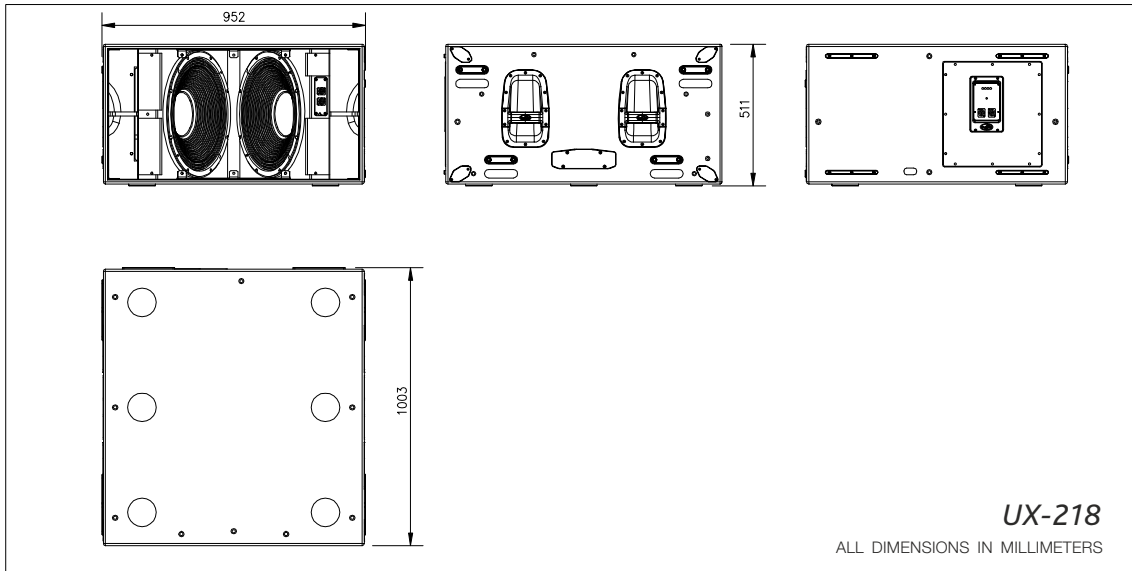
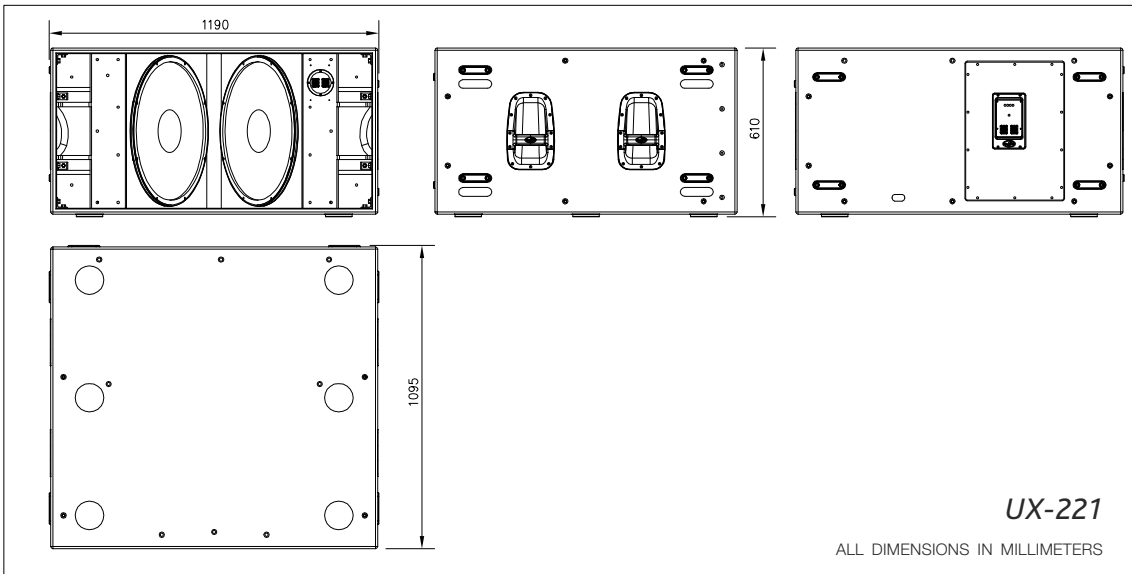


SPECIFICATIONS

	<i>UX-221</i>	<i>UX-218 / UX-218-R</i>
Frequency Range (-10 dB)	28 Hz – 125 Hz	28 Hz – 125 Hz
RMS (Average) Power Handling	2 x 2000W	2200W
On-Axis Sensitivity 1W/1m	104 dB SPL	103 dB SPL
Rated Maximum Peak SPL at 1 m	145 dB	142 dB
Transducers / Replacement Parts	LF: 2 x 21UXN4 / GM-21UXN4	LF: 2 x 18UXN / GM-18UXN
Nominal Impedance	2 x 4 Ohms	4 Ohms
Recommended Amplifier Power	2 x 2800W @ 4 Ohms (1 unit UX-221)	3600W @ 4 Ohms
Enclosure Geometry	Rectangular	Rectangular
Enclosure Material	Birch Plywood	Birch Plywood
Color/Finish	Black ISO-flex Paint	Black ISO-flex Paint
Rigging System	Ground Stackable	Ground Stackable Integrated in box design (R)
Connectors	4 x NL4 speakON wired ±1 & ±2	4 x NL4 speakON wired ±1
Dimensions (H x W x D)	60 x 120 x 110 cm 23.6 x 47.2 x 43.3 in	51.4 x 95.2 x 101 cm 20.1 x 37.4 x 39.7 in 51.4 x 101 x 101 cm (R) 20.1 x 39.7 x 39.7 in (R)
Weight	130 kg (286 lb)	87 kg (191.4 lb) 129 kg (283.8 lb) (R)
Accessories	ANL-2 Eye Bolt	ANL-2 Eye Bolt AX-UX218 Rigging system (R)
	FUN-2-UX221 Cover	FUN-2-UX218 Cover FUN-3-UX218 Cover
	PL-221S 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 change without prior notice.

