Manual

Modular-15sp

Multifunctional Loudspeaker

VOICE ACOUSTIC

professional german loudspeaker systems

success through quality

Herzlichen Dank,
dass Sie ein Voice-Acoustic Produkt gekauft haben.
Seit dem Jahr 2006 entwickeln wir unsere Produkte
in der Überzeugung, dass es auf die Details ankommt.
Wir wünschen Ihnen viel Freude mit diesem Produkt.

Thank you very much,
for purchasing a Voice-Acoustic product.
Since 2006 we have been developing our
products in the firm belief that details matter.
May we wish you a lot of pleasure with this product.

Muchas gracias
por haber comprado un producto de Voice-Acoustic.
Desdel año 2006 estamos desarrollando nuestros productos
estando convencidos, que son los detalles que cuentan.
Le(s) deseamos mucha alegría usando este producto.

Merci beaucoup
d´avoir acheté un produit Voice-Acoustic.
Depuis 2006, nous développons des produits
avec la ferme conviction que les détails comptent.
Nous vous souhaitons beaucoup de plaisir à utiliser ce produit.

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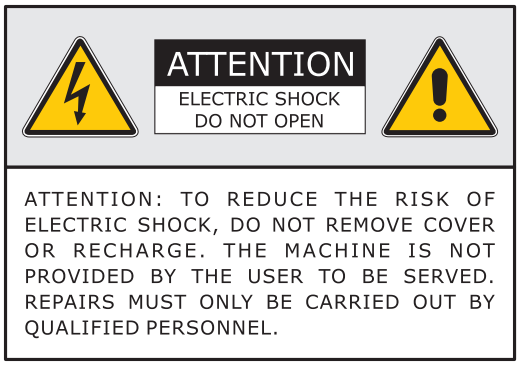
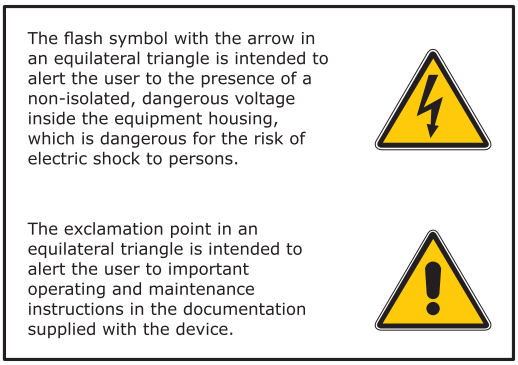
Safety Instructions Active Electronics





Read these instructions.

Observe all warning instructions.

Follow all operating instructions.

To prevent fire hazard or risk of electric shock, do not use this device in the rain or in moist environments. Do not operate the unit nearby the water.

Clean the unit only with a dry cloth.

Observe the instructions from the manufacturer for the mounting of the unit.

Do not mount the unit in the proximity of heat sources, such as heating units, herds or other heat radiation devices.

Install the power cable at places where it cannot be damaged, especially at the sites of the socket, extension cables and where it leaves the unit.

Never remove the safety device from the two terminal or grounding-type plug. A two-pin plug has two different plug contact widths. An earth plug has two plug contacts and a third contact for earthing. The wider plug contact or additional earth contact is for your safety. If the supplied plug size does not fit in your socket box, please consult an electrician for exchanging the socket box.

Only use additional devices/accessory parts, that meet the manufacturer‘s instructions.

Pull the power plug out in case of storm or when you do not use your device for a longer period.

All maintenance works must be performed by qualified service staff. Maintenance is required when the unit has been damaged, objects or fluids have leaked or fallen inside, when the unit was exposed to rain or humidity, or in case of malfunctioning or when it has fallen on the floor.

General Safety Instructions:
Loudspeakers produce a static magnetic field even if they are not connected or are not in use. Therefore make sure when erecting and transporting loudspeakers that they are nowhere near equipment and objects which may be impaired or damaged by an external magnetic field. Persons with cardiac pacemakers must maintain a safe distance.

The minimum recommended safety clearance is 1 m.

Never stand in the immediate vicinity of loudspeakers driven at a high level. Professional loudspeaker systems are capable of causing a sound pressure level detrimental to human health. Seemingly non-critical sound levels (from approx. 90 dB SPL) can cause hearing damage if people are exposed to it over a long period.

All connected cables must be laid in such a way that they cannot be crushed by objects and that nobody can step on them! Replace damaged cables immediately and do not use them!

Use only accessory parts specified by Voice-Acoustic or original accessory parts from Voice-Acoustic. Check all cabinets and accessories regularly for wear and replace them if necessary.

Do not set up the loudspeakers in places where they are permanently exposed to moisture, dust, dirt or direct sunlight.

Care
Wipe the surface of loudspeakers only with a damp cloth and pure water. In case of heavy pollution, repeat the above procedure several times if necessary. Do not use any chemical additives or aggressive detergents, as these may harm and damage the surfaces.

Transport and storage
When transporting and storing the unit, it is important to ensure that the surface and front grill of the loudspeaker are not damaged. Moisture can penetrate through exposed wood surfaces and cause the wood to swell. A bent or broken front grill will no longer adequately protect the sensitive speaker membranes. In addition, appreciable dust deposits may considerably impair the functionality of a loudspeaker membrane. For this reason, the loudspeakers should be transported and stored in a safe, careful, dry and largely dust-free manner.

