

## **SPECIFIC PRODUCT ANSWERS**

### **Can I use two-way loudspeakers horizontally oriented?**

The two-way loudspeakers are designed to be used in a vertical orientation. The waveguide gives a wide directivity in the horizontal plane for a wider listening area, and a narrow directivity in the vertical plane for reduced reflection effects of the mixing console. Conversely, there are situations where a horizontal orientation is desirable, for example in OB vans where the side wall reflections are strong and the listening area is relatively small.

### **Can I use the plastic screws on O 110 and O 300 to mount the loudspeakers?**

The plastic screw plugs on the side panel (O 300) or back panel (O 110) are there to seal the cabinet. They are NOT strong enough to support the weight of the loudspeaker cabinet when mounted onto mounting hardware. Use the metal M8 bolts or other mounting screws supplied with the mounting hardware to attach the mounting hardware to the cabinet.

Failure to plug up the mounting points leads to air blowing out of these holes resulting in a hissing or whistling sound. Contact the local distributor for replacements, use an M8 bolt, or (in an emergency only!) use duct (gaffer) tape.

### **Can I use the O 300 / O 300 D vertically oriented?**

The O 300 / O 300 D / KH 310 A were designed to be used in a horizontal orientation. The waveguide gives a wide directivity in the horizontal plane for a wider listening area, and a narrow directivity in the vertical plane for reduced reflection effects of the mixing console. Conversely, there are situations where a vertical orientation is desirable, for example in OB vans where the side wall reflections are strong and the listening area is relatively small.

### **Should I use a vibration isolator when placing a loudspeaker on a mixing console meter bridge?**

Positioning a loudspeaker directly onto a mixing console meter bridge causes the entire console to vibrate when playing loud signals due to mechanically transmitted energy from the loudspeaker cabinet. As the console is highly likely to be resonant, there will be an undesirable coloration of the perceived sound. To overcome this, a vibration isolator can be used to reduce the efficiency of the mechanical coupling. Taking some theory from noise control applications, a good isolator will result in a loudspeaker-isolator resonant frequency three times less than the lowest frequency that the loudspeaker can reproduce. So for a mid-sized two-way loudspeaker a resonant frequency of 10-20 Hz is desirable. This can be achieved using high-density rubber or dense foam. There are several good off-the-shelf solutions available from companies such as Auralex and Primeacoustic. In some cases the isolator also gives vertical angle adjustment of the loudspeaker cabinet. Another way to mechanically isolate the loudspeaker from the console is to place the loudspeaker on a separate stand. The transmission path then becomes acoustical, which is very inefficient therefore the console vibration is insignificant.



### **I can hear a hissing/whistling sound?**

The plastic plugs screwed into the side panel (O 300) or back panel (O 110) threaded inserts must be inserted and fully tightened. On the MM 201, M 50, M 51, and M 52 the plastic plugs for the side mounting holes on the sides must be fully inserted. Failure to plug up these mounting points leads to air blowing out of the hole resulting in a hissing or whistling sound. Contact the local distributor for replacements, use an M8 bolt, or (in an emergency only!) use duct (gaffer) tape.

### **What is the difference between the O 500 C and the O 410?**

The main differences between the O 410 and the O 500 C are:

- The O 500 C can play louder than the O 410.
- The O 500 C has a lower low-frequency cut-off than the O 410.
- The O 500 C has more extensive acoustical controls than the O 410.
- The O 410 has an analog controller, whereas the O 500 C has a DSP controller that includes linear-phase filters.
- As a result of customer feedback, the O 410 has a slightly wider dispersion, so it is less analytical sounding than the O 500 C. This has been achieved without compromising the overall sound quality of the O 410.
- The O 410 is smaller and lighter than the O 500 C.
- The O 410 is significantly cheaper than the O 500 C.
- On the O 500 C, analogue and digital sources can be simultaneously connected and switched between using an IR remote. The O 410 does not have remote switching and a DIM 1 is required for digital signal interfacing.

For a particular application, one has to weigh the advantages and disadvantages of each product to find the most appropriate solution.

### **The O 500 C is a 10-year-old design, is it out of date?**

The O 500 C is still a product in the range. It is unique in the range in that it has a DSP controller. This DSP controller offers features still not seen in other newer products on the market. For example, FIR filtering and linear-phase modes is either not available on competing DSP products or not possible in analog products. A further example is the stacked input stage which offers 130 dB of dynamic range. This is still more than any single chip solution available now, over a decade later. Additionally the amplification, drivers and waveguide are still state of the art relative to other products in the market. This is all possible because when the products are designed, the solution is always the best it can be at the time and so is often years ahead of competing products.



**How can the FIR filters be tuned for the room in an O 500 C?**

There is a company called HMP Acoustics based in Munich who can offer this service at a cost.

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We also offer a tuning service for the O 500 C. This costs one day of labor plus travelling time and accommodation. This service is subject to personnel availability.

**The O 900 is a passive subwoofer but I want an active system.**

The O 900 subwoofer is normally connected to an O 500 C and subject to the control of the DSP controller. This controller has a look-ahead limiter which means that a very large power amplifier can be connected to the system to power the subwoofer without damaging the drivers. The advantage of this is that the transient response of the system is much better than is typically achieved by passive or analog active systems. The disadvantage is that the required large power amplifier has cooling fans and so cannot be located in the subwoofer's cabinet. As it has to be located elsewhere, in a machine room or in a soundproof and cooled cabinet, the loudspeaker cable will be 5-20 m long. Long loudspeaker cables do not affect the low-frequency performance of the system if the conductors are thick enough (4...6 mm<sup>2</sup>, 11...9 AWG). The complete system is still active as the system knows what subwoofer and amplifier are connected, it is just that the amplifier is remote located and the subwoofer driver cables are longer than when the amplifier is located in the subwoofer.

**Can the O 500 C accept digital input sample rate other than 44.1 kHz and 48 kHz?**

At the time of the design of the O 500 C, sample rate converter performance was not sufficiently good enough to be used. As a result the entire controller operates with the frequencies 44.1 kHz or 48 kHz depending on the input signal's sample rate. For the vast majority of users this is still perfectly acceptable, however some customers use sample rates of 96 kHz and 192 kHz. These higher sample rate signals should be converted to analog and then applied to the analog input, or downsampled to 44.1 or 48 kHz and then applied to the digital input.