SoundField Microphones and Processors
Surround Sound Production Tools

With TSL Products’ SoundField range of Surround Sound Microphones and Processing equipment, broadcasters, music producers and location sound specialists can capture the atmosphere of any environment from sports venues, concerts, talent shows and recording studios, to documentary, film and TV sets.

www.tslproducts.com
HD has fast become the mainstream delivery standard for broadcast worldwide, which has brought a growing need for a straightforward means of recording and broadcasting 5.1 audio. With TSL Products’ range of SoundField surround microphones and processors for broadcasting, location and music applications, 5.1 recording and upmixing can be achieved simply and cost-effectively with the installation of a single microphone.

5.1 surround recording and broadcasting of major and minor live events with a single microphone

Traditionally, multiple microphone arrays have been used to capture surround soundscapes, but the set-up, trouble-shooting and de-tying of multiple arrays take time. Moreover, such arrays usually produce audio that suffers from phase incoherence creating several problems when 5.1 audio has to be ‘decapsulated’ to create a stereo soundscape for broadcast or legacy networks. This is often the case with transmissions delayed beyond a week in a variety of markets, e.g. international sports events, music concerts and film sets. To address this, SoundField’s unique B-Format Technology is based on the principle that all acoustic information (width), ‘Z’ which is up/down information (height) and ‘W’ which is front/back information (depth), ‘Y’ which is left/right information (side) is centred on a single central point from which the other three elements are referred. Collectively, X, Y, and Z are entitled SoundField B-Format. Because the SoundField capsule array captures three different sound at the same ‘central point’, all phase related anomalies created by spaced microphones are eliminated. Once in B-Format the point of acoustic origin is defined and all output variations (i.e. mono, stereo, M/S, 3.1, 5.1 etc.) are derived from this same ‘central point’. Thus, surround recordings made with SoundField microphones can be collapsed to stereo or mono – with the phase cancellation and high frequency differences encountered when ‘summing’ multiple spaced microphone.

Optimum control

A significant advantage that SoundField offers is control over the entire microphone parameters are adjustable either in real-time or in post-production. These controls include microphone orientation – with controls such as Rotate, Tilt and Zoom – as well as output formats including Mono, Stereo and 5.1. This combination of controls allows the audio engineer to create the optimal microphone array right from the ideal listening position in the OB truck or the studio control room.

Future-proof audio archiving

If the B-Format signal is recorded to a four-channel channel storage medium, the decoding can take place in post-production, allowing decisions about the eventual output format to be made when it’s actually required. This makes the B-Format an excellent ‘future-proof’ audio archiving format, as B-Format signals could easily be decoded into any future surround formats, including 3D audio. In addition to the SoundField Surround Sound Microphones and Processors, TSL products also specialises in Audio Monitoring & Throning, Power Management and Broadcast Control Systems – thousands of which are in operation across the globe. Visit: www.tslproducts.com or call +44 (0)1628 576321

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For more information, visit www.tslproducts.com or call +44 (0)1628 576321.

A revolution in surround sound broadcasting and recording, SoundField microphones and accessories enrich the consumer-experience by bringing atmospheres of sporting events, concerts, documentary locations and film sets to life.

SoundField Surround Sound Microphones and Processors - Product Overview
Digital Broadcast Surround Microphone package.

Representing the latest generation of SoundField technology, the DSF-B Digital Broadcast package consists of a DSF-2 microphone system (which includes the DSF-2 microphone and DSF-2 microphone controller) and the DSF-3 digital surround processor. The system provides simultaneous digital surround and stereo soundscapes at large scale live outside broadcast events such as sports stadiums, concert halls and live audience TV shows.

Unusually, the multi-channel audio data from the DSF-B microphone system generates from a single centred mono microphone. It is possible to place an additional microphone in any of the other six problem areas associated with spread microphones in multi-cap suicide head arrangements.

The DSF-2 surround-sub array capsule, M/S and four-channel format which can be decoded into any surround format analogue or digital. Two DSF-B capsules can be placed side by side, allowing up to four capsules. The DSF-3 surround processor allows the need to physically move the microphone, including orientation, angle, pickup pattern and a unique Mi Pots 3D control.

