SAFETY INSTRUCTIONS

Read this user manual and keep it with the product.

Always follow all safety instructions and local security regulations.

Never use accessories not manufactured or approved by Aura Audio with Aura Audio products.

Make sure no audience or crew member is too close to loudspeakers when operating with high sound pressure levels (SPL). Professional loudspeaker systems are capable of producing sound pressure levels high enough to cause permanent hearing damage even at exposure times less than couple of minutes.

Please check the Aura Audio website on a regular basis for latest downloads and updates.

In case of any questions please don´t hesitate to contact us for more information via info@auraaudio.fi
We also welcome all comments and system pics from you!

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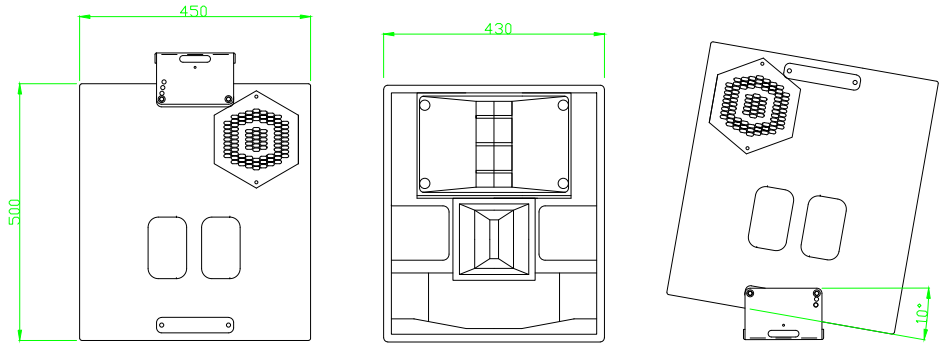
INTRODUCTION

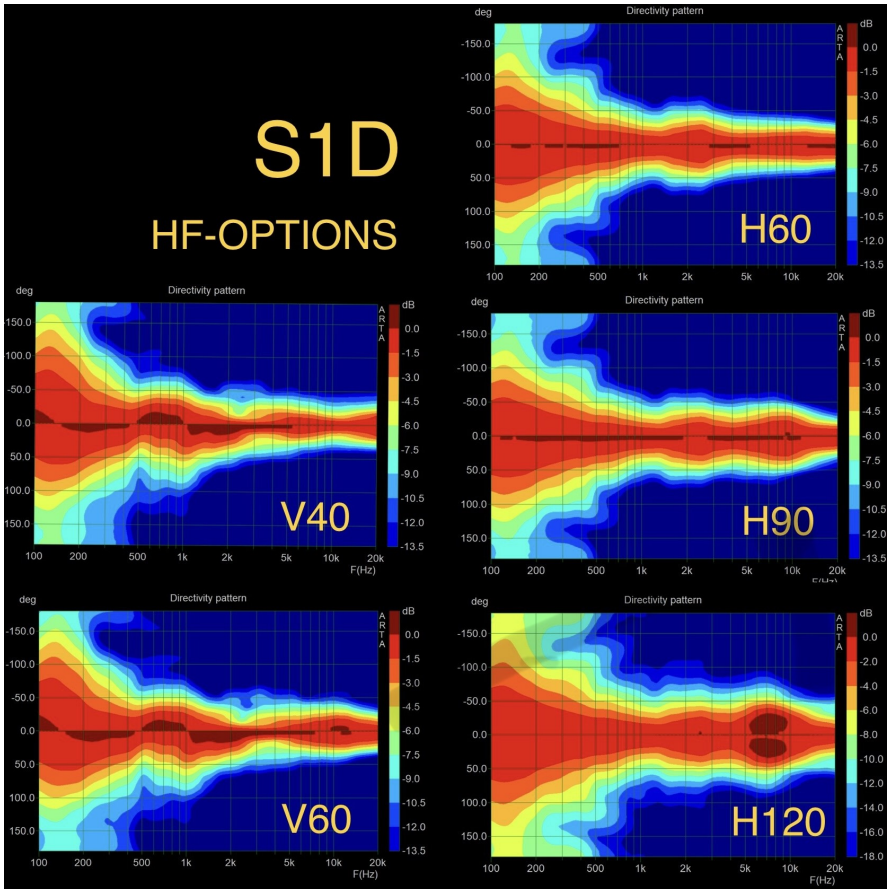
S1D is a compact passive 3.5-way speaker system. It consists of folded horn-loaded 10" neodymium magnet cone driver, two side-firing reflex tuned 6.5" cone drivers, 6.5" neodymium magnet cone driver loaded with a multi-path waveguide and center mounted 1" exit compression driver loaded with rotatable constant directivity waveguide.