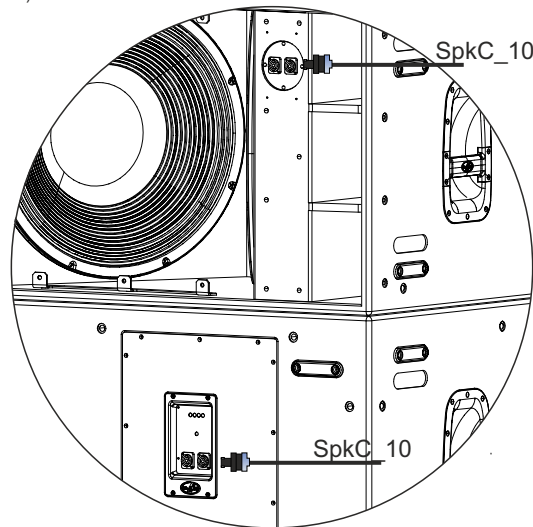
LINE DRAWINGS



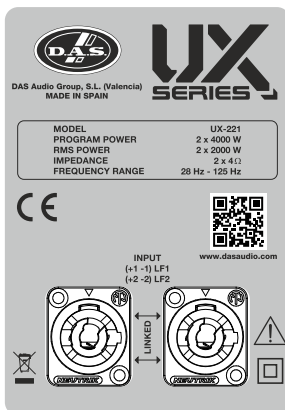
INSTALLATION AND ACCESSORIES

INSTALLATION

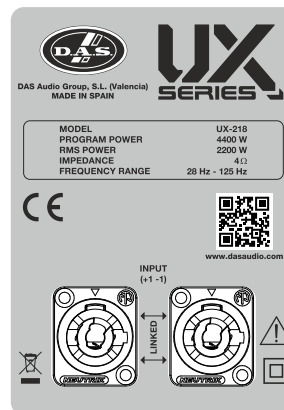
When boxes are flown in cardioid configuration, connect the turned units at the front for tidier wiring as shown in the figures (rear views).



Simply plug the cable into the front NL4 speakON connector. **Carefully observe the label directions for proper connection of speakers:**



LF1 (±1) & LF2 (±2)
[UX-221]



LF1 & LF2 (±1)
[UX-218 / UX-218-R]

ACCESSORIES

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 ongoing at DAS. Specifications are subject to change without notice.

It's common industry 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 for 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).

For the working load of each lift motor, a safety factor of 10:1 must be used.

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. 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.

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

ANL-2

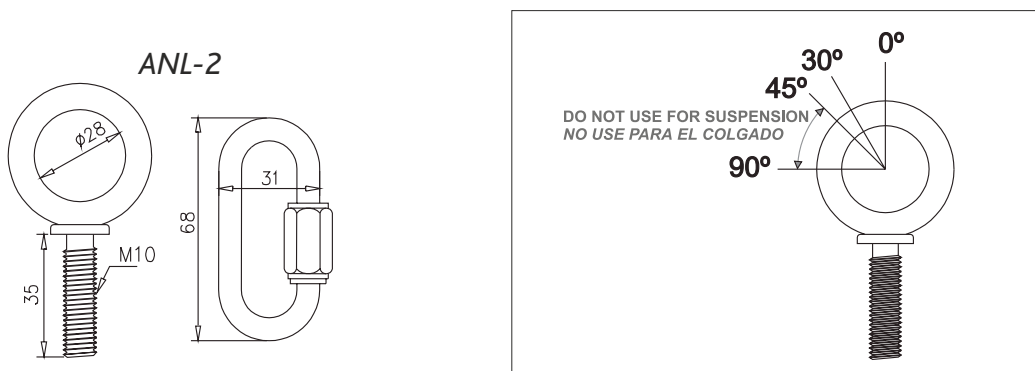
The **ANL-2** set is an optional set of four eyebolts and four carabiners. (Dimensions in the figure below are in millimeters)

To install an enclosure using this system, the Allen-head screws of the enclosure 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, vertical orientation can be achieved by using bottom eyebolt point at the back.

Each **ANL-2** eyebolt has a rated working load of 200 kg. (440 lbs.). Each **ANL-2** carabiner has a working load of 330 kg (726 lbs.). 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. For vertical orientation, use of an eyebolt beyond that angle is possible (see figure below).

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



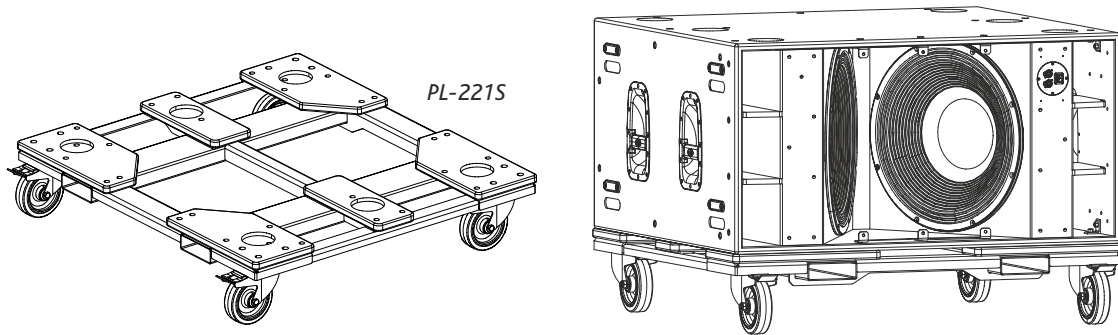
	0 degrees	30 degrees	45 degrees	> 45 degrees
% Working Load	100%	65%	30%	25%

PL-221S

Even though it features integrated rigging points for threaded eyebolts (*ANL-2*), the most practical use of *UX-221* is stacked. Using the *PL-221S* dolly platform (WLL = 450 kg), we can stack and transport up to three *UX-221* 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-221* 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.

