

Users and Maintenance Manual

UNDERWATER SPEAKER Mod. AKUASOUND PORTABLE AND FIXED



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This manual:

- is an integral part of the supply and must be read carefully to ensure proper use, in conformity with the essential safety requisites;
- has been drawn up pursuant to the requirements of the **EC Directive on Product Safety**, and contains the technical information required to do all necessary work in complete safety;
- must be kept with care (protected in a transparent sealed container to prevent damage) and must accompany the product throughout its service life, including transfers of ownership.

If lost or damaged, a new copy may be requested from **Mausound**, citing the nameplate data.

Mausound declines all liability for improper use of its product/system and for damage or injury resulting from operations not envisaged in this manual.

The conformity of the manual to the requirements of applicable directives and standards has been checked by the certification company

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1 INTRODUCTION



IMPORTANT

BEFORE WORKING ON THE PRODUCT IN ANY WAY, OPERATORS AND TECHNICIANS CHARGED WITH DOING SO MUST READ THE INSTRUCTIONS GIVEN IN THIS MANUAL AND ITS ENCLOSURES AND FOLLOW THEM WHEN DOING THE WORK IN QUESTION.

IN CASE OF DOUBT REGARDING THE INTERPRETATION OF THE INSTRUCTIONS, PLEASE CONTACT OUR SERVICE DEPARTMENT FOR CLARIFICATIONS.

1.1 GENERAL INFORMATION

The instruction manual refers to:

TYPE OF PRODUCT: UNDERWATER SPEAKER

Model: AKUASOUND PORTABLE AND FIXED

YEAR OF MANUFACTURE: 2013

This manual contains the principal information indicated in the list of contents, is an integral part of the product and must be kept with care up to the time of final scrapping and disposal of the product to enable reference for future updates.

If the manual is damaged and rendered unusable, a new copy can be requested from

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by specifying the type of product and the serial/order number indicated on the product's nameplate.

The official language employed by the manufacturer is: Italian

The manufacturer is not liable for translations into other languages which do not reflect the meaning of the original.

This manual reflects the state of the product at the time of supply and may not be considered inadequate solely because the product has been modified on the basis of new experience or studies.

You may receive occasional revisions and updates for consideration and integration into the manual.

Mausound reserves the right to update its products and manuals without the need to notify users of previously supplied products. Notification of proposed updates to the manual or product are in the nature of a courtesy.

Our Customer Service Department is available to supply information on updates to Mausound products on request.

1.2 GENERAL INFORMATION ABOUT THE USE OF THE PRODUCT

This manual is designed to provide the user with a general familiarity with the product and the maintenance instructions deemed necessary to ensure its proper operation.

Before proceeding to install, service or repair the product, read the manual in full. It contains all the information required for proper and safe use of the product.

The inspection and maintenance schedules given in this manual are the minimum required to keep the product operational and safe and ensure a long service life in normal conditions of use. Supervision must nonetheless be continual and immediate action must be taken in case of malfunction.

All routine maintenance and inspections must be done with the product disconnected from its power source (electrical).

WARNING: modifying or tampering with the product or its safety systems without the manufacturer's permission relieves the manufacturer of all liability regarding their CE conformity.

1.3 GENERAL PRECAUTIONS TO BE OBSERVED IN USING THE PRODUCT

The present instructions form part of the user's regular responsibilities in relation to the product, and the manufacturer has thus considered them to be known to the user in the design and fabrication of the product. The **user must inform** (using this manual) **and train staff** (operators and maintenance staff) to ensure that anyone working on the product or system is familiar with these instructions, and must check the product's conformity with the documents and correspondence supplied with it, to ensure that any problems are resolved before it is put into use.