Horn-loaded 10" driver and side-firing 6.5" drivers create cardioid polar pattern utilising patented Passive End Fire Technology. This is achieved by carefully matching the sound wave travel distances between side-firing drivers to the internal propagation delay of the horn sound paths. This arrangement of the two bands overlapping also increases the sound pressure level at low frequencies.

S1D features changeable HF section combined with different horizontal and vertical beam widths by using three different waveguides. Directivity option are 90x60, 60x40, and 120x40 degrees. High MF cut off frequency of 3kHz makes it possible to use small diaphragm lightweight compression drivers for high frequencies for increased sensitivity and HF resolution.

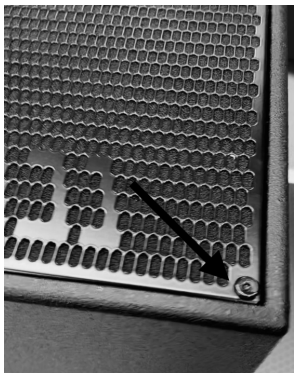


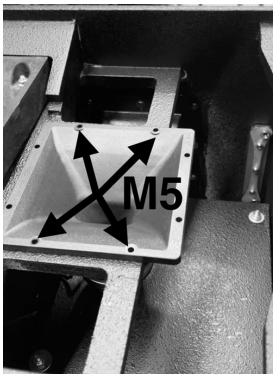
S1D is powered by Aura Audio D80DSP powered controllers. Bespoke rigging and pole mount adapters enable easy and safe deployment from single unit on top of a subwoofer to a larger flown arrays.

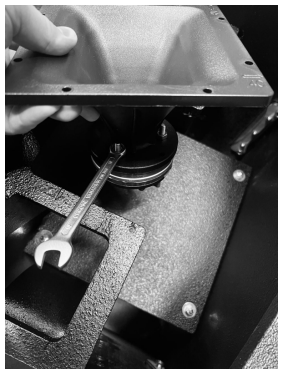


CHANGING HF-HORNS

S1D can be fit with three different waveguides: 90x60, 60x40, and 120x40 degrees.







#1 First remove the front grill using a standard Allen key.

#2 HF horn is fixed to the enclosure using four M5 screws

#3 Driver is fixed to the horn with three M6 double thread screws with three bolts. Loosen the bolts without removing the two connectors fixed to the driver.

!!! Be careful not to pull the cables while working with horns !!!

#4 Reverse the process and insert the new horn to the driver and driver to the enclosure. Note that the orientation of the horn is marked to the flare of the horn.

In case the connectors are removed from the driver the correct polarity is red stripe wire to the red marked driver connector (+) and all-black wire to the non-marked driver connector (-). It is extremely important that the polarity is correct!

SIMULATION USING EASE FOCUS 3 SOFTWARE

S1D arrays and single unit performance can be simulated using AFMG developed simulation software Ease Focus 3. This process is explained in detail at our Youtube channel: @AuraAudioOfficial