The DSF-3 surround processor is a digital surround processor designed to decode the digital SoundField B-Format signals generated by the DSF-2 system. It can decode the E5.1 Surround and Surround Zone product as well as the original digital surround sound production chain when used with DSF-3 signals.

The stereo signal may be output digitally via rear panel XLR MADI or analogue 5.1. Outputs discrete B-format and the DSF-3 control processor can be decoded into any surround format analogue or digital surround sound production chain when used with DSF-3 signals. The stereo signal may be output digitally via rear panel XLR MADI or analogue 5.1.

The Digital Broadcast Surround Microphone package is designed for analogue broadcast use: SPS-B Analogue Broadcast Surround Microphone package. The Digital Broadcast Surround Microphone package is an analogue alternative to the DSF-B Digital Broadcast Package.

DSP-3 control processor

The DSF-3 control processor is a digital surround processor designed to decode the digital SoundField B-Format signals generated by the DSF-2 system. It can decode the E5.1 Surround and Surround Zone product as well as the original digital surround sound production chain when used with DSF-3 signals.

The stereo signal may be output digitally via rear panel XLR MADI or analogue 5.1.

After the 64 games there was nothing but praise from the world’s broadcasters who took the 5.1 feed. We were delighted with the sound and the robustness of the signals delivered to us in Munich. Robert Edwards, Sound Director at Video Sound Services on DSF at a world sporting event.
Surround Sound Processing

As the world continues to adopt 5.1 surround for HD, many broadcasters still do not have established workflows for transporting, archiving and editing discrete 5.1. Broadcasters often find themselves in situations where they either need to introduce stereo material into a 5.1 audio stream through upmixing or derive stereo from a 5.1 production through downmixing.

SoundField offers a range of products using our highly regarded upmix and downmix algorithms to intelligently distribute between the front and rear while maintaining the frontal stereo image by performing detailed real-time analysis of the stereo signal and fed to the center channel while replacing the frontal stereo image by keeping the center channel sounds at the front. The exactitude of the process is truly intelligently distributive between the front and rear stereo images.

Upmix controls
1. Input Level A/B
2. L/R Input Balance "T"m
3. L/R Group

Output controls
8. L-R Tm
9. L-100m
10. L-200m
11. System Equalizer

Inputs and Outputs (hardware version only)
12. Stereo Input (AES 75 BNC)
13. AES 75 BNC
duplex stereo input and output (SADec 32)
15. Ethernet and USB Connectivity

The thing that's great about the UPM-1 is that it produces very phase-coherent, stereo compatible results. We need the thing that's great about the UPM-1 is that it produces

Master Control Room (MCR)
The UPM-1 can be placed in a control room, a dedicated control room or a broadcast room. It is designed for seamless integration into a post-production workflow. It is available in 7.1 (PC and Mac), 7.1 (Windows and Mac) and 5.1 (only Mac) formats and runs at high production speeds. It provides a complete suite of controls and options appropriate for all kinds of content from live broadcasts to streaming services.

Stereo-only edit suite
For all those that have been upgraded to 5.1 and need to support stereo, the UPM-1 is available with stereo only controls. It is designed for seamless integration into a post-production workflow. It is available in 7.1 (PC and Mac), 5.1 (Windows and Mac) and 5.1 (only Mac) formats and runs at high production speeds. It provides a complete suite of controls and options appropriate for all kinds of content from live broadcasts to streaming services.

X-1
Combined Upmix/Downmix Processor - 3rd Generation
The X-1 produces a flexible, transparent intelligent distribution of audio at a low bit rate with the ability to seamlessly integrate into a post-production workflow. It is available in 7.1 (PC and Mac), 7.1 (Windows and Mac) and 5.1 (only Mac) formats and runs at high production speeds. It provides a complete suite of controls and options appropriate for all kinds of content from live broadcasts to streaming services.

SVG-3 control APP
- Seamless Upmixing and Downmixing from separate sources
- Auto L/R and Stereo Input select
- Balanced Input and Output (SADec 32)
- Ethernet and USB Connectivity
- Automatically creates a new project file when available

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The ST450 microphone system is ideal for location recording and TV sound production anywhere. The ST450 takes full advantage of the latest technology in electronics components, resulting in superior noise performance. It incorporates a noise suppressor to control the information captured by its four capsule array. This is achieved without sacrificing surround sound capability. The microphone system is ideal for use in the studio on fully fledged Digital Audio Workstations.

