Monitor Mixing in Houses of Worship
Distributed Mixing Reduces Stage Volumes, Improves Sound FOH

Many houses of worship now use contemporary music styles as a regular part of their worship services. The goal, of course, is to bring a rich and lively worship experience to the congregation and to communicate the Word in a positive and uplifting manner. Too often, however, the addition of contemporary music brings with it a series of frustrations and challenges, including higher volumes both on the stage and in the sanctuary. Instead of enriching the worship experience, the new music gets in the way, as volume rises and sound quality falls.

To tame the volumes, more and more worship teams are turning to personal monitors (headphones and in-ear monitors), replacing open floor wedges and their associated high volumes. However, many teams find the experience less than satisfying, and some even put the IEMs and headphones away and get the wedges back out. Aviom's Pro16® Monitor Mixing System offers a solution to both problems: wedge-based systems can run at lower volumes, and IEM and headphones users can get the mixes they need to make their personal monitors work effectively.

Aviom's A-16II personal mixer allows every performer to customize his own mix, without affecting other monitor mixes, the front-of-house mix, or recording/broadcast feeds.
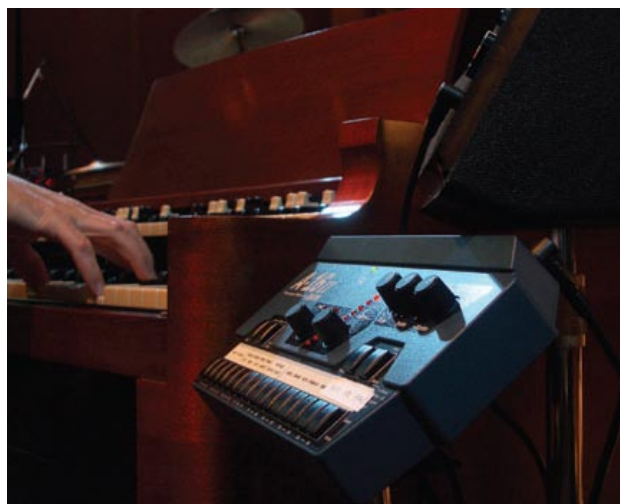
THE CHALLENGES OF MONITORING

One of the problems with traditional wedge-based monitoring is that all the mixes compete. Musicians use monitors so they can hear one another and blend their playing and singing into a cohesive ensemble sound. To do this well, each musician needs to hear different things in his or her monitor; one mix will not address everyone's needs very effectively. What happens with wedges is that everyone hears some of everyone else's mix, so they ask the engineer or tech for more and more volume. It's easy to see how quickly this can get out of hand. Worse yet, these rising volumes eventually spill out into the sanctuary, competing with the front-of-house mix the congregation is supposed to hear. Despite everyone's best efforts, nobody gets the right mix.

Lowering the volume on stage is crucial to improving sound in the sanctuary. With on-stage volumes under control, the tech staff can mix for the congregation without first trying to mask all the sound pouring from the stage. The key, however, is to reduce on-stage volume while still providing the worship team with the pitch and timing references they need to play and sing well and to interact with one another and the congregation.

A LOUDER MONITOR ISN'T A BETTER MONITOR

When all else is equal, most musicians will choose to run their monitor mix at a lower volume than typically exists on stage. High quality monitoring is a matter of clarity and precision,

not raw volume. This is especially true for personal monitors, such as headphones and IEMs, which are very sensitive to mix changes that would be nearly imperceptible in a wedge. Additionally, personal monitors benefit tremendously from monitoring in true stereo. While wedges can generally run in mono without a significant sacrifice in quality, a mono IEM or headphone mix is both disorienting and isolating. Thus, effective use of personal monitors requires not only more control but also more content: two carefully controlled mixes (left and right) for every user.

The key, then, to reducing on-stage volumes and to making personal monitors effective is to provide greater precision and control in making monitor mixes. Traditionally, this has meant purchasing a large mixing console and hiring an engineer to run it. Even then, the results are often only modestly improved, as members of the worship team try to communicate adjustments they need while also participating in the service. The right kind of user-adjustable monitoring system, however, makes achieving consistent clarity a reality.

DISTRIBUTED CONTROL AND CUSTOMIZED MIXES

Aviom's Pro16 Monitor Mixing System gives musicians a way to make their own customized monitor mixes and to change them as often as they want, in whatever ways they want. In the Aviom system, every mix is completely independent, so there is no need to compete or compromise because the guitarist and the bassist, for instance, need different things in their

mixes. Modifying a mix is as simple as selecting a channel and turning the volume up or down or adjusting the pan left or right. Requests don't have to be signaled to an engineer, so everyone in the worship team can have a unique and accurate monitor mix at all times.

SYSTEM ARCHITECTURE

Aviom's Pro16 Monitor Mixing System is designed to be both easy to use and easy to set up. The user interface on the mixer is straightforward and intuitive, and the cost-effective system is flexible and infinitely expandable. No specialized training or expertise is required, and you can reconfigure or add to your system as your needs change.

