

# sound technology

soundInnovations: the manufacturer's view

## Making Personal Mixing Very Personal

### Roland's M-48 Live Personal Mixing System



by Rob Read

Since the introduction of the REAC protocol in 2005, Roland Systems Group has developed a number of products around this technology, including the S-4000 and S-1608 digital snake systems, and the M-400 digital console, to name a few.

REAC stands for Roland Ethernet Audio Communication, which is Roland's original technology for its low-latency, high-quality digital audio transfer system over a single Cat-5e cable. Products using REAC technology provide unique system advantages and are installed in many venues worldwide.

#### More about REAC

REAC transfers 24-bit uncompressed multichannel audio with very low latency over lightweight Cat-5e cabling. REAC technology eliminates the typical problems found in analog snakes such as signal quality degradation or hums and buzzes, because it is an all-digital transfer system. REAC can transfer up to 80-channels (40x40) of audio over a single Cat-5e cable up to 328 feet. Additionally, the REAC protocol can be converted to fiber-optic transmission for longer cable runs over one mile.

#### M-48 Development Background

Roland Systems Group entered the personal mixing market as a natural progression of the REAC technology and a

fundamental core component of the V-Mixing System. The V-Mixing System consists of digital snakes, digital mixing, multichannel recording and now personal mixing. These four key components make up the V-Mixing System, providing an integrated solution for customers who want a high-quality solution for live performance, audio mixing and multichannel recording.

John Broadhead, VP of technology for Roland Systems Group, provides some background and insight to the development of the M-48 live personal mixing system: "We asked a number of musicians who currently use personal mixing solutions what features they were enjoying and what features they were looking for. Some of the key findings in our research lead us to the core development of the M-48 live personal mixer.

"Overwhelmingly, the number-one request was 'more channels.' This request was due in large part to each musician sharing the same sources, mapped in the same order on each musician's personal mixer. The only personal feature in this scenario is that each musician has control over his or her own volume. If you are a lead singer, your individual volume-control knob for lead vocal will be always assigned into a particular order and channel that it is assigned for everyone. In talking with the musicians, we found that they were asking for more

channels based on the current personal mixing systems' limited ability to customize their mixing sources."

He continues, "Once we discovered that, the better question was to ask, 'If you could choose what you wanted to listen to and in what order, how many channels would you need?' We found most answers were between four and 12 channels (stereo) and that most would not need more than 16 channels. This key fundamental question led us to design a personal mixing system that allowed musicians the ability to select, group and assign the audio sources in a meaningful way to them."

#### M-48 Design

Personalization and flexibility is at the heart of the M-48 live personal mixing system design that allows each musician the ability to control exactly what they want to listen to during his/her performances. The M-48 enables control of up to 40 audio channels via 16 stereo groups, providing a way to customize each musician's personal mixer in a meaningful way. Each musician has the ability to choose what he or she wants to listen to and in what order. For example, a lead vocalist may want to assign his/her own voice on channel 1, the drums all grouped on channel 2, bass on 3, lead, acoustic and rhythm guitar on 4, keys on 5, backup vocals on 6, and the rest of the instruments on 7,

and so on. A drummer might, for example, want kick on channel 1, snare on channel 2, hi-hat on channel 3, kit on 4, lead on 5, and so on.

#### Personalization for Each Musician

In addition to the flexibility of channel assignment, the M-48 allows each musician to control and affect sound quality with effects. Vocalists tend to want more reverb than guitarists or keyboard players. Each M-48 allows the musician to sweeten the monitor mix with volume, pan, 3-band EQ and built-in reverb per group—all adjustable by rotary encoder knobs. A built-in limiter is incorporated on each M-48 for protecting your ears from sudden and dangerous volume spikes.

#### Noise

Stage clutter and noise seem to be an ongoing problem in today's live performances. We are seeing a trend of many performing musicians choosing to use IEMs (in-ear monitors) instead of wedges to isolate stage noise while providing a crystal-clear monitor mix. IEMs are great for their intended use; however, when someone wants to speak with you on stage, you can't hear them unless you take out your ear-buds. The M-48 has a built-in ambient mic with individual gain control so that musicians can hear people on the stage and additionally provide some ambient

crowd noise to add in the personal mix.

#### Clutter

In an effort to reduce stage clutter and the need to plug-in wall-warts, the M-48 is powered using the newly developed "REAC Embedded Power," which transfers both power and 40 channels of audio to the M-48 via a single Cat-5e cable, dramatically simplifying wiring and stage layouts, and thereby reducing the unwanted stage clutter.

"We are very pleased with our engineering accomplishments and quick response to the needs of performing musicians as it relates to the personal mixing market," states Broadhead. "Musicians have been looking for better sound and more control, power and flexibility in their personal monitor mixes. In response to market feedback, we are confident that the M-48 brings the next level of quality to a monitor mix that is very personal."

*Rob Read is marketing communications manager for Roland Systems Group U.S.*

**Roland Systems Group**  
[www.rolandsystemsgroup.com](http://www.rolandsystemsgroup.com)