The following accessory parts for transport and storage are available from Voice-Acoustic:

- Transport and rain cover for Modular-15, left (Art.-Nr. 501501100)
- Transport and rain cover for Modular-15, right (Art.-Nr. 501501200)
- Heavy duty flightcase for up to 2 x Modular-15 (Art.-Nr. 501503000)

Note: *The original packaging is unsuitable as permanent storage and transport packaging!*

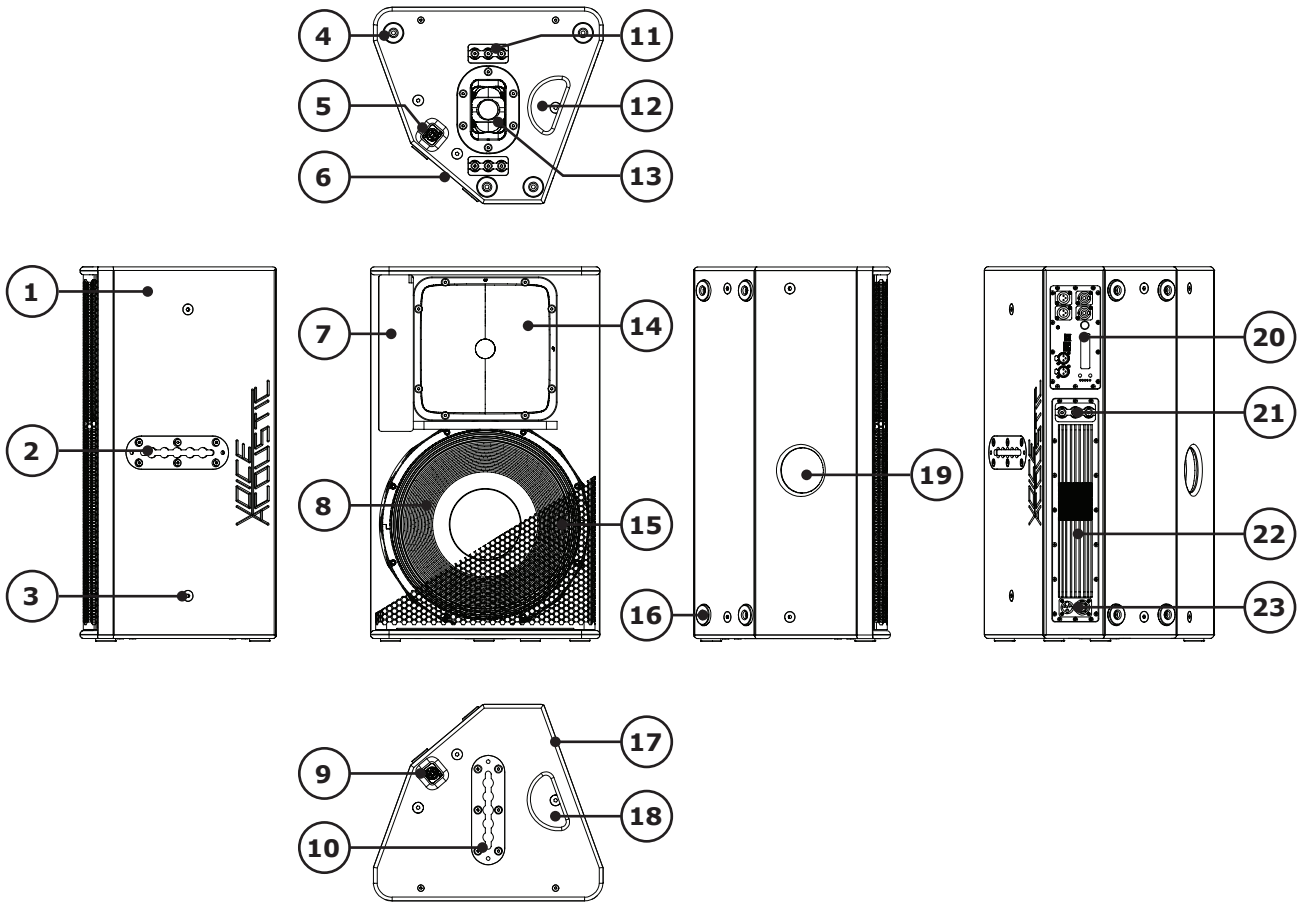
Warranty
The warranty period is 24 months from date of delivery.

On our choice we will eliminate any lack of conformity with repair or with replacement of the faulty goods. The place of performance for warranty services is Voice-Acoustic headquarters in Dörverden. In case of remedy of defects, the buyer shall bear all costs resulting from transportation of the goods to Voice-Acoustic headquarters in Dörverden.

The ordering party is not entitled to remedy the defect by itself or to organise a replacement and to charge such activities to Voice-Acoustic. In case of self remedy by the ordering party the warranty given by Voice-Acoustic becomes void.

Warranty doesn’t apply to parts of wear and tear, such as threaded points, such as threaded points, flying tracks, tilting pole socket, rubber feet and the SpeakON® connectors.