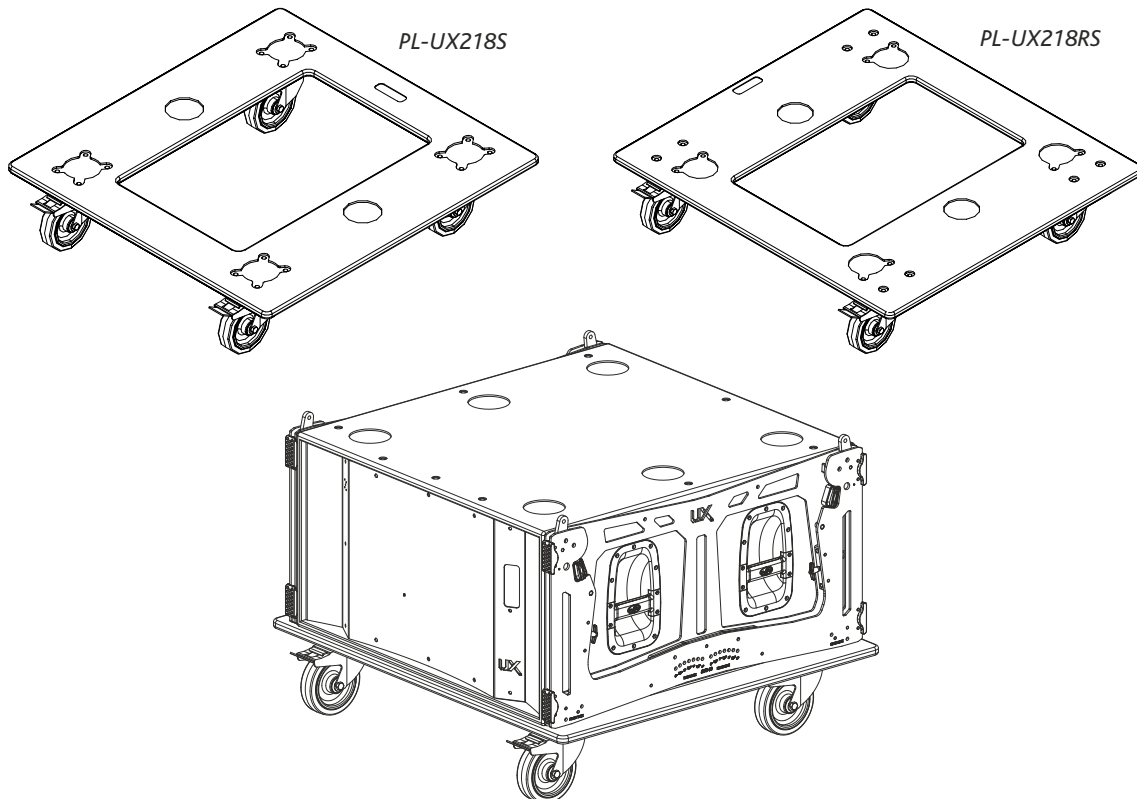


PL-UX218S / PL-UX218RS

As for *UX-221*, a dolly platform is available for transporting and stacking *UX-218* units (*PL-UX218S*, with WLL = 300 kg), and its rigging version, *UX-218-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 figure below.

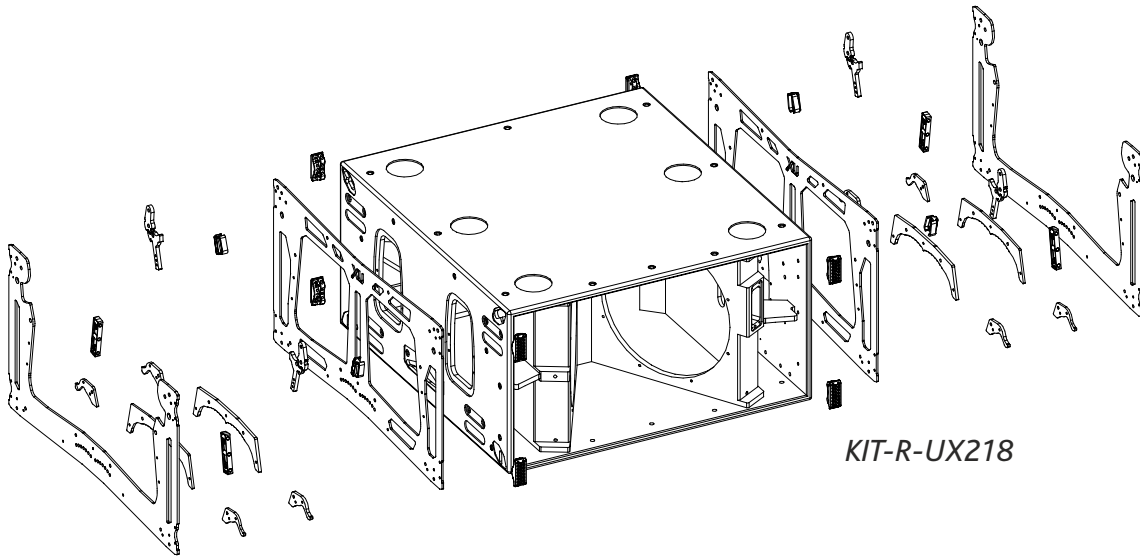
Note: when handling heavy loads, always wear appropriate clothing and protective elements such as gloves, safety shoes, etc.



RIGGING

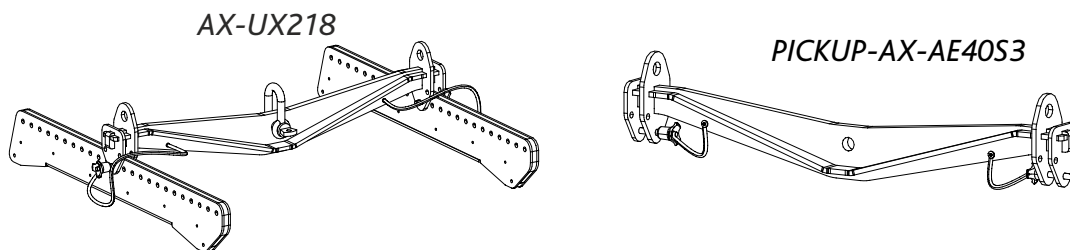
Out of the subwoofers in this manual, only *UX-218-R* can use a frame designed specifically for flying. *UX-218* can be converted to *UX-218-R* by means of the *KIT-R-UX218* accessory kit. Only in this way will the enclosure be safely suspended.

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



Therefore, only *UX-218-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.

