

Beware fake stereo!

In a new series, audio whizz and Technical Manager at integration specialist, **Custom AV Distribution**, Wayne Hyde offers his insight into the tricky world of getting audio right. In this article Wayne raises the importance of speaker polarity.

In the grand scheme of wiring and terminating hundreds of cables for a complete smart home, the easiest part must surely be connecting a two-core bare wire into a loudspeaker?

Because this is almost a 'do it with your eyes closed' task for an AV engineer, maybe an over-relaxed approach is what's causing this issue to be so common. I've done it myself for sure!

When the red cable goes to the black connector, instead of red to red and black to black, the speaker ends up playing out of polarity.

It will pull when the other speaker that's in polarity is correctly pushing. Of course, to produce any sound a speaker has a push and pull the air at many times per second. But they need to be synchronised.

The effect, when this happens with a pair of ceiling speakers for example, is firstly a noticeable loss of bass and then also when you stand between both speakers, the stereo image is really messed up, it sounds all 'phasey'.

When you listen to a mono signal, such as talk radio, or a solo singer, it will appear to sound like fake stereo, instead of dead-centre. In fact, this is partly how pseudo stereo and similar effects are created in music production; by manipulating the phase of two signals.

To enjoy high-quality speakers properly, it's important to get the basics right

Imagination

Now imagine if one or two speakers are out of polarity in a surround sound system. Let's say 7.1.4, which is trying to accurately place Dolby Atmos or DTS:X objects up and around your head. As soon as one speaker is out, then the whole audio picture will fall apart.

So how can you check your systems are 'in phase' or 'in polarity'? Obviously taking lots of care at the wiring stage, but after this you can take time to test by listening. Try to practise in the office or showroom, changing the polarity and listening to the outcome, build up that skill.

Second to this, you can buy a test kit. One option is the versatile Galaxy Audio Cricket kit, which has a transmitter box and receiver too.

You can inject an in-phase clicking test sound at almost any point of the rack system and then check the result at the speaker woofer cone.

Lastly, using a simple 3V battery at the hub-end. Connect red to + and black to - and look out for the speaker cone pushing and remaining outwards. Reverse the battery connections and the opposite happens.

This test will tell you if the speaker has been connected wrongly before wasting time to remove it from the ceiling or wall.

To learn all you need to know about this subject and other similar system saving techniques, you can book the Audio Tips training session with CAVD by emailing info@cavd.co.uk

