

# SoundField SPS200 Zephyr Kit

**HUGH ROBJOHNS** braves the great outdoors in a testing quest for stereo and surround recording with a software-controlled microphone from SoundField.

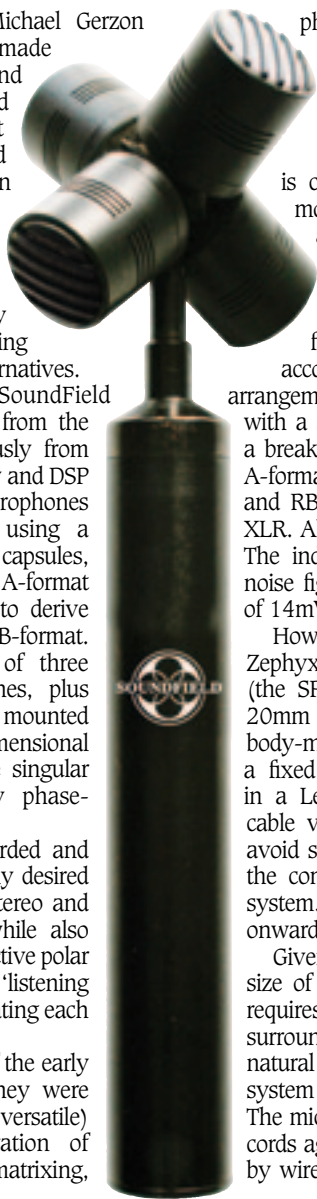
Created in the 1970s by Michael Gerzon and Peter Craven, and made practical by Ken Farrer and Calrec Audio, the SoundField microphone has struggled over the last 40 years to achieve the widespread recognition that its brilliant design deserves. However, thanks to the challenges of 5.1 HD television sound and ever more complex computer games, the SoundField microphone is increasingly in demand as a very practical and versatile solution providing some unique advantages over the alternatives.

The latest generation of SoundField microphones has come a long way from the original designs, benefitting enormously from developments in head-amp technology and DSP signal processing. All SoundField microphones capture the acoustic environment using a compact array of four capacitor mic capsules, the outputs of which (known as the A-format signals) are then matrixed together to derive another set of four signals, called the B-format. These are essentially the outputs of three 'virtual' orthogonal fig-8 microphones, plus an omnidirectional microphone, all mounted coincidentally — a kind of three-dimensional Mid-Side array, if you like, with the singular advantage of providing completely phase-coherent outputs.

The B-format signals can be recorded and subsequently reprocessed to derive any desired output format from mono, through stereo and onto any surround configuration, while also enabling the user to determine the effective polar patterns, mutual angles and even the 'listening axis' of the virtual microphones generating each channel's output.

The complex analogue matrixing of the early SoundField mics inevitably meant they were noisier than more conventional (if less versatile) alternatives, but the latest generation of SoundFields use DSP to perform the matrixing, either in hardware or via VST or TDM software plug-ins, which neatly removes that problem.

The entry-level model in the range is now the SPS200 Software Controlled Microphone, which combines a cost-effective A-format mic with bespoke Surround Zone plug-in software to handle the signal format conversion, matrixing, and output manipulation. A dedicated 4-channel microphone preamp, the SMP200, is also available with controls to provide gain,



phantom power, and high-pass filters across all four channels. There is also a bespoke shockmount and windshield kit available from Cinela, called the Zephyx.

The standard SPS200 microphone is constructed using four 20mm capsules mounted in the familiar tetrahedral array at the top of a slim 21mm diameter body measuring roughly 150mm in length and weighing 220g. The SoundField logo indicates the nominal forward axis, although the software can accommodate inverted or end-fire mounting arrangements. The base of the mic body is fitted with a screw-lock 10-pin Lemo connector and a breakout cable is supplied to access the four A-format capsule outputs (labelled LF, RF, LB, and RB — left and right, front and back) on XLR. All four channels require phantom power. The individual SPS200 capsules have a self-noise figure of roughly 12dB and a sensitivity of 14mV/Pa.