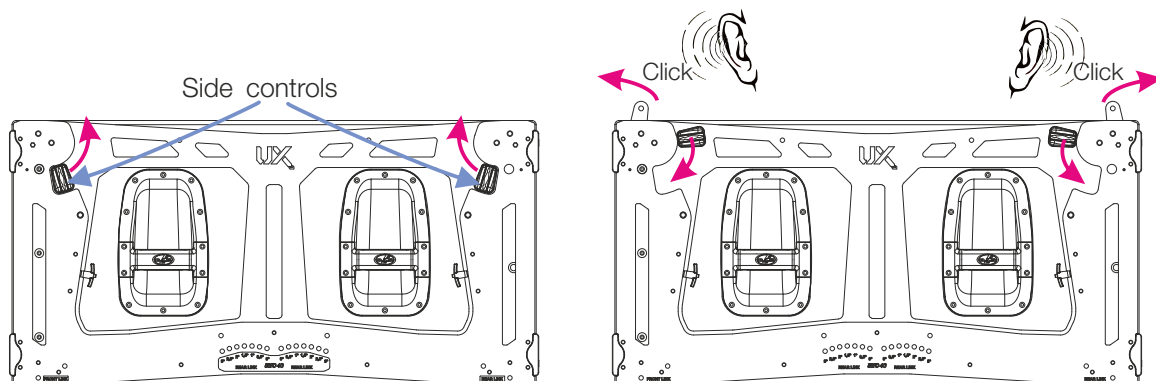


Next, we'll show an example of a line array system, with the steps on how to assemble it.

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.

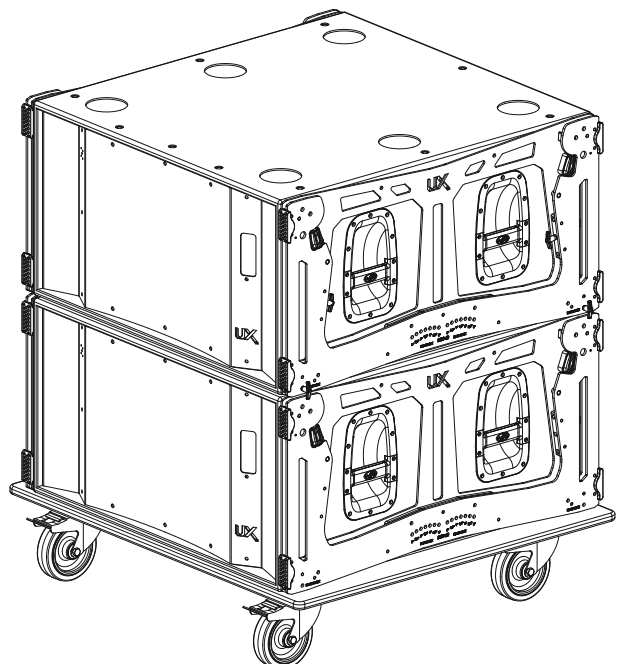
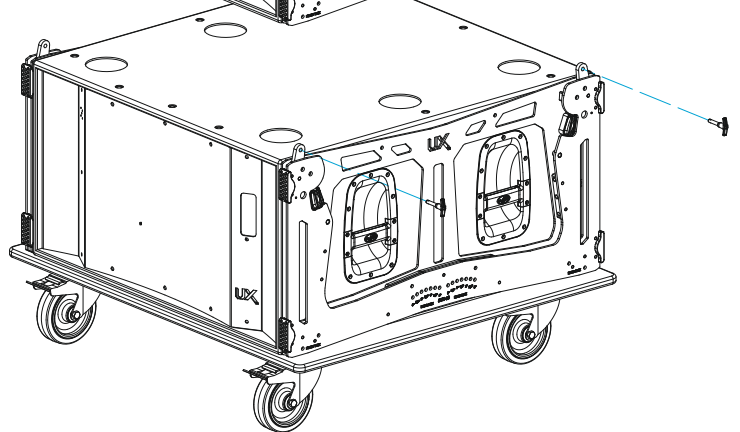
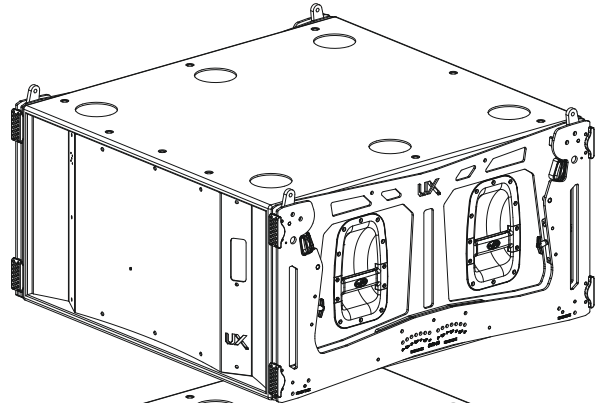
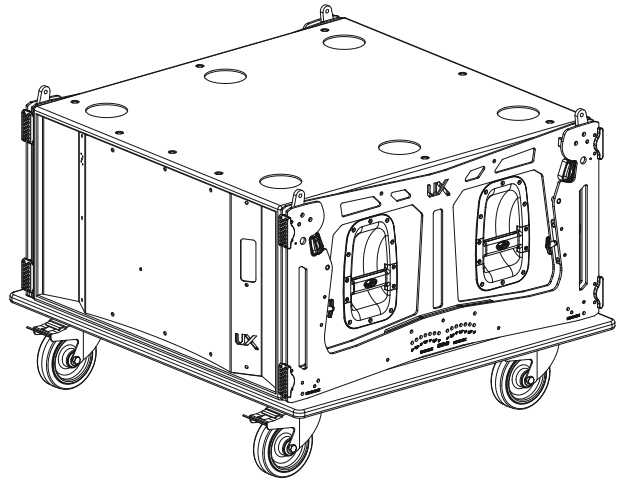
In our example, since it is not a cardioid configuration, all units go forward.

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

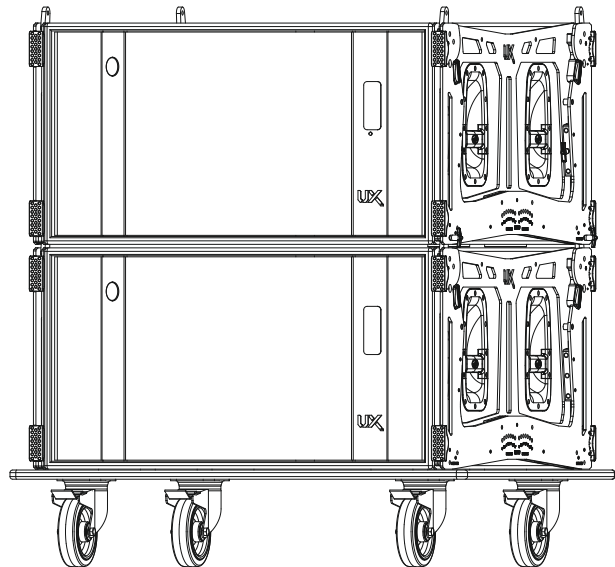
Align the holes and engage the quick release pins on both sides of the enclosures as indicated in the attached figure.