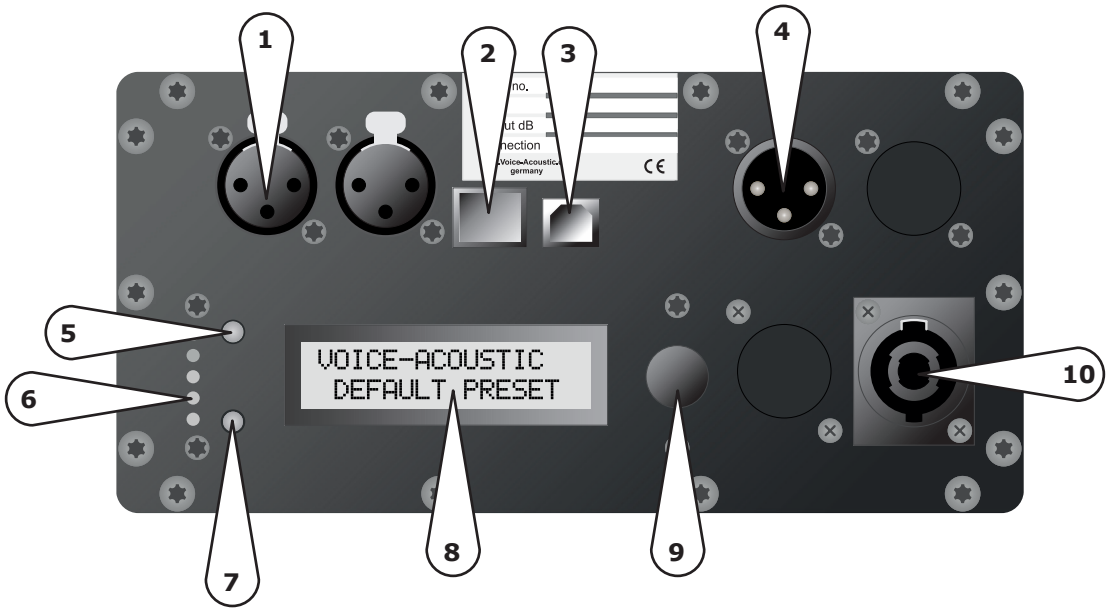
Components



1. 24 and 15 mm multiplex cabinet, Warnex textured paint finish
2. Easyfly flying track for horizontal suspension
3. 12 x M10 mounting points with internal steel brackets
4. 4 x rubber feet on the underside
5. SpeakON® connector on the underside
6. Monitor angle 20°
7. Bass reflex port
8. 15" Neodym woofer
9. SpeakON® connector on top side (not on Modular-15sp)
10. Easyfly flying track for vertical suspension
11. 2 x small flying track at the bottom (to fly two loudspeakers below each other)
12. Recessed grip on the underside
13. Tilting pole socket +/- 18°
14. 1,4" Neodym compression driver rotatable horn 90° x 40° or 60° x 40°
15. Front grille 1 mm with 10 mm acoustic foam
16. 4 x rubber feet at the monitor angle
17. Monitor angle 50°
18. Recessed grip on top
19. Recessed grip in the side panel
20. Control element* with type plate and serial number
21. Safety point for safety rope with Single-Stud
22. Amplifier module with cooling fins and fan
23. powerCON TRUE1 connectors

*For equipment and functions see Voice-Acoustic-Control operating manual.

Connections Control element



01. Analog input
2 x separate 3-Pin connector for Audio-input. Each input is a symmetric XLR-connector

02. Ethernet connection
RJ45 jack for network connection

03. Standard USB Jack Type B
The unit can connected to the PC via a traditional USB-cable.

04. Analog output
1 x Separate 3-pin connector for audio output. The output is a symmetric XLR-connector.

05. Button top
To enter the system menu and browse between the configuration functions.

06. Peak Level LEDs
Displays the current PEAK level in 5 levels: -18 dB, -12 dB, -6 dB (green), -3 dB (yellow), Limit (red).

07. Button bottom
To leave the system menu or the configuration functions.

08. LCD Display
Background lit double-space 16-Segment LCD Display, for all important edition parameters.

09. Encoder wheel
You can change the parameter values with the encoder wheel. You can select different parameter values by pressing and set them by turning.

10. Speaker output
For self-powered tops also the bi-amping amplifier signal is implemented for the speak-on jack, in order to feed a non-active top bi-amping from the self-powered top. This also requires a 4-pin speak-on cable. Configuration 2+/2- bass-midrange speaker, 1+/1- tweeter.

Technical data

Components	1 x 15" Neodym woofer (LF) with 4" voice coil 1 x 1,4" Neodym compression driver (HF) with 3" voice coil
Frequency response 60° **Frequency response 90°**	60 Hz - 17,6 kHz (- 10 dB) 130 Hz - 17 kHz (+/- 3 dB) 58 Hz - 17,8 kHz (- 10 dB) 122 Hz - 16.5 kHz (+/- 3 dB)
Coverage range (h x v)	90° x 60° or 60° x 40°, rotable horn
Monitor angles	50° and 20°
Powerhandling	LF: 850 W AES / 1.700 W program / 3.400 W peak an 8 Ω HF: 110 W AES / 165 W program / 330 W peak an 16 Ω
Sound pressure	129 dB SPL AES / 132 dB SPL program / 135 dB SPL peak
Dimensions / Weight	698 (h) x 431 (w) x 368 (d) mm / 27,9 kg