However, if purchased in the form of the Zephyx kit, a modified version of the mic (the SPS200-SB) is provided that is roughly 20mm shorter than the standard model, the body-mounted connector being replaced with a fixed 280mm lightweight cable terminated in a Lemo plug. The idea is to help isolate cable vibrations from the microphone and to avoid short-circuiting the isolation provided by the complex but effective Cinela shockmount system. A 5m breakout cable is provided for onward connection to a preamp or recorder.

Given the relatively low weight and compact size of the SPS200, and the fact that it only requires four record channels to capture a full surround sound image, location recording is a natural application for the SPS200; the Cinela system provides a practical solution to that end. The microphone is held tightly with elastic loop cords against a metal bracket that is suspended by wire loops above a mounting bar, allowing

a high degree of movement fore and aft. Clearly this arrangement is optimised for conventional end-fire microphones, but still provides a useful degree of isolation for the SPS200's capsules.

The mounting bar is joined to a post running down to a 3/8-inch threaded stand adapter for attachment to a mic stand or boom, via a clever two-axis swivel that allows the whole shockmount assembly to be tilted or rotated by releasing a single knob. Fixed to the side of the stand adapter is a bracket to hold the Lemo plug from the microphone, allowing quick and easy (dis)connection of the breakout cable.

The integral egg-shaped windshield basket frame is supported from flexible linkages at the ends of four spider arms extending from the base of the shockmount. A pliable rubber bellows gasket seals around the base itself and a removable rear panel (with integral windshield cover) provides access to the microphone and mount. Two removable windshield covers are provided — a surprisingly thick but very porous stretchy plain fabric, and a long-haired alternative for high wind situations. Fully loaded, the whole assembly weighs in at a tad under 600g, with a slightly front-heavy balance, but still easily manageable on a handheld boom.

For the purposes of boom-swinging, I found it quite acceptable to monitor just the two raw front capsule outputs, which makes it quite practical to use the SPS200 in conjunction with a small portable multitrack recorder, transcoding the A-format tracks to B-format or any required stereo or surround arrangement in postproduction.

The Zephyx provides very good isolation from wind noise provided the covers are fitted properly, and handling noise rejection was equally impressive — though a careful boom technique is required. The fact that there are four microphones facing in different directions makes effective shock mounting inherently difficult.

One of the major differences between the SPS200 and other SoundField microphones is the absence of integral preamps; the SPS200 can be used with any external preamp, including those built into location recorders, for example. Not only does this provide cost reductions, it also allows a degree of system tailoring through the choice of preamp. The only requirement is that the channel gains are accurately matched, since this directly affects the precision of the matrixing and the resulting imaging. The SPS200's handbook recommends aligning the channel gains using a test signal generator, but tests using GML 8304 and Focusrite 428 mic preamps suggest that preamps with switched gain controls will probably be accurate enough.

However, the review Zephyx kit was also supplied with the SoundField SMP200 4-channel preamp. This elegant unit, housed in a smart extruded aluminium case, is equipped with four female XLR sockets on the front panel, along with a large rotary gain switch (0-56dB) and two pushbuttons to engage phantom power and a high-pass filter. Simple four-LED bargraphs above each XLR provide level indications at -40, -20, 0, and +15dBu. The rear panel carries four male output XLRs and a fused IEC mains inlet accepting supplies between 115 and 240V AC. Operating the unit is simple but the sound quality is most impressive. This is a very quiet and transparent sounding preamp that doesn't add or subtract anything to or from the innate quality of the SPS200. The maximum of 56dB of gain might seem a little on the low side, but I never felt the need for more during my trials.

Once the A-format signals from the microphone have been loaded into a DAW, the dedicated Surround



Zone software can be used to process them to generate mono, stereo, or surround output signals. The software operates as a channel plug-in and is compatible with Pro-Tools HD (TDM) systems or multichannel-capable VST platforms, such as Nuendo, Cubase, Soundscape, and others. However, the user will require an iLok account and USB dongle as the software is activated with an iLok user ID issued by SoundField against the mic's serial number.