The result can be seen in the attached figure.

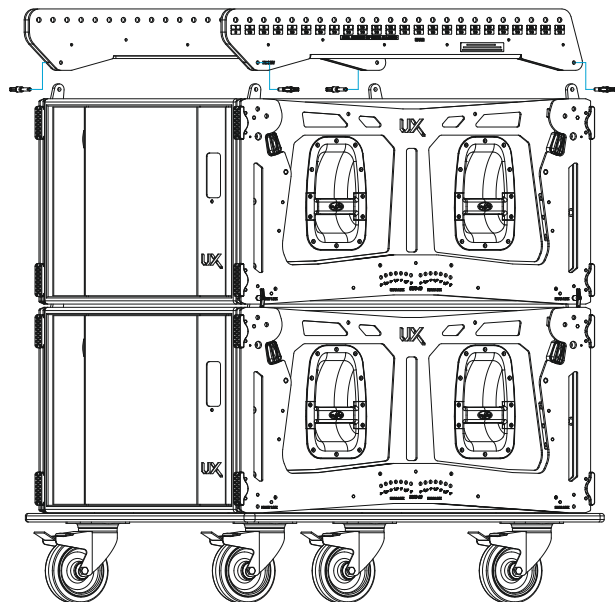
In our examples we will only stack two units, but, as you may remember, the platform allows for stacking up to three units.



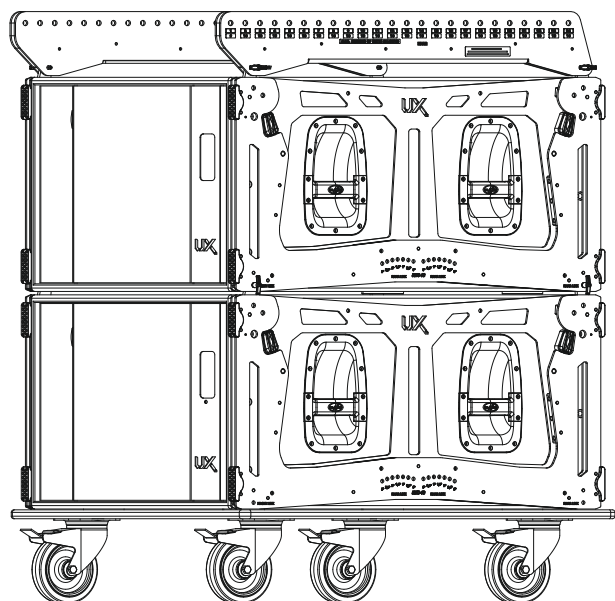
Expose the upper guides of the units like we previously did with the lower unit.



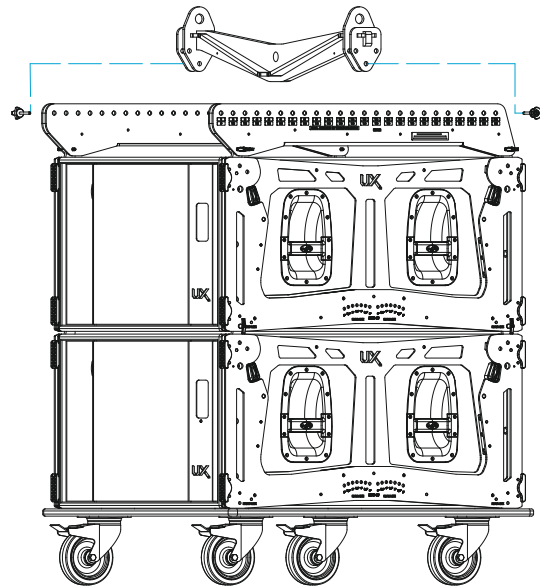
Place the side parts of the AX-UX218, each on its correct side (check the silk screening), lining up holes of the quick release pins, as shown.



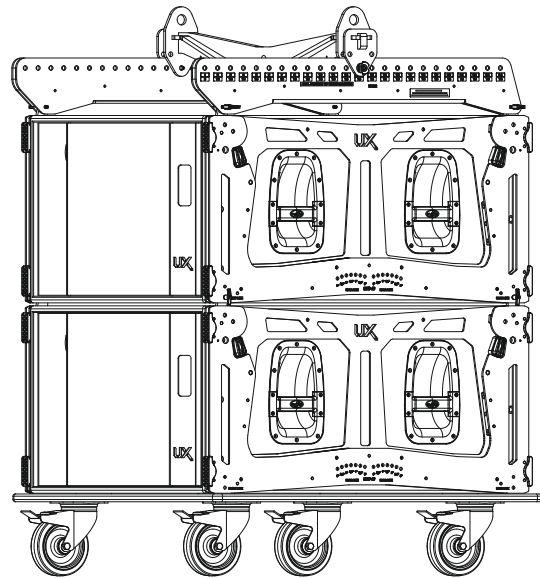
Next, engage the quick release pins to attach the AX parts to the stacked units, on both sides of the units.



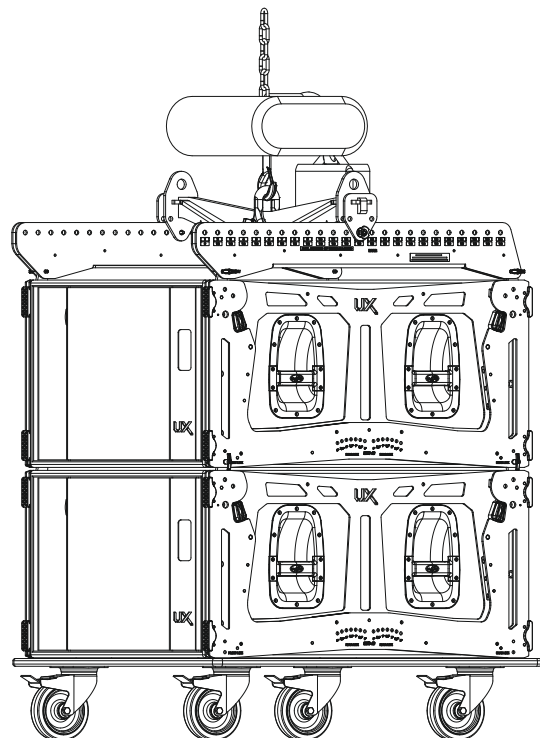
Attach the pick-up point, or pick-up points, to the holes in the side of the AX parts indicated by *Ease Focus*, using the quick release pins.