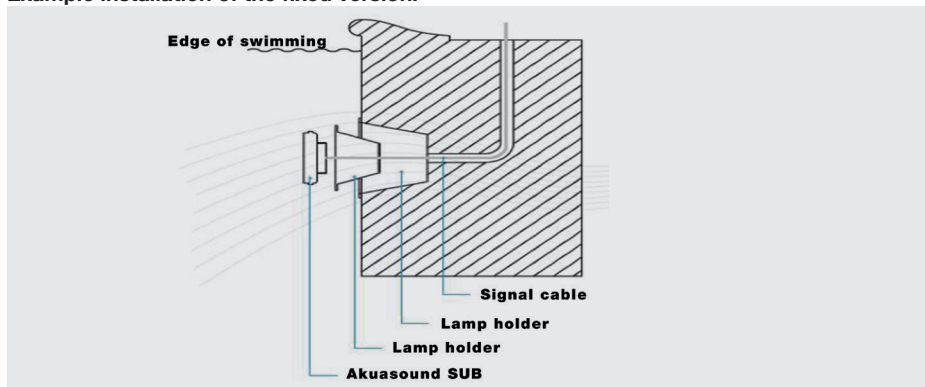
- Before you use the product, make sure that any hazards have been eliminated from the place of use and its vicinity.
- Make sure that no foreign objects are in the vicinity of the product.
- The hookup, commissioning, maintenance, measurement and adjustment of the electrical equipment and its components may be done by **qualified staff** only.
- Do not allow unauthorised persons to work on the product.
- Do not use the product if it is faulty (if its sound is distorted or its cables are damaged or stripped).

2 PRESENTATION

2.1 INTENDED USE

The product is intended to emit musical sound to be heard underwater. point 2.5 “TECHNICAL DATA”.

Example installation of the fixed version:



2.2 NAMEPLATE

Citing the model, serial number and year of manufacture of the product assists us in identifying it and providing a quick, precise response to your requests.

Always quote this information when contacting our Customer Service Department or requesting spare parts. This information can be read off the nameplate affixed to the product.



Do not alter the nameplate data for any reason.

The enclosed drawing shows the location and look of the nameplate.

Quote the serial number whenever you contact the manufacturer for information about the product or to order spare parts.

2.3 PRINCIPLE OF OPERATION

The product makes it possible to listen to music and sounds underwater (in a swimming pool or at sea) by means of an amplifier connected to an Akuasound portable underwater speaker.

Once the amplifier has been hooked up and powered on, and the microphone/radio/CD/mp3/USB audio is on or playing, the speaker outputs sound which can be heard underwater.

Technical description:

Akuasound underwater speaker for use with portable battery amplifiers. The unit is designed and fabricated to provide the best acoustic result underwater using our amplified speaker, powered by an **MSPS** rechargeable battery.



2.4 CHARACTERISTICS

The product is intended for both private and public use (swimming pools, the sea).

The number of speakers required to give good results depends on the size of the swimming pool or area over which the sound is to be broadcast. Refer to Chapter 5 INSTALLATION for details.

The user must be familiar with the characteristics of the product and with the contents of this manual.

The product is designed for automatic operation.

2.5 TECHNICAL DATA

AKUASOUND

Product specifications

size, thickness:	28 mm
outer diameter:	164 mm
weight:	2.2 kg

models

- 1) removable/portable **Akuasound** model with 8 m/16 m cable
- 2) fixed **Wallsound** model with 20 cm cable
- 3) suction cup model (for smooth walls and surfaces only)

N.B. The cable is flexible and waterproof, even at its connection to the speaker (pull it by hand only and with care, only to move the weight of the speaker itself). Do not pull the product's cable out of water. Minimum radius of curvature 10 cm. If the coils burn out, the only repairable model is the portable version.

Maximum applicable power: 100 W rms

Impedance: 8 Ohm

Output frequency range: 150 Hz to 16 kHz at -10 dB

Very low voltage components with 2X1 cable. The product may be hooked up to any audio amplifier.

Operating ambient temperature **0 ÷ 45°C**

The speaker is composed of PVC, plexiglass and carbon fibre; the glue used to seal it is not silicone based, and polymerises in water.

Assess the content of chlorine and salt in the water, whether in a swimming pool or at sea (speakers used in seawater have not suffered damage after six months use).

Report any doubts, problems or malfunctions to the manufacturer.

The unit is available with the following connectors (to be specified in the order):



SPEAKON



JACK 6,3



**CANNON
female**



**CANNON
male**

WALLSOUND

Product specifications

Outer diameter:	178 mm
Thickness:	52 mm
Weight:	2.3 kg

Maximum applicable power: 100 W rms

Impedance: 8 Ohm

Output frequency range: 150 Hz to 16 kHz at -10 dB

Very low voltage components with 2X1 cable. The product may be hooked up to any audio amplifier.