Integrated 2-Way Amplifier Modul

Power output CH1	2.400 W/4 Ω, 1.580 W/8 Ω, 800 W/16 Ω
Power output CH2	800 W/4 Ω, 450 W/8 Ω, 200 W/16 Ω
Amplifier gain	CH1 32 dB, CH2/3 26 dB
Signal-to-noise ratio	>120 dB (20 - 20.000 Hz, 8 Ω)
Damping factor	>1.000 (8 Ω, 1 kHz)
Distortion	THD+N < 0,05 % (20 - 20.000 Hz, 8 Ω)

Integrated Loudspeaker Management System

Manual hand operation	2 button and 1 x digital encoder-wheel
Operable language	Selectable between English, German, France, Spain
Software connection	Bi-directional connection in real time via USB, Ethernet
Controllable units about software	Up to 128 self-powered Speaker & HDSP-amplifier in one network
DSP preset memory quantity	80 Presets
Processor	64 bit, 96 kHz sample rate
Dynamic range input	120 dB
Maximum input level	+ 23 dB
Latency	0,5 ms
Routing	2-input signals can mix together in one loudspeaker
EQ filter	10 parametric filter each In- and Output
X-Over	Butterworth, Bessel, Linkwitz-Riley
Limiter	In each Input and Output

Setup

The Modular-15sp loudspeaker is designed for standing, vertical and horizontal operation. A variety of accessories is available from Voice-Acoustic to securely attach the loudspeaker safely on tripods, distance rods or hanging it from on trusses, ceilings and walls. Ensure that the loudspeakers are securely attached to prevent personal injury and damage of property.

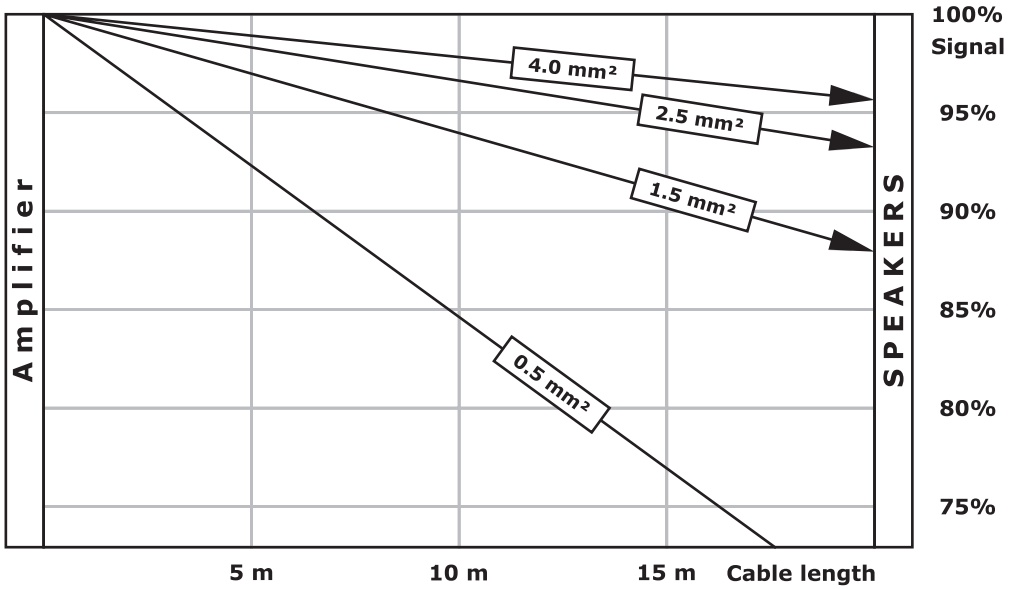
Connecting cables

When connecting the cables to the loudspeaker, ensure that the polarity (+/-) and pin assignment (1/2) is correct. Incorrect connection results in a significant change in the loudspeaker sound characteristics and may damage the compression driver.

The two connection sockets on the back of the loudspeaker can be used to link multiple loudspeakers on a single amplifier. Note that parallel connection reduces the total impedance (Ω) seen by the amplifier. The total impedance of loudspeakers connected in parallel must not drop below the minimum operating impedance of the amplifier.

Voice-Acoustic recommends to use the available 4 x 4 mm² Speakon cables for mobile use.

We recommend wiring the basses with at least 4 mm² in installations. The cables of the tops in installations must be sufficiently dimensioned according to impedance, power and cable length.



Simplified display without consideration of loudspeaker impedances

Operation

A Modular-15sp can feed a Modular-15 bi-amp via a 4 pin cable.

The woofer is designed in 8 Ω, 16 Ω in the compression driver.

Make sure the appropriate preset has been selected before connecting the speaker to the system power amp or self-powered subwoofer.