The SurroundZone plug-in only accepts A-format inputs and only provides fully decoded output for up to eight channels, depending on the selected decoding mode; there is no option to provide B-format signals for efficient archiving, for example. The plug-in's visual interface is logical and informative, with a set of bargraph meters to show the input levels with an associated slider control to trim the gain between -30 to +10dB. End-fire and invert buttons allow the software to compensate for alternative mic mounting arrangements. Further gain trim sliders allow the levels of each output to be adjusted and solo and mute buttons enable the individual channels to be auditioned.

Seven preset decoder buttons across the top of the screen configure the software for stereo, a trio of different 5.1 setups, or 6.1, 7.1, or 8-channel surround outputs (the last option is only available on VST). These presets can be further optimised and tweaked using six rotary controls along the lower part of the screen to manipulate the B-format decoding parameters. For example, the frontal axis of the 'virtual' microphone can be rotated 360 degrees and tilted up or down by



45 degrees, while the perspective can also be adjusted with a control labelled Zoom. Three more controls adjust the front and rear image widths and change the effective pickup pattern of the rear mics of the virtual surround array (balancing imaging precision against general envelopment).

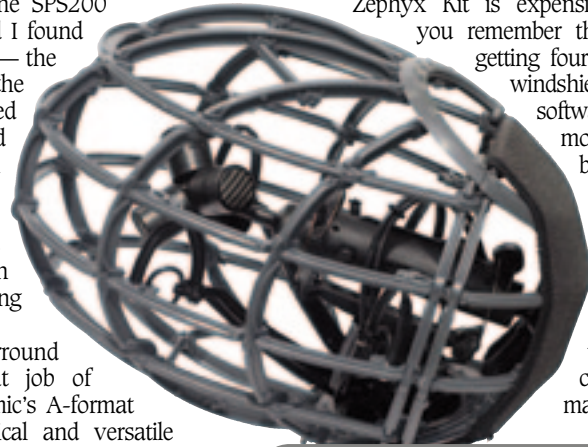
I've long been an advocate of the SoundField concept, and use my own SPS422B and SurroundZone software regularly, so the SPS200 system was very familiar, and I found the sound quality comparable — the potentially higher self-noise of the smaller capsules was outweighed by the better preamps and digital format conversion and matrixing. Running the software as a multichannel VST plug-in on Nuendo is fairly straightforward, though some care is required in allocating inputs and outputs correctly.

The bespoke SPS200 SurroundZone software does a great job of transcoding the mic's A-format signals in a logical and versatile way, and the flexibility of being able to tweak the front and rear channel widths and envelopment allows the surround stage effect to be optimised for the material.

However, the value of the mic for gathering location atmospheres would be significantly enhanced if the software allowed audio to be archived in the standard (and future-proof) B-format, and for B-format archive sources to be processed through the plug-in (the standard SurroundZone software accepts only B-format inputs).

I occasionally use an old Rycote windshield system with my SPS422B, and, although very effective, the rig is very heavy and not much fun on the end of a boom pole. In contrast, the SPS200 in the Zephyx windshield is much easier to use and, although the mount is fiddly to adjust or to replace the suspension wires, once set up it works very well.

At around UK£2,575 (+ VAT) the SPS200 Zephyx Kit is expensive, though when you remember that you're actually getting four microphones, plus windshield kit, plus decoding software, the value for money balance swings back to a more favourable position. The SPS200 is far more versatile as a stereo and surround acquisition tool than anything else currently on the market. ■

**PROS**

Most cost-effective SoundField system yet; Software format conversion maximises sound quality; bespoke 4-channel preamp makes life easy!

**CONS**

No B-format I-O from the software; the Cinela mount can be very fiddly to adjust or repair.

**Contact**

**SOUNDFIELD, UK:**

**Website:** [www.soundfield.com](http://www.soundfield.com)