CREATING ARRAYS WITH S1R AND S1RAD

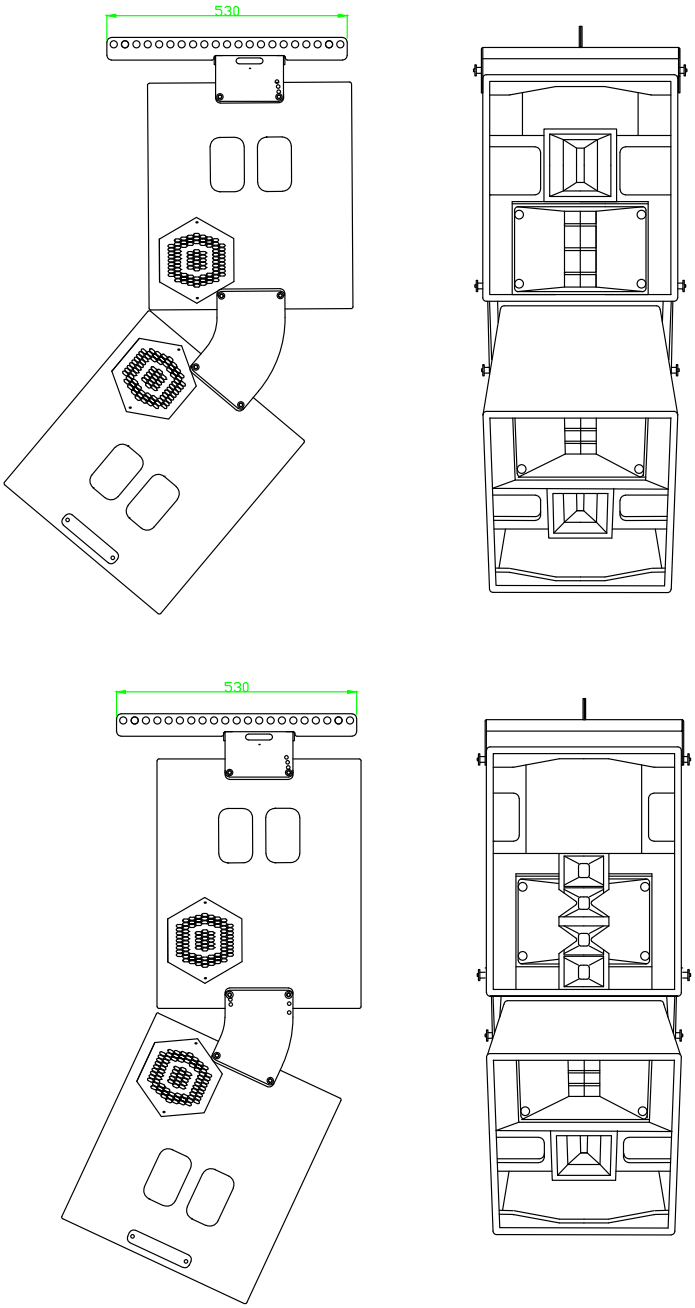
S1D is designed to meet many different applications from simple stand mounting in compact touring to larger scale arrays up to three units per side. S1R is used in all applications except when S1D is simply placed on top of a subwoofer or other platform for ground stacking. S1R is equipped with large number of fixing holes and can be used with pole mount adaptor such as K&M 24528, K&M 24521 and K&M 24281 Screw-on adapters. S1R includes three pin positions for tilting S1D vertically either up or down 0, 5 or 10 degrees depending on which front S1R is facing.

When two or multiple S1D units are used in flown or ground stacked arrays S1RAD should be used. Placing two units as a mirror pair with MF horns together the S1D´s work as close to one speaker.

Coupling directions can also be seen as “side firing drivers together”!

Rigging and flying S1D arrays is explained in detail at our Youtube channel: @AuraAudioOfficial

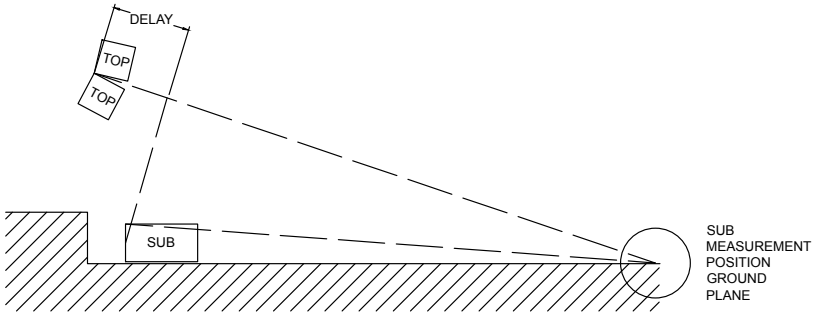
S1D can also be combined with S1 creating an even vertical and horizontal coverage, S1 for long throw (80x10 degrees) and S1D for short throw (90x60 or 120x40 degrees).