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.

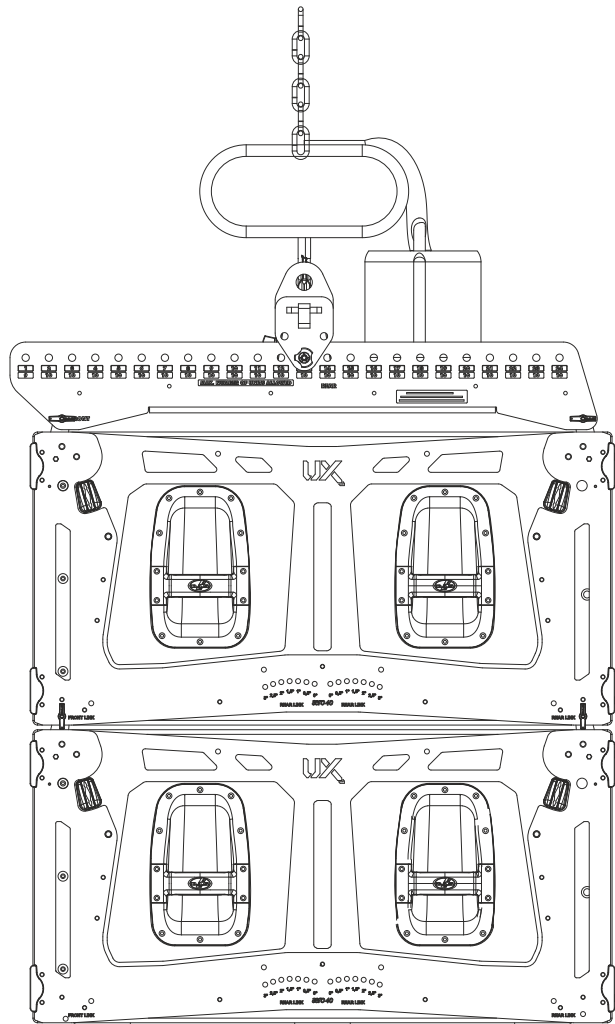


Proceed to hook the assembly to the motor (or motors, if using two pick-up points).

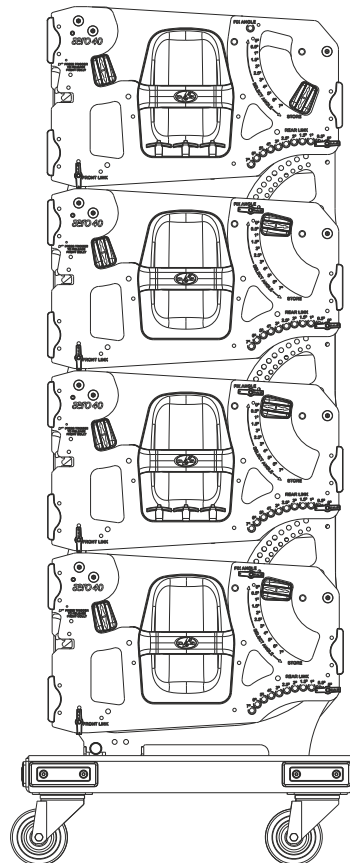


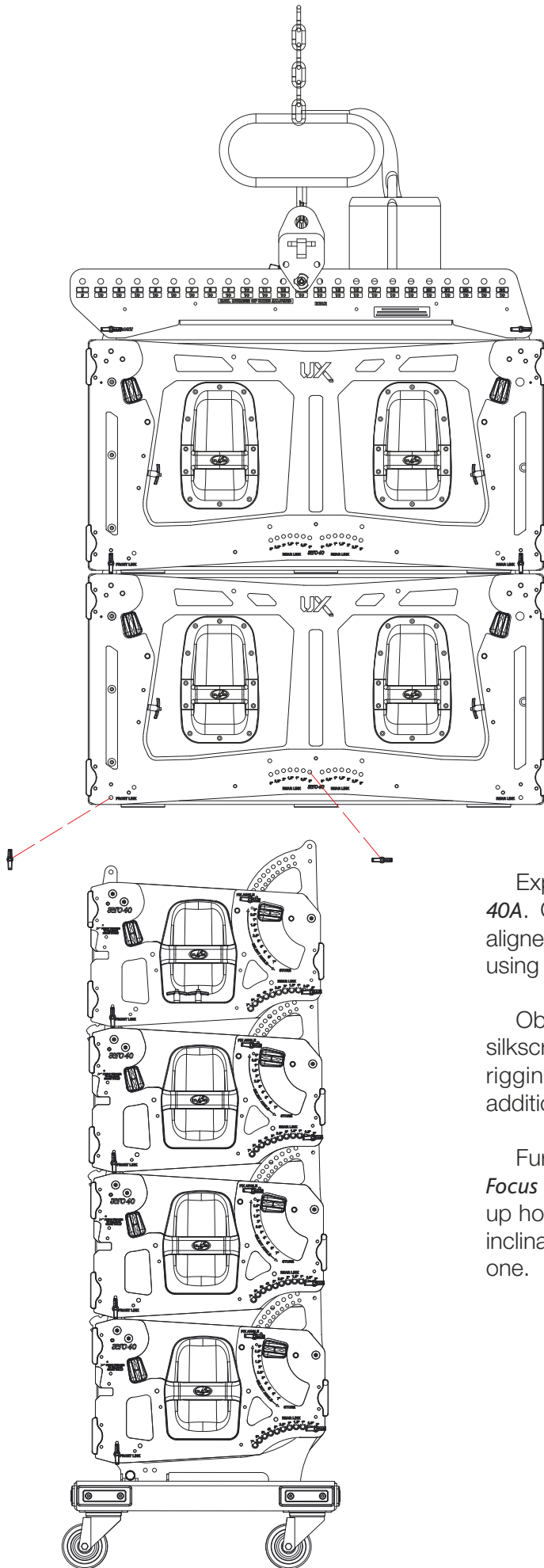
Lift the assembly slightly and remove the dolly platform so as to be able to add **AERO-40A** enclosures.