Operating ambient temperature **0 ÷ 45°C**

2.5.1 AIRBORNE NOISE EMISSIONS

Sound power level LeqA 103 dB measurable in the open with pink noise 100 W rms

3 HAZARDS AND PROTECTION EQUIPMENT

3.1 IMPROPER USE AND COUNTERINDICATIONS

The product must be used for the purposes indicated by the manufacturer. See chapter 2

In particular, the system may NOT be used even partially:

- without its protection equipment or with its electrical safety equipment deactivated, malfunctioning, or disassembled;
- if the product has not been properly installed;
- in an explosive atmosphere or in the presence of solvents or flammable vapours;
- if the product itself is hazardous or malfunctioning;
- in aquariums (contact the manufacturer for further information if necessary);
- for improper use by untrained persons, with partial or total failure to observe the instructions;
- if the power supply is defective;
- in case of lacking or faulty maintenance, and after unauthorised work or modifications;
- with materials and tools other than those specified by the manufacturer.

The product MAY NOT be used in the following circumstances:

- in environments in which the mean temperature per 24 hour period is in excess of +40°C;
- with stripped or exposed wires.

ANY WAIVER OF THE ABOVE CONDITIONS MUST BE AUTHORISED IN WRITING BY MAUSOUND



CAUTION

THE MANUFACTURER IS NOT LIABLE IN ANY WAY FOR UNAUTHORISED MODIFICATIONS WHICH ALTER THE SPECIFIED FUNCTION OF THE DEVICE, AND MODIFY OR INCREASE THE RISKS ATTENDANT ON ITS USE. ANY SUCH UNAUTHORISED **MODIFICATIONS** ALSO VOID THE WARRANTY AND **INVALIDATE THE CE DECLARATION** ENVISAGED BY THE PRODUCT DIRECTIVE.

3.2 RESIDUAL RISKS

- The maximum noise emitted by the underwater speaker (both models) at maximum power can damage human and animal hearing. The user must make sure not to exceed the sound pressure limits to avoid damage to the hearing, or enforce the use of earplugs or ear defenders.

4 LIFTING, TRANSPORT AND STORAGE

4.1 LIFTING AND TRANSPORT

The product must be lifted and transported taking care not to drop or tip it over. The provided bag/backpack may be used for transporting it.

Lift the product by the speaker itself, and move the cable as desired or wrap it around the speaker. It can be secured with the velcro strap and inserted into the backpack.



4.2 STORAGE

Keep the product inside its nylon backpack when storing it for an extended period of time, at a temperature from -10 to 40°C.

The packaging material must be disposed of according to local regulations. Contact the manufacturer if necessary.

5 INSTALLATION

5.1 PREPARING THE AREA (TO BE DONE BY THE USER)

The user must prepare:

- The installation area as required by local occupational health and safety regulations.
- The electrical power supply as required by local regulations applicable to the installation area.
- A grounding system and circuit breaker must be installed upline of the power supply (battery powered models are already suitably equipped).

5.1.1 LIGHTING

The installation area must have sufficient illumination (natural or artificial) as required by local regulations applicable to the installation area.

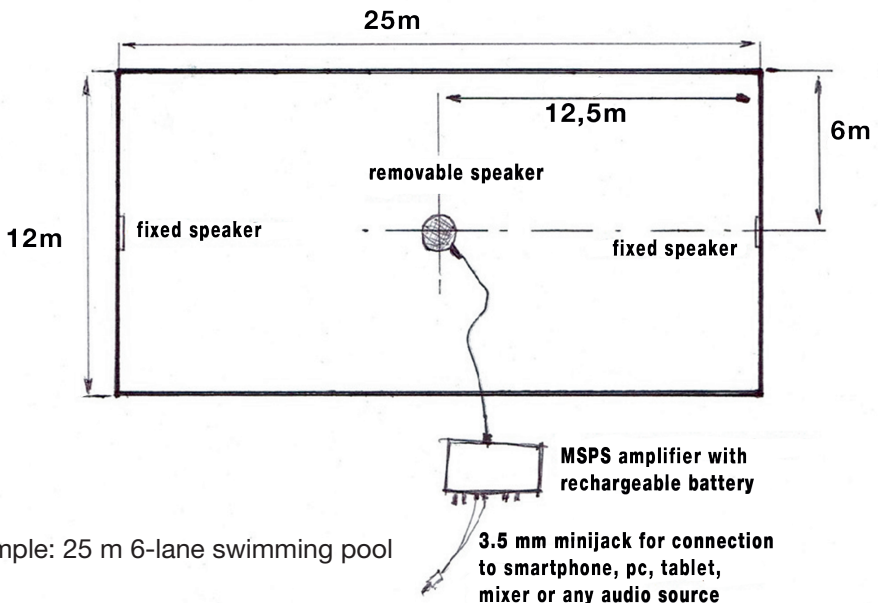
In any case, the lighting must be even, provide good visibility of the product as a whole and should not be dazzling or strobing.