The system begins with an A-Net® input module, typically the AN-16/i, which accepts up to 16 analog signals and converts them to 24-bit, 48kHz digital audio (Aviom also offers a mic input module and an A-Net card for direct interface to certain Yamaha and DiGiCo digital consoles.). Any combination of line-level signals can be connected to the AN-16/i, including direct outs, inserts, aux sends, and group outs. This allows ensembles of any size to select the exact monitor feeds which will provide the most effective control over mixes.

The digitized signals are then output over standard Cat-5 Ethernet cables to a Pro16 Distributor or Personal Mixer. Each cable can carry up to 64 channels (though the monitoring system uses only 16 of these), and mixers can be connected

serially, in parallel, or in any combination of the two. Headphones, IEMs, powered speakers, or an amp can be connected directly to each Personal Mixer. Aviom also offers a version of the Personal Mixer which is specifically designed for wireless in-ear users.

The technology behind the system is Aviom's patent-pending A-Net communications protocol. A-Net supports long cable runs (up to 500'/150m between devices), plug-and-play setup, and real-time transmission of audio. A-Net connections are self-configuring and self-healing, so when any Aviom component gets unplugged—even by accident—it immediately starts working again as soon as it gets plugged back in. No computer or specialized networking technical expertise is required for setup, configuration, or operation of the system.

GETTING THE MOST OUT OF PERSONAL MONITORS

Personal monitors are an effective way to lower on-stage volumes, especially when used in conjunction with other techniques (such as replacing guitar and bass amps with amp modelers and acoustic drums with a good electronic kit). However, personal control over the mix is essential to making in-ears and headphones work for performers and sound their best. In addition, with monitor mixing shifted more to musicians, the tech staff is free to focus substantially more attention on the main front-of-house mix in the sanctuary. The result is more comfortable volumes, better audio fidelity, and an improved worship experience for everyone.
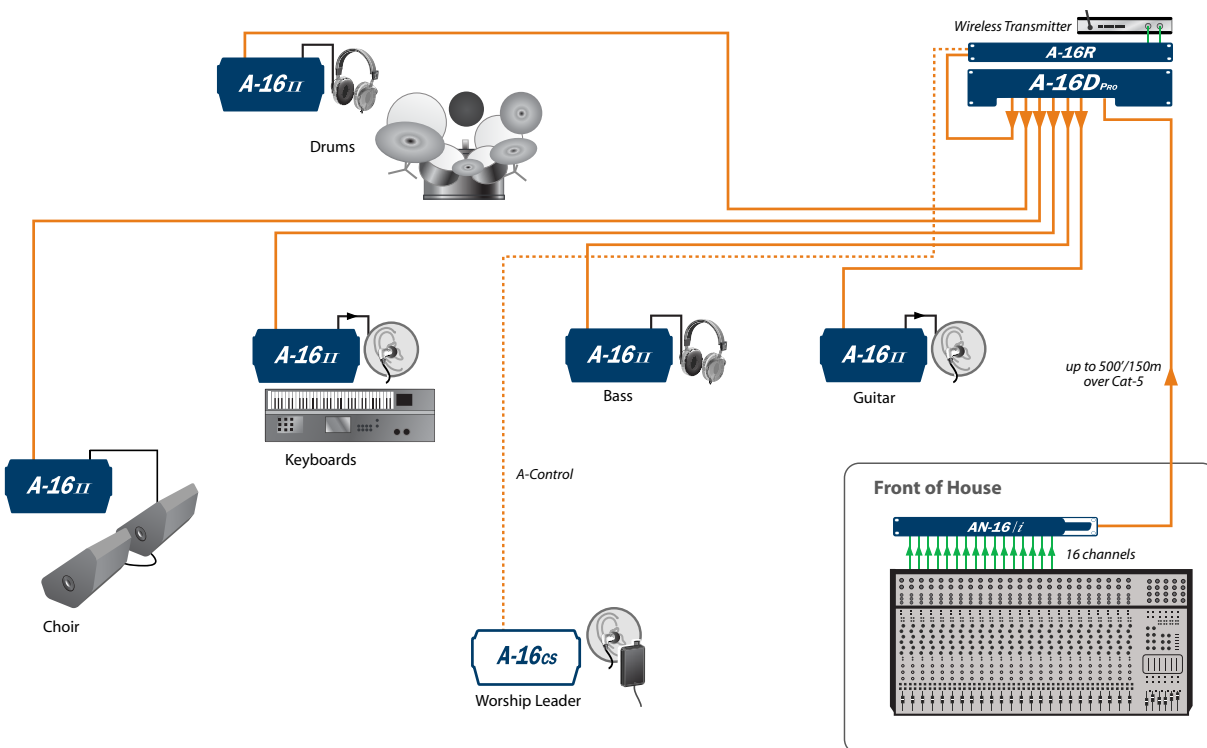
In the Pro16 Monitor Mixing System, 16 audio channels are distributed from the console to the Pro16 Personal Mixers, which can drive headphones, wired or wireless IEMs, or wedges. The A-16CS shown here provides remote control of the A-16R rack-mount mixer driving the transmitter for the Worship Leader's wireless in-ears.