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-218-R**. In this example, two groups of 4 **AERO-40A** will be attached.

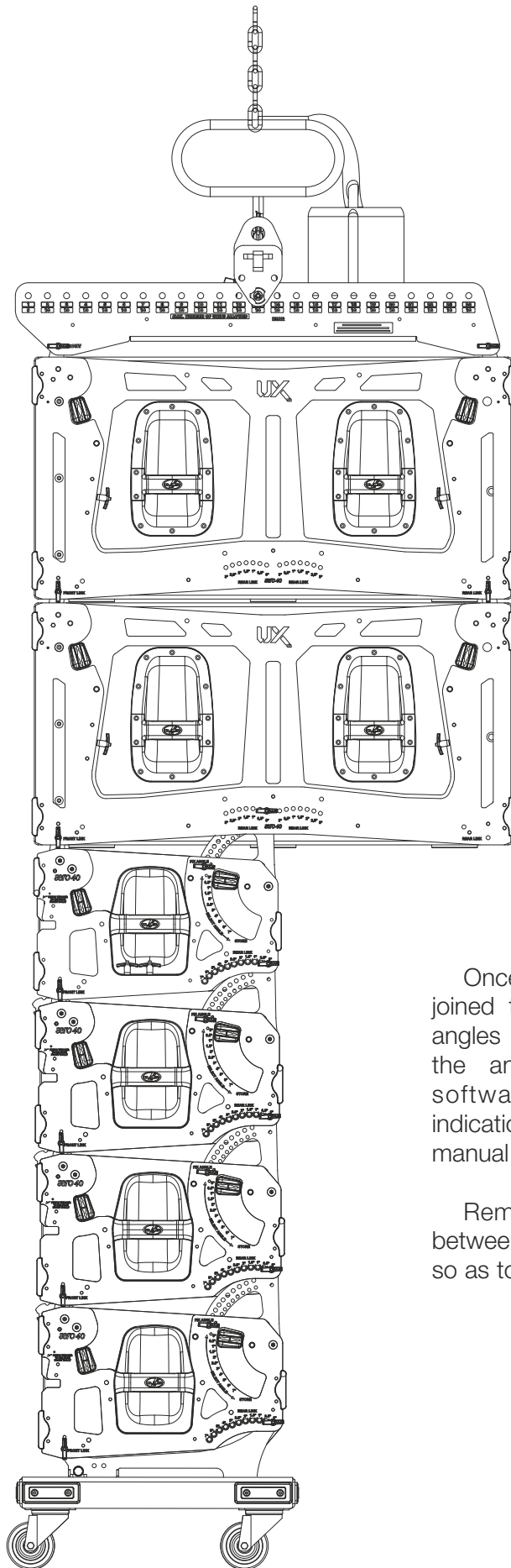




Expose the guides in the upper *AERO-40A*. Once the guides are prepared and aligned, link the two groups together using quick release pins.

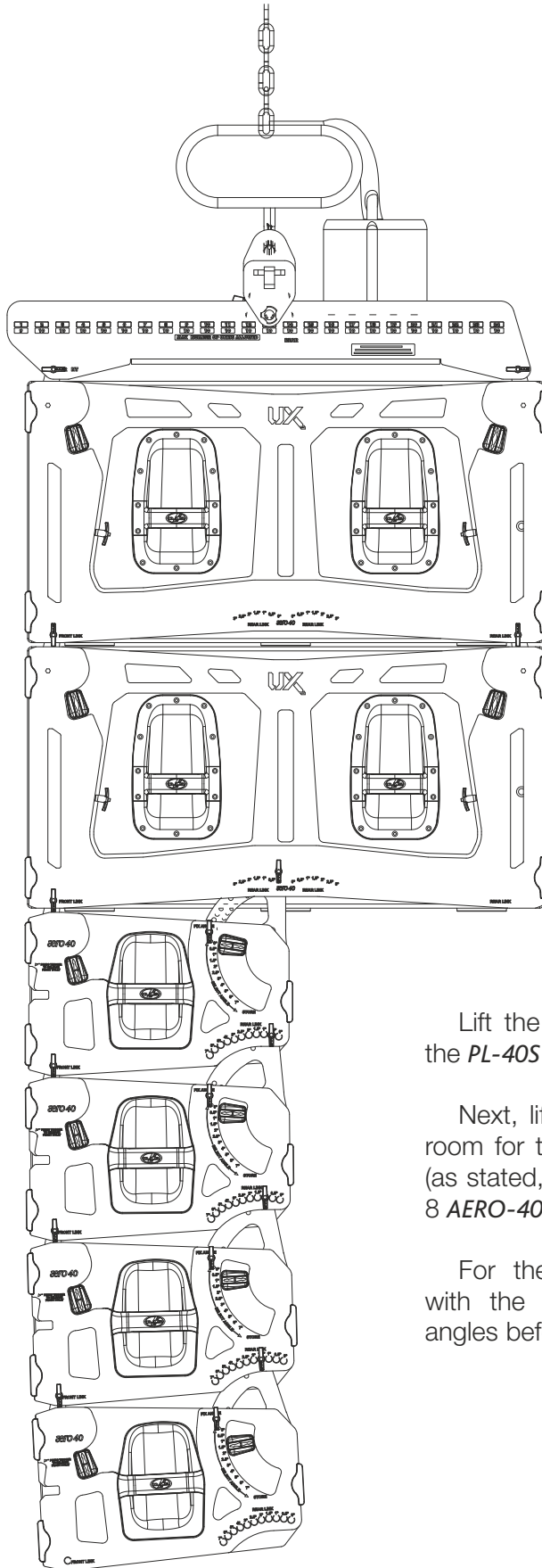
Observe the indications present in the silkscreen lettering and use the *AERO-40A* rigging manual, **RM_AE40_03**, as additional information.

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**).