We recommend a mean illumination of 200 lux/m (indoors). The product or its outline should be illuminated to permit identification outdoors or in the sea.

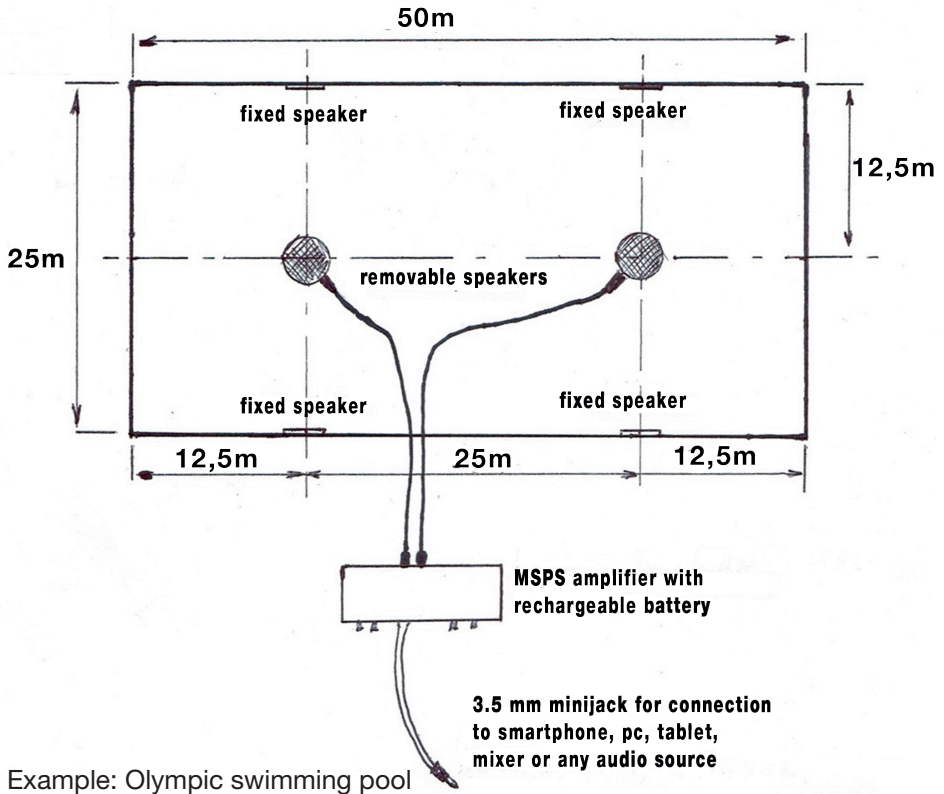
The product does not have its own lighting or lamps

5.1.2 CLEARANCES

To ensure effective diffusion of sound in the installation area, refer to the following:



Example: 25 m 6-lane swimming pool



Contact the manufacturer for different situations and advice on the installation

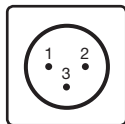
5.1.3 MASONRY WORK AND POOL FLOOR

No masonry work is required for the installation of the removable version with cable.

For the fixed WALLSOUND version, the design of the swimming pool must provide recesses for the speakers like those for the in-pool lights. .

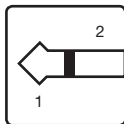
5.2.1 ELECTRICAL HOOKUP

CONNECTION:



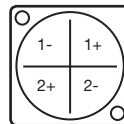
CANNON

- 1. ground
- 2. positive



JACK

- 1. TIP: positive
- 2. SLEEVE: ground



SPEAKON

- 1+ positive
- 1- ground

A proper installation would include not just one underwater speaker: for applications like synchronised swimming, we recommend installing more than one AKUASOUND speaker in the pool.