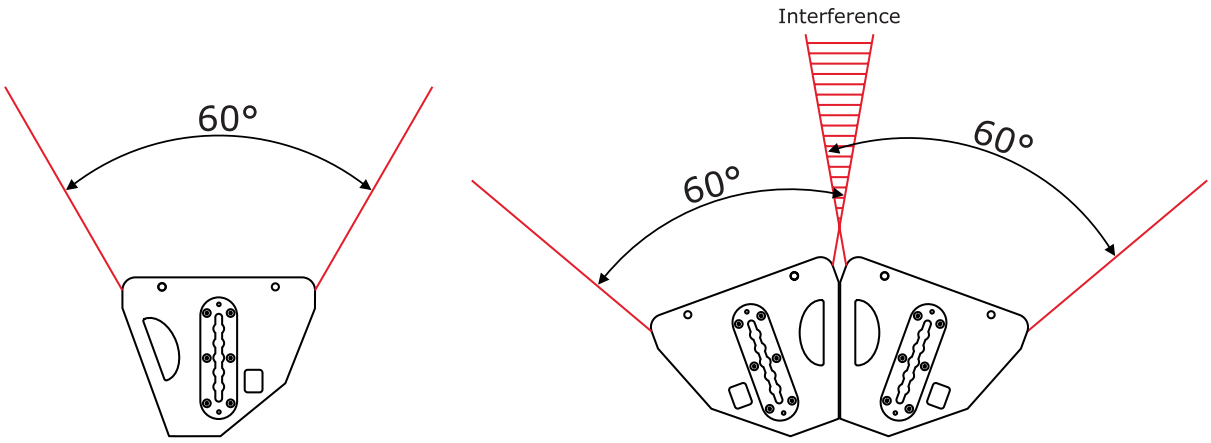
Using the wrong preset can damage parts of the loudspeaker.

Forming a Array

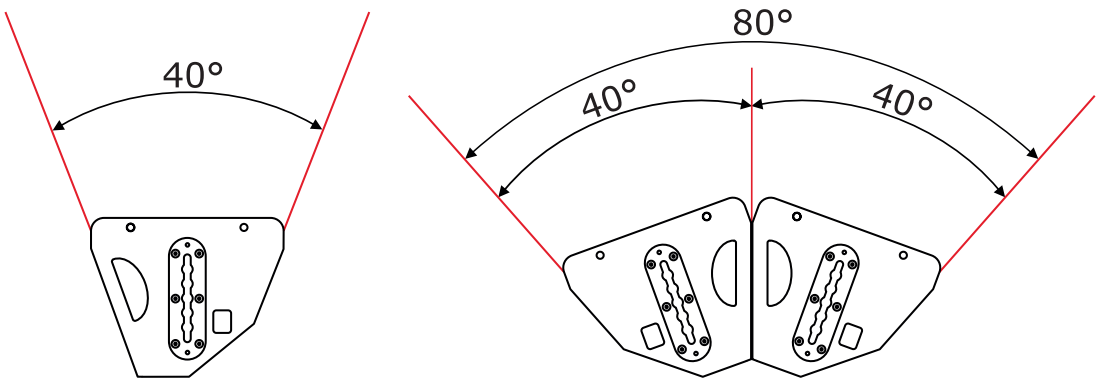
For maximum flexibility, the user can choose between two different beam angles, 60° x 40° or 90° x 60°. The system amplifiers of the HDSP series and the controller boards of the self-powered subwoofers contain specific settings as presets for both beam angles.

Horns 60° x 40° or 90° x 60° are fitted as standard. If you want to use two Modular-15 side by side in an array (only with 60° x 40° horn), the horns must be rotated to avoid interference.

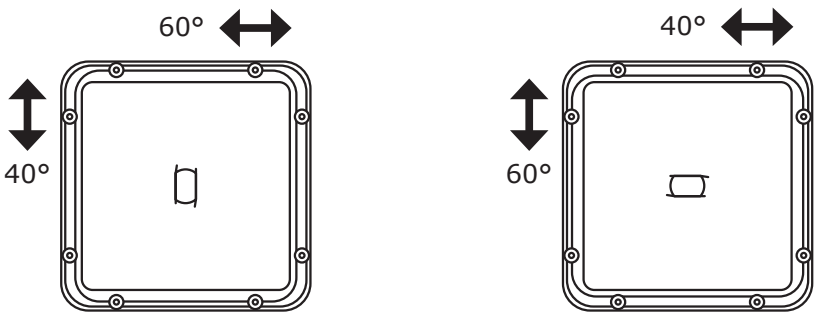
> ***Note:*** *The two loudspeakers are always joined together on the side walls with the largest contact surface. So that the handles are inside and the bass ports outside.*



Modular-15sp in array with horn 60° x 40° (v x h) interference occurs

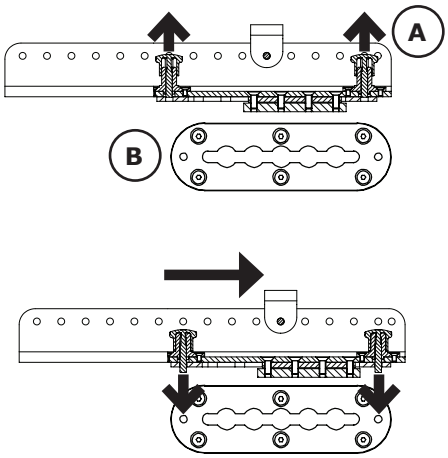


Modular-15sp with rotated horn 40° x 60° (v x h) Interference minimized



Horn 60° x 40° seen from the front

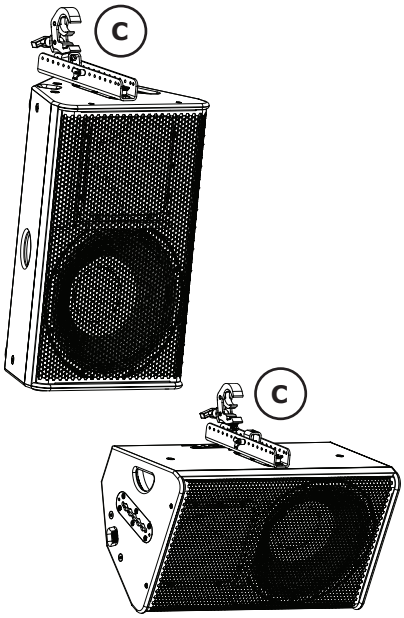
To turn the horn, remove the M6 x 40 mm countersunk head screws with which the horn is fixed. Then turn the horn with driver by 90° and screw it on again.



