STUDIO PROJECTS LSD2

By Rob Shrock

May 1, 2004 12:00 PM

E-mail this article

Studio Projects' LSD2 is a stereo large-diaphragm condenser microphone with a unique design. It essentially consists of two Studio Projects model C3 mic capsules stacked vertically in the upper half of the casing. Because sounds hit the capsules at virtually the same time, this microphone avoids the phasing issues that can arise when mics are positioned some distance from each other.

The LSD2's top mic housing rotates 270 degrees in relation to the fixed bottom capsule. That lets you point the capsules in the same direction, rotate one capsule 180 degrees (to point them in opposite directions), or arrange the capsules anywhere within the 270-degree range. Each capsule can be set independently to a cardioid, omnidirectional, or figure-8 pattern, which allows you to control the width of the stereo image and use a variety of XY-coincident miking techniques, including Blumlein and middle-side (M-S). In addition to the independent pattern switches, each capsule has a -10 dB pad and a highpass filter.

The LSD2 does not require a special power supply; it operates on normal phantom power. However, a proprietary cable connects to the LSD2 chassis with a 7-pin connector and fans out at the other end to two XLR connectors. The included 25-foot cable is generously long, and additional XLR cables can be connected if longer cable runs are required. (Each channel of the LSD2 requires its own phantom power and preamp.) The LSD2 comes in a nice carrying case that holds the microphone, the cable, the included well-built shockmount, and a foam windscreen. It's an elegant package.

HIT THE RED BUTTON

PRODUCT SUMMARY	
Studio Projects LSD2 stereo large-diaphragm condenser mic $999.99	
FEATURES	**4.5**
AUDIO QUALITY	**4.0**
VALUE	**4.0**

RATING PRODUCTS FROM 1 TO 5

PROS: Provides a mono-compatible stereo signal from any source. Rotating top capsule allows easy adjustment of stereo spread. Variable patterns allow a variety of miking techniques. Excellent sensitivity. Sounds especially good in omni and middle-side configurations.

CONS: Highpass filter is fixed at too high a frequency (150 Hz) for many applications. Slightly noisy on extremely quiet sources with lots of gain added.

Manufacturer

Studio Projects/PMI Audio Group (distributor)
tel. (877) 563-6335 or (310) 373-9129
e-mail sales@pmiaudio.com
Web www.pmiaudio.com

I happened to be playing electric guitar when the LSD2 review unit arrived, so I decided that my first task was to capture an ambient stereo image from my electric-guitar rig.

I keep two small amps — a Vox and a Marshall — set to basic clean sounds and positioned on stands about three feet apart. I use various preamps, pedals, and effects units for overall tone creation. Each amp responds differently, creating a cooler stereo sound than two identical amps. In front of the grilles of each amp, I've permanently mounted a pair of Shure SM57s pointed at the speakers. However, close-miking alone doesn't always result in the ideal sound for many guitar tones. I had experimented a few times with a stereo pair of condenser mics placed about six feet back, but had always felt lukewarm about the results. Based on my previous experiments, I wasn't really expecting too much from the LSD2 in this particular application.

After reading through the instruction booklet, I learned that the two switches on the front of the LSD2 control the bottom capsule, while the identical switches on the back apply to the top rotating capsule. I set both capsules to cardioid patterns with no rolloff and positioned the LSD2 at ear level where I stand when working on the guitar sound. I angled the mic toward the Vox on my left, rotated the top capsule so that it pointed at the Marshall, and hit the Record button.

After playing a few licks, I gave it a listen. The sound was almost identical to what I heard when standing in front of my rig. There seemed to be a hole in the center of the image that hyped the stereo spread a little, so I switched both mics to the omni position and recorded a little more. I liked that sound even better. It was more even across the stereo spectrum (though the stereo effect was less exaggerated) and more natural in tone, although the added ambience from the omni patterns revealed the sound of my hard drives purring away in the background. (I was recording in a single big room partitioned with gobos and panels.) Blending in the SM57s with the LSD2 capsules set to omni created a huge guitar sound with more clarity and depth. It was impressive.

ON THE OTHER SIDE

I was now ready to try some different miking techniques with different settings. I had to record some quick versions of songs on an acoustic guitar for a rehearsal CD. Rotating the LSD2's top capsule to the 270-degree position properly aligned the capsules for middle-side recording. That provided an ideal configuration for recording a solo acoustic guitar.

In M-S recording, a cardioid microphone is pointed directly at the sound source, and a bidirectional microphone is placed perpendicular to the cardioid microphone. The figure-8 pattern picks up the sides of the room, with the pattern's null points aimed directly at the source and directly opposite the source. The figure-8 signal is then fed to two separate mixer channels and panned hard left and right with one channel switched out of phase.