This is because the swimmers must be able to hear the musical beat clearly while underwater over the sound of the water itself. Above water level, on the other hand, the underwater speakers are effectively inaudible.

In such situations, it is important that there be a sound system above water level so that instructors and the public can hear the music output by the MSPS.

A version of the underwater speaker with suction cups is available, to anchor the unit to the pool floor or walls (which must be perfectly smooth for this to work).



CAUTION

ALL CONNECTION TO THE MAINS POWER MUST BE DONE WITH THE POWER CABLE DISCONNECTED (NO POWER), BY QUALIFIED STAFF AUTHORISED TO DO SO, AND IN ACCORDANCE WITH APPLICABLE REGULATIONS. BEFORE STARTING WORK ON THE EQUIPMENT, WHEN ALREADY INSTALLED, READ THE DOCUMENTATION PROVIDED BY THE MANUFACTURER.

OBSERVE APPLICABLE REGULATIONS WHEN WORKING ON LIVE EQUIPMENT.

Make sure the amplifier is conforming to the specifications on the CE nameplate

6 STARTING AND STOPPING THE SYSTEM

6.1 FIRST START UP

After the product is installed, run the specified checks before using the equipment.

Read this manual with care before you start up the equipment for the first time.



CAUTION

DO NOT START THE EQUIPMENT UP IF ITS CABLE OR ANY OTHER COMPONENTS ARE DAMAGED

The initial adjustments are normally done by Mausound staff or persons authorised by them.

Clients wishing to do the work themselves must read this manual with care before proceeding, to ensure they are familiar with the purpose and effect of the commands.

6.1.1 ACTIVATING THE POWER SUPPLY

N.B. The manufacturer is not liable for providing a circuit breaker if the user uses his own amplifier.

6.2 USING THE PRODUCT

Mausound - the specialist in underwater speaker installation!

Underwater speakers are ideal for synchronised swimming, relaxation activities, pre-natal swimming classes, scuba diving courses and swimming pool activities in general. They are designed to output very high sound pressure over a wide frequency range, which makes music completely clear and audible underwater!

Thanks to its tested sound generation system, the underwater speaker is perfectly adapted to underwater conditions and provides good, clear sound quality (including speech) and good resistance to levels. The speaker diffuses sound throughout the underwater area: the diffusion and perception of sound underwater is completely different from that in air.

Human hearing is far less sensitive underwater.

The underwater speaker may only be used for reproducing sounds, speech and music in water tanks or swimming pools (public and private) and at sea.

In particular, it may be used for training divers at sea or synchronised swimming teams, for scientific research on the sea floor and for fishing in rivers and at sea.



CAUTION

THE PRODUCT OPERATES AUTOMATICALLY AND MUST BE OPERATED BY OPERATORS TRAINED IN ITS USE.

6.3 POWER OUTAGES

Power outages (even transient ones) immediately shut the product off. The product starts up again when power is restored.

7 MAINTENANCE

The product has no scheduled maintenance requirements.

It should be inspected by the manufacturer during its second year of use, and must be scrapped in a regulatory fashion.

ALWAYS MAKE SURE THE CONNECTOR AND POWER CABLE ARE IN GOOD WORKING CONDITION

7.1 CLEANING

Not required. The speaker will tend to fade in colour over time.

Clean it with a biodegradable, non-corrosive product, like those used for cleaning the side of the swimming pool.

8 SCRAPPING AND DISPOSAL

The product reaches the end of its service life when it can no longer be repaired, at the sole discretion of the Technical Service Centre (TSC). The TSC will disassemble and transport the product or scrap and dispose of it. It will also do so when replacing it with a new product.

The following are to be done by the manufacturer or TSC, to prevent risks to the user;

The product is made of mixed parts and parts in iron, steel, carbon and metals in general, plastic, PVC and electrical wiring, and mixed components installed with special adhesive which cannot be removed.



CAUTION

ONLY AN AUTHORISED COMPANY MAY REMOVE OR RECOVER THE COMPONENTS; TO SCRAP THE PRODUCT, DELIVER IT AND ITS PARTS TO AN AUTHORISED WASTE MANAGEMENT COMPANY

The product and its parts (especially its electrical and electronic equipment) are conforming with the following directives: RoHS 2002/95/EC, RAEE 2002/96/EC and 2003/108/EC, relating to waste electrical and electronic equipment;



- [illegible]



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