Easyfly mechanics
Tool-less flight mechanism for clicking in and exact alignment of the loudspeaker in the horizontal and vertical axis.

1. Pull the two locking bolts (A) upwards and let them engage by turning them slightly.
2. Insert the Easyfly mechanics into the flying track (B).
3. Slide the mechanics backwards as far as it will go.
4. Let the two locking bolts snap into the intended holes on the flying track.

Note: *Notice that the two locking pins (A) are engaged to prevent the Easyfly-Mechanics from slipping out.*

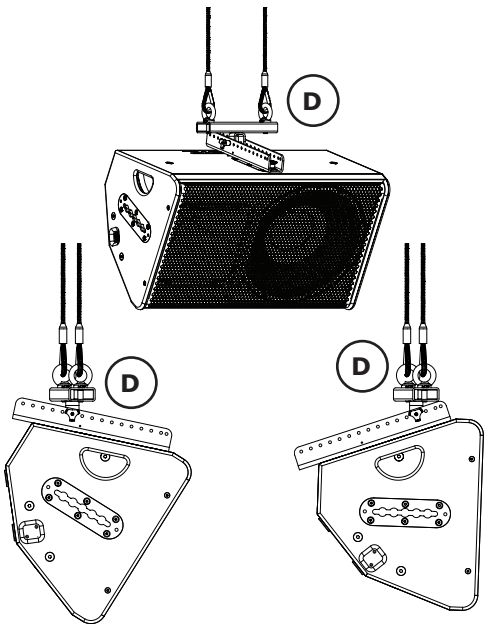


Installations with Easyfly mechanics
Installation with self-lock clamp (C) on trusses.

1. Mount the self-lock clamp to the Easyfly mechanics using an M10 threaded screw and lock nut.
2. Hang the clamp and holder into the mechanics using ball lock bolts.
3. Hang the loudspeaker into the truss.
4. Adjust the inclination by fixing the holder on the top hole rail with the ball locking pin.

Installation with universal suspension arrangement for flight mechanics (D) on high ceilings

1. Mount the universal suspension arrangement for flight mechanics with an M10 threaded screw and lock nut to the mounting of the Easyfly mechanics.
2. Hang the suspension device and holder into the mechanics using ball locking bolts.
3. Hang the loudspeaker into the installed chains.
4. Adjust the inclination by fixing the holder on the top hole rail with the ball locking pin.

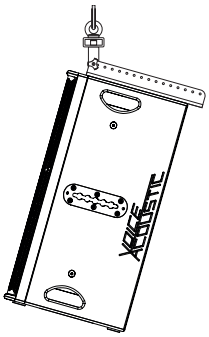
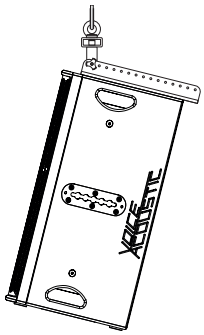
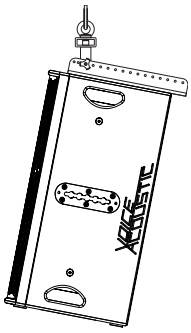
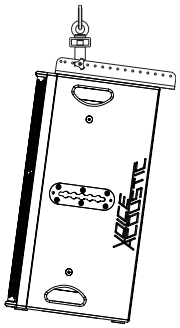
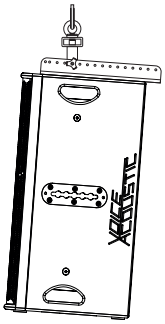
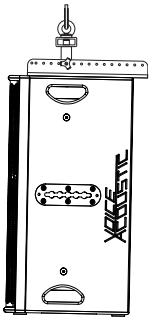
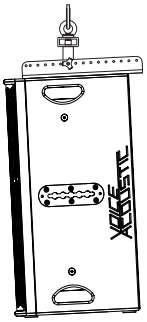
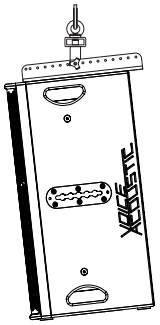
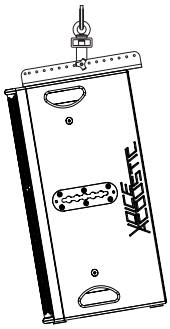
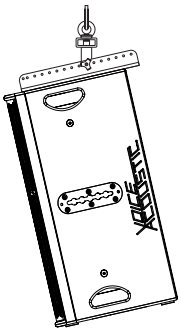
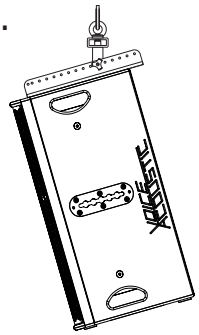
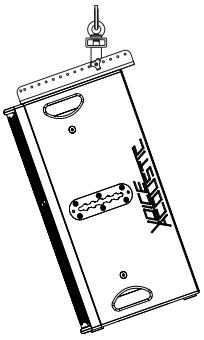
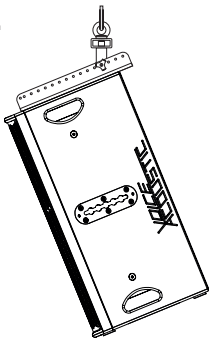
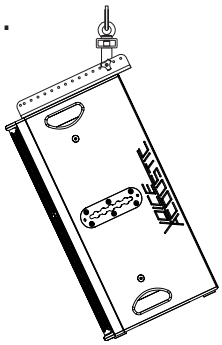
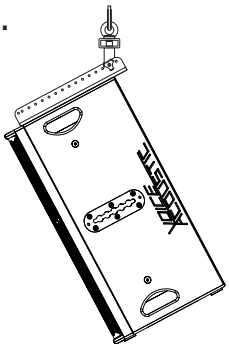
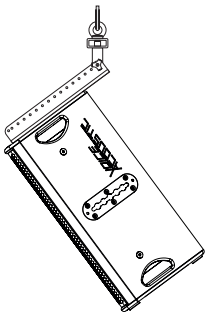


