Pin 2 or Pin 3 Hot?

By Don Pearson

I believe that the following is the real issue in the pin-2 pin-3 decision. In an ideal world, a positive pressure at a microphone should produce a positive pressure at the speaker. Unfortunately, a positive pressure at the microphone drives the diaphragm backwards toward the connector. A loudspeaker can withstand short extreme excursions forward but will bottom out and fail with extreme excursions backwards.

To correct for this problem, long, long, long ago when everything was pin-3 hot, microphone manufacturers wired them so that this would be corrected by making the signal wired in the opposite polarity to everything else, i.e. "Pin 2 hot". Sooooo, a pressure driving the microphone cartridge toward its connector would make the speaker cone move forward, away from its magnet. Today's modern spider suspensions alleviate this bottoming out problem somewhat.

You are out there checking the acoustical arrival polarity from the speaker with respect to the microphone or signal input, aren't you? This device (I use SIA-Smaart) is one of the standard tools you use when you verify a system, isn't it? Polarity everywhere is the first thing you look at, right? When the bass player plucks his strings and the drummer both hit on the same count, the energies are not in opposite polarities, are they? When mixing, polarity changes (for example: over or under/front or back of a drum) or even phase (gasp) shifts are used to correct polarity issues or for effect, but you should always know where you are for the final delivered signal. When you play back, is the kick or pluck of a string making the low frequency speakers move forward? Hopefully, the rest of the speaker components are summing acoustically correct with respect to the low drivers.

You will be shocked at how many devices have different polarity from input to output. The Alesis ADAT version 1 versus version 2 is a perfect example. Some speaker manufacturers have been known to ship drivers with connectors marked with wrong polarity. Maybe the crossover requires some polarity inversion in order to achieve proper frequency response? Sometimes, that extra ounce of headroom is all that is needed for those of us who are pushing the limit. And this issue goes on and on and on…