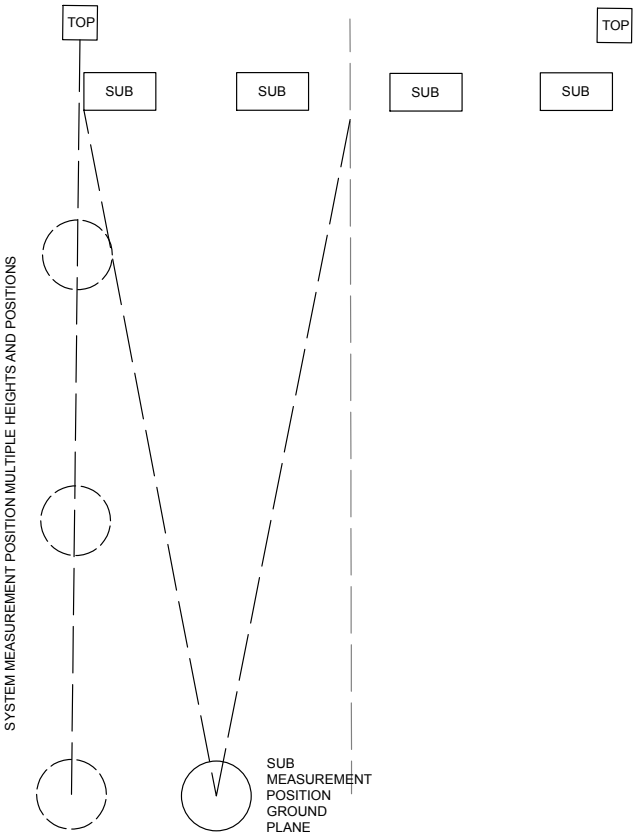


FIXED INSTALLATION WITH S1Ri AND S1RADi

Both S1R and S1RA are also available as S1Ri and S1RAi. These models are intended to be used in fixed installations and feature more economical M8 bolt connection replacing quick release pins found in standard touring models.

S–SERIES SYSTEM TUNING TIPS part 1: Delay





As rule of thumb, all S-series single speakers and array configurations can be quickly (delay) tuned by measuring the distance from rear wall of the top speaker(s) and rear wall of the subwoofer(s) and use delay adjustment to digitally move the one that is in front of the other to the same distance from audience (average) and front of house mix position.

S–SERIES SYSTEM TUNING TIPS part 2: Measurement

Ground plane measurement is recommended for subwoofer and top speaker time alignment measurements to prevent ground reflections to interfere with the measurement results. For system tuning, a full range measurement, an ear height (120cm – 170cm) is recommended and mixture of multiple heights and multiple distances along the top speaker on-axis line. For a good approximation make measurements at least in a couple of different positions including back and front of the audience area, still keeping the measurement mic at on-axis position.

Warning! Under no circumstances must both Left & Right arrays (or single tops) be ON when measuring! This would cause unpredicted summing and cancelations that will cause most harm to phase measurements and measurement coherency resulting in non-usable and misleading information.

Same applies to front fills, delay lines or side fills. Keep them muted unless you are measuring the sum and delay compensation of the two lines of course, matching front fill to the main array, for example.

Always verify the results by listening to some familiar music!

S1D - SPECIFICATIONS

Frequency Response (+-3 dB): 85–20000 Hz

Horizontal Coverage (-6 dB): 90 degrees nominal

Vertical Coverage (-6 dB): 40 degrees nominal

Max peak SPL : 138 dB (free space)

Sensitivity LF, 1w/1m: 107 dB (free space)

Impedance: 8 Ohms

Crossover: 250Hz, 400Hz, 3.2kHz passive

Power handling LF: 300 W rms, 1200 W pk

Recommended HP-filter: 90 Hz, 12dB/oct

DRIVERS

LF: (1) x 10” neodymium magnet cone driver, horn-loaded

LF-Side: (2) x 6.5” cone driver, reflex loaded

MF: (1) x 6.5” neodymium magnet cone driver, horn-loaded

HF: (1) x 1” exit compression driver in dual exit waveguide

ENCLOSURE

Enclosure material: Finnish birch plywood,

textured black paint finish

Grille: Cold rolled steel grille, textured black paint finish

Connectors: (2) x NL4, +/-1: INPUT, +/-2: N.C. linked thru

Dimensions: 500 mm x 430 mm x 450 mm

Weight: 30 kg

EC declaration of conformity Manufacturer:

Aura Audio Oy
Pääskykalliontie 3
21420 Lieto
Finland

We declare the under our sole responsibility the following product models:
A-Series,
C-series,
F-Series,
XD-series,
XQ-series,
i-series and
S-series products are intended to be used as loudspeakers and are in conformity with the following EC Directives, including all amendments, and with national legislation implementing these directives:

BS EN 60065:2002

BS EN 55103-1/-2

March 2024

Mika Isotalo
Managing Director