Note: *The inclination depends on the hole in which you fix the Easyfly mount on the hole rail!*

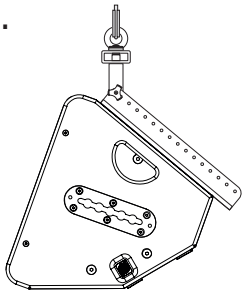
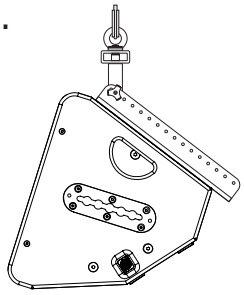
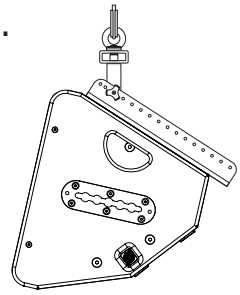
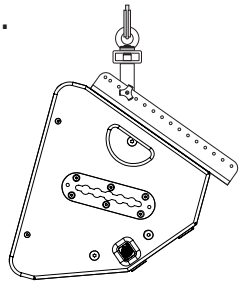
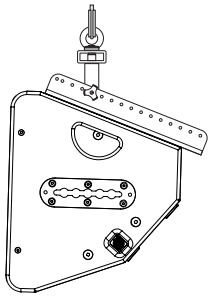
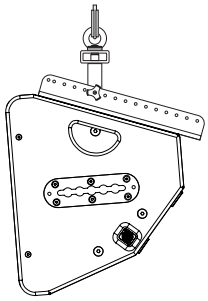
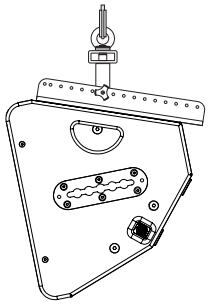
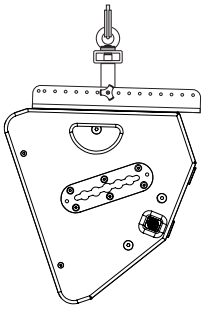
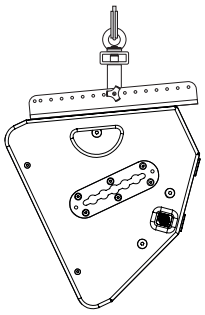
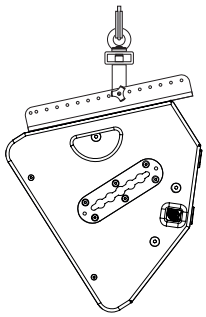
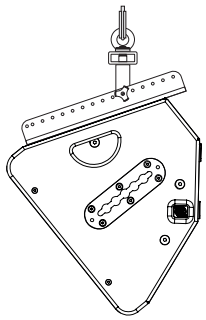
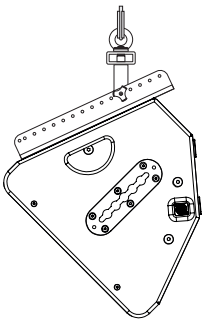
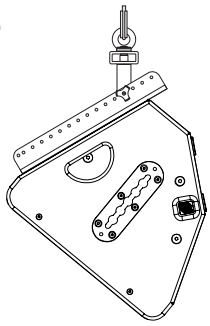
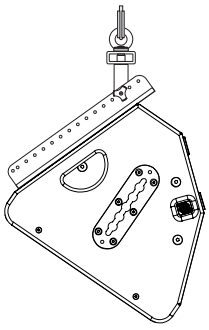
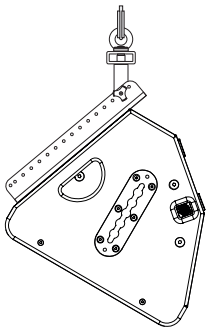
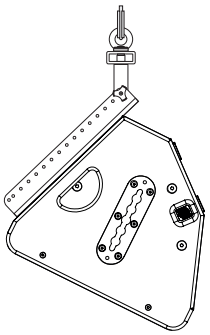
Adjusting the inclination with the Easyfly mechanic

