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Road Tests

TOA Electronics AM-1 Realtime Steering Array Microphone System



Breakthroughs in microphone technology don't come along very often, so when something truly new comes along, it definitely piques my curiosity. And some months ago, when I found out some preliminary details about the AM-1 Realtime Steering Array Microphone System from TOA Electronics, I wanted to check it out firsthand.

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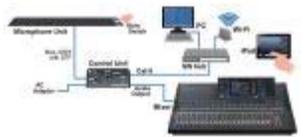
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The AM-1 is a low-profile microphone with eight condenser capsules that resembles a very wide boundary mic. Combine this multi-capsule array with its outboard hardware controller and software control via PC or iPad, and it forms a powerful system that intelligently “listens” to detect a nearby sound source and can steer the pickup pattern to track and home in on the source. This beam angle steering occurs silently, automatically and in real-time, so if one person is speaking from the far left of the podium, the mic's directionality can lock in on that position for a dramatic gain increase without feedback.

The fun comes in when using an iPad or PC, where the user can preset or dynamically change the width of the polar pattern and much more — all from the convenience of touch screen or mouse control.



The Concept

The concept of beam-forming — where multiple elements couple to form a more coherent pickup pattern — is hardly new. However, the application of beam-forming to a microphone design and adding the convenience of DSP and intelligent control changes everything.

The AM-1's low profile package improves sightlines and avoids intimidating presenters. The mic's steerable array can intelligently follow the sound source within a user-definable range (up to 180°), so problems of persons speaking off-mic or readjusting mic stands for each person's height are no longer an issue. The net effect is almost like having a boom operator pointing the mic to each sound source within a user-predetermined zone.

Additionally, a gain compensation function (with parameters under user software control) acts like a leveller, automatically insuring consistent levels from speaker to speaker. And a “limit mute” feature can act as a proximity automute to keep unwanted stage noise out of the system.

While locking in sounds you want for increased gain and more clarity, the unit's narrow horizontal pattern also provides near-immunity to feedback.

Getting Physical

The mic itself is about 1 inch tall and 14 inches wide and has a top-panel mute switch with on/off indicator LED and an attached 10-foot cable that terminates with a standard 3-pin XLR-M connector. The mic body has onboard DSP and the signal from that XLR must be connected to the AM-1C controller. The output signal from the mic can be extended some 230 feet from the AM-1C over standard shielded twisted pair mic lines, although AES-rated cabling is preferable.

About the size of a brick, the AM-1C controller provides power to the mic's capsules and DSP, as well as adding a rotary volume output knob and an RJ-45 Ethernet jack for connecting to a 10Base-T or 100Base-TX network, which is only required to access software control via PC or iOS devices. The rear panel has AES/EBU and analog XLR outputs and a switch that selects the +4 dBu/-10 dBv analog line level or -50 dBu mic level. The control unit operates from a compact 24 VDC external supply. Also standard are LEDs that indicate power-on, signal presence and whenever the mic is muted.

The muting indicator is particularly useful, as the mic body's top-panel mute switch could inadvertently be switched off by a

performer/presenter. One of the caveats everyone learns early on in live sound is never provide a performer with a switchable mic. However, in the case of the AM-1, the switch is a plus, as it affords a speaker (who actually understands the function of the mute switch) the luxury of a “cough” button or simply the ease of making a few off-mic comments without the entire audience hearing them. Alternatively, using the software app, the sound tech has fingertip access to the mute switch or can just disable the local muting entirely.



Speaking of software, the free AM-1 control app offers system config parameters, realtime visual monitoring of sound source location and gain, meters for the eight individual capsules and the output, control of the tracking range (angle and distance), tracking sensitivity and speed, gain compensation, distance adjustment threshold and more.

Assessment

The AM-1 system is solid and well-designed. Setup is easy and the software GUI is flexible and simple to use. I did encounter occasions where the person speaking laid notes over the mic or wanted to use the AM-1 as an arm rest, but placing the mic at the top edge of the podium (rather than bottom), or just informing the subject beforehand, would solve that issue.

The AM-1 is not inexpensive (MSRP is \$2,699), but definitely delivers what it promises, with smooth, near-undetectable operation of the gain and angle functions and almost 100 percent feedback immunity. The audio quality was clear and natural. Besides offering great reproduction in an “invisible” no mic-in-the-face package, the AM-1 is a perfect solution to any of those speaking gigs you work where the subject is way off-axis, and completely unaware of the phrase “step up to the mic.” Thumbs up on this one.

At a Glance

Steerable Microphone Solution

The AM-1 is a low-profile mic system that can automatically adapt its horizontal pattern, while its steerable DSP can lock in on a sound source for greater gain, clarity and reduced feedback.

AM-1 Realtime Steering Array Microphone System

Manufacturer: TOA Electronics

Pros: Steering action is effective and undetectable; clear, natural sound; versatile software control, near-immunity to feedback.

Cons: Somewhat pricey; need to inform speakers not to block mic with hands, elbows or notes.

How Much: \$2,699 (MSRP)

More Info: www.toaelectronics.com