Adding the cardioid mic's signal and blending the three channels to taste results in a stereo sound that is also mono-compatible. (When summed to mono, the out-of-phase figure-8 signals completely cancel each other, and you're left with the cardioid signal only.) M-S is a great choice for single-point sources — such as acoustic guitar, voice, or cello — that you want to capture in stereo without specific left-right imaging. (Sources such as piano and drum overheads are better recorded with another coincident-pair technique if you want to hear the imaging of the source.)

The guitar sound that I recorded with the LSD2 in an M-S configuration was nothing short of brilliant. I could hear the air around the guitar, and on practically every monitoring system I tried, it sounded like someone was playing the guitar right in front of me. In mono, the guitar was solid and clear without any phasing artifacts.

SPREADING OUT

I decided to record a more common stereo acoustic guitar sound by setting the capsules to cardioid and spreading them out. Again, there seemed to be a little hole in the center phantom image — it definitely sounded like two separate mics pointing in different directions. However, that's not the fault of the LSD2; it's often the sound you get with two cardioid mics creating a stereo sound field. I played with the spread of the capsules a bit, and the sound improved. No matter how widely I spaced the capsules, the combined mono sound was solid and pure. The proximity of the two capsules makes good on the manufacturer's claims for mono-compatible stereo recording.

I then switched the two capsules to the omni pattern and the acoustic guitar sound just fell into place. The hole in the center went away, and the tone improved dramatically. Of course, I was also getting a sense of true left and right, and any movements I made while playing affected the sound. I also heard more room sound in the recording, so I moved the mic in a little closer, and it sounded even better. The omni pattern let me get in closer to the source and minimize the room sound without the proximity effect of the cardioid pattern.

In the end, I preferred the M-S sound for the acoustic guitar. I wasn't interested in capturing a left-right perspective as I would be on piano or drum overheads, and I liked that the M-S stereo image was rock solid. Moreover, it just sounded the best for this application, although I really liked the omni-pattern recording too.

A few days later, I took the LSD2 to another studio and tried it on an acoustic piano. This particular piano was extremely bright, and the LSD2 did a nice job of catching the strident sound of the hammers. I got a completely acceptable sound using the LSD2's cardioid patterns, although it took several adjustments to get the capsule spread just right. Setting both capsules to omni and opening the piano's lid completely to eliminate reflections produced the best sound. (I've become so accustomed to using cardioid patterns that I had forgotten how unnatural the resulting sound could be compared with a good omni-pattern microphone.)

MAKE A WISH

While working with the LSD2, I did notice a few things that I would have liked in the design. There are no markings on the rotating capsule to indicate its current position; I would prefer a graded scale that showed the degrees of rotation to aid in matching previous settings. Although you can configure the capsules at a 90-degree angle for M-S recording, for example, you have to eyeball the setting. Thankfully, rotating the capsule all the way locks it and aligns the capsules at 270 degrees. However, being able to repeat particular settings would be especially helpful when using the more sensitive cardioid patterns.

Another small complaint is that the highpass filter is set at 150 Hz. Although the rolloff is a mild 6 dB per octave, the setting is a bit high for my taste. I would rather it be a little steeper and at a lower frequency, such as 80 Hz. I chose not to apply the built-in filter and instead used outboard EQ or a plug-in to filter the subsonics. Also, though the LSD2 is not particularly noisy, there is some audible noise when boosting the mic to high gain settings. In these days of high-resolution DAWs and whisper-quiet mics, any apparent self-noise is noticeable.

STEREO STANDOUT

I really like the LSD2. For stereo recording, it's a capable and versatile multipattern microphone that maintains phase coherence and mono compatibility. It wouldn't be my first choice in a single-channel cardioid application; there are plenty of great-sounding, affordable cardioid mics on the market. But when it comes to stereo recording, the LSD2 shines, especially in omni and M-S configurations. The LSD2 sounds great up close on instruments, and it's also ideal for recording ambience. And to top it off, the price is right.

LSD2 Specifications	
Element	(2) condensers (vertically coincident)
Diaphragm	1.06" dual-membrane 6 µm mylar
Polar Patterns	cardioid, omni, figure-8
Frequency Response	30 Hz-20 kHz
Maximum SPL	146 dB SPL (1% THD at 1 kHz)
Self-Noise	18 dBA
Signal-to-Noise Ratio	76 dB
Power	24-52.5V phantom power
Circuit Type	transformerless
Low-Cut Filter	6 dB/octave at 150 Hz
Pad	-10 dB
Dimensions	10.75" (H) × 2.1" (diameter)
Weight	1.8 lb.

Composer, producer, and keyboardist **Rob Shrock** *recently worked on projects for Aretha Franklin, Ronald Isley, and* American Idol II. *He has recorded and performed with Burt Bacharach, Elvis Costello, Dionne Warwick, David Foster, and a host of others*