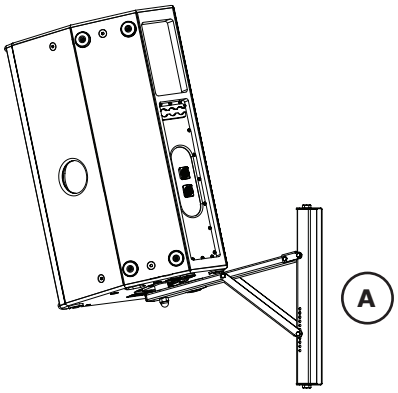
The Easyfly mechanic have 16 locking holes which can be used to determine the inclination.

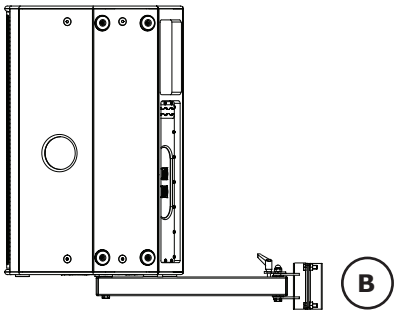
Vertical operation

1.  **-15,7°**	2.  **-14,0°**	3.  **-10,9°**	4.  **-7,6°**
5.  **-4,2°**	6.  **-1,1°**	7.  **2,8°**	8.  **6,3°**
9.  **9,5°**	10.  **12,8°**	11.  **16,0°**	12.  **19,4°**
13.  **22,3°**	14.  **25,1°**	15.  **28,0°**	16.  **30,5°**

Horizontal operation

1.  **-19,7°**	2.  **-17,4°**	3.  **-12,8°**	4.  **-7,6°**
5.  **-1,7°**	6.  **4,5°**	7.  **11,3°**	8.  **18,4°**
9.  **25,3°**	10.  **32,3°**	11.  **38,8°**	12.  **44,9°**
13.  **50,5°**	14.  **55,6°**	15.  **59,8°**	16.  **63,6°**

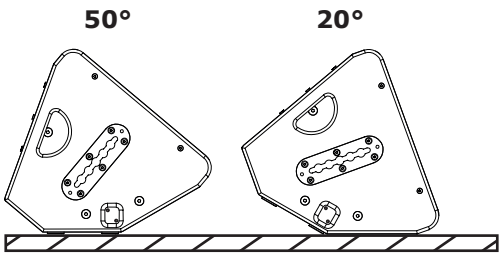




Mounting on box wall or traverse holder

1. When mounting the brackets on the wall (A) or truss (B), follow the manufacturer's operating instructions.
2. Place the loudspeaker with the tilting pole socket on the wall- and truss holder.
3. Adjust the inclination with the tilting pole socket.

Note: *The tilting pole socket snaps into place by the weight of the loudspeaker. If you want to adjust the tilt, you have to raise the loudspeaker slightly.*



Monitoring with Modular-15sp

Two monitoring angles, 50° and 20°, are available for monitor operation with the Modular-15sp.

Overview Accessories

	Transport and rain cover for Modular-15 left (Art.-Nr. 501501100) Transport and rain cover for Modular-15 right (Art.-Nr. 501501200)
	Heavy duty flightcase for up to 2 x Modular-15/15sp (Art.-Nr. 501503000)
	1,4" Horn, 60 x 40° rotatable (Art.-Nr. 999991464), with driver (Art.-Nr. 999141464) 1,4" Horn, 90 x 60° rotatable (Art.-Nr. 999991495), with driver (Art.-Nr. 999141495)
	Easyfly mechanics (Art.-Nr. 409991001)
	Carrying bag for up to two Easyfly mechanisms with accessories (Art.-Nr. 409992000)
	Self lock clamp for pipe 48-51mm, 30mm wide, max. 250 kg (Art.-Nr. 999950731)
	Universal suspension arrangement for flight mechanics (Art.-Nr. 409992001)
	Wall bracket, max. 50 kg, slewable and 22° tiltable (Art.-Nr. 999924120)
	Wall- and truss holder, max. 50 kg, slewable (Art.-Nr. 999924150)
	Safety 6/1000 mm (Art.-Nr. 999963100)
	Single stud fitting (Art.-Nr. 999957450)

Imprint

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All specifications in this manual are based on information available at the time of publishing for the features and safety guidelines of the described products. Technical specifications, measurements, weights and properties are not guaranteed.

The manufacturer reserves the right to make technical modifications according to legal regulations stipulating the continual improvement of product features. For the safe operation of the unit, this manual and all other required information must be available to all users at the time of assembly and disassembly of the unit, and during operation. Assemble or operate the unit only after reading and understanding this manual, and keeping it at hand at all times at the site.

We are happy to receive your suggestions and proposals for the enhancement of this manual.

Please send us your ideas to the following address:

SRV Licht- & Tonanlagen - Voice-Acoustic Headquarters
Brocksfeld 3
D-27313 Dörverden

Tel.: + 49 (0) 4234 942 777
E-Mail: info@voice-acoustic.de