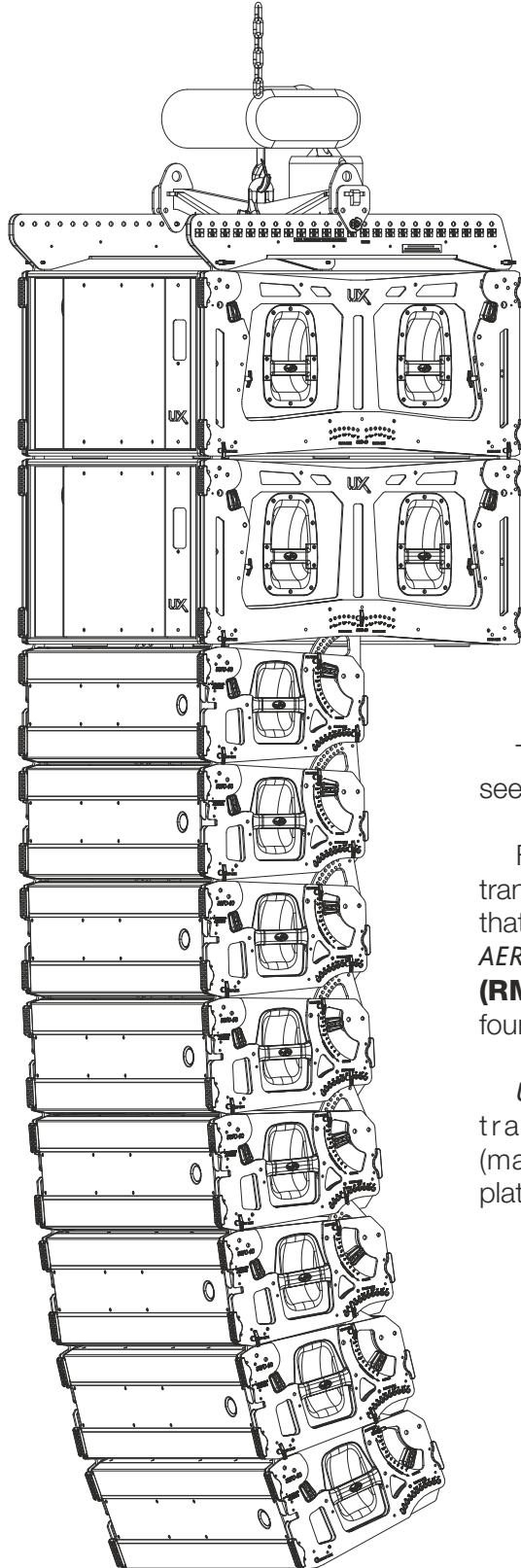
Remember that inter-box angles between *AERO-40A* units have been 0° , so as to allow for a safe transport.



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

ANNEX : Table for cable selection

This table shows the power loss in % and dB, for different cable lengths and sections shown. It is recommended that the losses do not exceed 30% in any case (around 3dB). Although it is recommended minimizing losses, the maximum acceptable losses are usually around 15% (approximately 1.4dB).

Longitud / Length		Calibre	Area	R	Perdida de potencia / Power Loss			
m	ft				AWG	mm2	Ohms	% @ 8 ohms
5	16,4	18	0,8	0,2250	2,74	5,33	-0,241	-0,475
		16	1,31	0,1374	1,69	3,32	-0,148	-0,293
		14	2,1	0,0857	1,06	2,10	-0,093	-0,184
		12	3,3	0,0545	0,68	1,35	-0,059	-0,118
		10	5,3	0,0340	0,42	0,84	-0,037	-0,073
		8	8,35	0,0216	0,27	0,54	-0,023	-0,047
10	33	18	0,8	0,4500	5,33	10,11	-0,475	-0,926
		16	1,31	0,2748	3,32	6,43	-0,293	-0,577
		14	2,1	0,1714	2,10	4,11	-0,184	-0,364
		12	3,3	0,1091	1,35	2,65	-0,118	-0,234
		10	5,3	0,0679	0,84	1,67	-0,073	-0,146
		8	8,35	0,0431	0,54	1,07	-0,047	-0,093
15	49	18	0,8	0,6750	7,78	14,44	-0,704	-1,354
		16	1,31	0,4122	4,90	9,34	-0,436	-0,852
		14	2,1	0,2571	3,11	6,04	-0,275	-0,541
		12	3,3	0,1636	2,00	3,93	-0,176	-0,348
		10	5,3	0,1019	1,26	2,48	-0,110	-0,218
		8	8,35	0,0647	0,80	1,59	-0,070	-0,139
25	82	18	0,8	1,1250	12,33	21,95	-1,143	-2,153
		16	1,31	0,6870	7,91	14,66	-0,716	-1,377
		14	2,1	0,4286	5,08	9,68	-0,453	-0,884
		12	3,3	0,2727	3,30	6,38	-0,291	-0,573
		10	5,3	0,1698	2,08	4,07	-0,182	-0,361
		8	8,35	0,1078	1,33	2,62	-0,116	-0,231
50	164	18	0,8	2,2500	21,95	36,00	-2,153	-3,876
		16	1,31	1,3740	14,66	25,57	-1,377	-2,565
		14	2,1	0,8571	9,68	17,65	-0,884	-1,686
		12	3,3	0,5455	6,38	12,00	-0,573	-1,110
		10	5,3	0,3396	4,07	7,83	-0,361	-0,708
		8	8,35	0,2156	2,62	5,11	-0,231	-0,456
75	246	18	0,8	3,3750	29,67	45,76	-3,057	-5,314
		16	1,31	2,0611	20,49	34,01	-1,991	-3,610
		14	2,1	1,2857	13,85	24,32	-1,295	-2,421
		12	3,3	0,8182	9,28	16,98	-0,846	-1,616
		10	5,3	0,5094	5,99	11,30	-0,536	-1,041
		8	8,35	0,3234	3,88	7,48	-0,344	-0,675
100	328	18	0,8	4,5000	36,00	52,94	-3,876	-6,547
		16	1,31	2,7481	25,57	40,72	-2,565	-4,542
		14	2,1	1,7143	17,65	30,00	-1,686	-3,098
		12	3,3	1,0909	12,00	21,43	-1,110	-2,095
		10	5,3	0,6792	7,83	14,52	-0,708	-1,362
		8	8,35	0,4311	5,11	9,73	-0,456	-0,889



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