Side panel connections

6. Balanced mic input – 12 pin Lemo connector
7. Stereo Left/Right, M/S line level outputs – balanced 5 pin XLR
9. Stereo Left/Right, M/S line level outputs – balanced 5 pin XLR
10. Bi-Format (X, Y, Z), input level output – balanced pin XLR
11. 12VDC input on pin Hexo connector

Front controls

1. High performance microphone pre-amplifiers with discretely switched 6dB gain steps and linearity. This ensures all process – such as stereo and surround sound decoding and manipulation – can be generated with the same level of control. The ST450 has its own anti-vibrating location microphone kit known as the SPS200 Zephyx Kit. Given its size and weight, the ST450 is ideally suited to capturing both stereo and surround audio on location.

SPS200 Software Controlled Microphone.

The SPS200 Software Controlled Microphone brings the advantages of SoundField technology to a wider audience and provides the perfect front end to capture both stereo and 5.1 surround. It is ideally suited to those working in the field or at broadcast-based recording systems or in the studio on fully fledged Digital Audio Workstations. The ST450 microphone is included in the SPS200 kit. The SPS200 kit includes a soundfield microphone, a SPS200 Professional plug-in, a SPS200 Surround Zone plug-in, a SPS200 Surround Zone Control Panel and a Zephyx suspension mount.

SPS200 Software Controlled Microphone.

The ST450 SoundField Portable.

The ST450 SoundField Portable is a compact, lightweight microphone system for location recording. The ST450 is a unique lightweight ‘floating cage’ assembly that mechanically decouples the microphone from its card case, ensuring compatibility with all field portable equipment. The ST450 SoundField Portable is ideal for location recording and TV sound production anywhere.

Surround Zone Post Production Plug-In.

The Surround Zone Plug-In brings all the benefits of SoundField technology to the post production environment. The Surround Zone plug-in is designed to accept the four surround signals generated by the ST450 microphone. It incorporates a wide range of processing options.

Surround Zone Post Production Plug-In.

The Surround Zone plug-in can generate mono or stereo signals as well as surround encoded versions of both. The Surround Zone plug-in is designed to accept the four surround signals generated by the ST450 microphone. It incorporates a wide range of processing options.
The DSF-1 is a digital surround microphone system aimed at the discerning concert venue broadcast and recording markets. It is designed to provide the best possible sound quality and flexibility for a wide range of applications. The DSF-1 system comprises of a SoundField DSF-1 system and the hardware digital control unit which benefits from much of the technology employed in the successful DSF-2 digital broadcast system. In addition to the results in stereo, the DSF-1 system also allows the use of the microphone without physically handling it. This allows the DSF-1 to be used in situations where the performance and recording material include output signals which can be recorded digitally (up to 96 kHz). This is particularly useful for broadcast and recording applications where the sound engineer may need to adjust the sound quality in real time.

Features:
1. Switchable 87.5Hz to 22kHz filter
2. Stereophonic fixed threshold limit to prevent digital overload
3. Dynamic range control: 21 dB
4. Mid-Surround, center: 80 dB or 100 dB
5. Phantom power: 48V (±2%)
6. 120 ohm output level
7. Headphone output: 1/4" or 1/8" phone jack
8. AES-3I/O (4 channels)
9. MADI (8 channels)
10. VDM-4 digital format meter
11. AES-3I/O (4 channels)
12. MADI (8 channels)
13. Digital format meter
14. PowerStatus LED

Jonathan Freed, US-based mix engineer explains:

"A product like this DSF-2 should be heard by as many people as possible. The SoundField concept has tremendous potential for very high-quality reproduction, especially where many people are involved. The DSF-1 system is perfect for capturing performances by artists of international standing in world-class concert halls, as well as to record the sound from large-scale events such as sporting events and special occasions.

John Casali, Freelance Sound Mixer used the SoundField ST450 on the set of ‘Harry Potter and the Deathly Hallows’ as well as Sherlock Holmes. He says:

"The ST450 has been brilliant for capturing all kinds of sounds. I used it on a scene in a crowded room, and it created a realistic sense of space and movement, which was particularly important for the film’s overall atmosphere."