DSF-2 Broadcast Microphone System

User Guide

Version 2.0

System comprises:

- DSF-2 1U Digital Microphone Controller
- DSF-2 Microphone in Leather Case
- 20m SoundField Microphone Cable
- Shockmount
- Mains Power Cable
- Owners Manual

CONTENTS

SAFETY INFORMATION

• This equipment must be EARTHED.

• Only suitably trained personnel should service this equipment.

• Please read and take note of all warning and informative labels.

• Before starting any servicing operation, this equipment must be isolated from the AC supply (mains) by removing the incoming IEC mains connector.

• Fuses should only be replaced with ones of the same type and rating as that indicated.

• Operate only in a clean, dry and pollutant-free environment.

• Do not operate in an explosive atmosphere.

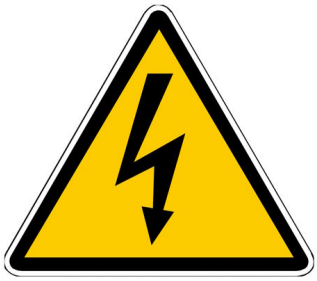
• Do not allow any liquid or solid objects to enter the equipment. Should this accidentally occur then immediately switch off the unit and contact your service agent.

• Do not allow ventilation slots to be blocked.

Cleaning

For cleaning the front panels of the equipment we recommend anti-static screen cleaner sprayed onto a soft cloth to dampen it only.

Explanation of Warning Symbols



The lightening flash with arrow head symbol within an equilateral triangle is intended to alert the user to the presence of dangerous voltages and energy levels within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock or injury.

The exclamation mark within an equilateral triangle is intended to prompt the user to refer to important operating or maintenance (servicing) instructions in the documentation supplied with the product.

INTRODUCTION

The DSF-2 Broadcast Microphone System has been specifically developed to simultaneously provide both the surround and stereo soundscape at large scale outside broadcast events such as football stadiums and concert hall venues. Its advantage over alternative methods is that the multi-channel audio it generates from a ‘single point’ source is completely phase coherent. This enables the broadcaster to collapse the surround to stereo or mono for TV and radio feeds without loss of information, frequency imbalance or any of the other phase problems associated with spaced microphones or multi capsule ‘dummy head’ arrangements.

All processing is in the digital domain and the 1U controller is equipped with digital 750 ohm AES 3-id outputs on BNC connectors capable of driving up to 1000m of coaxial cable (subject to correct cable specification). When used is conjunction with the 250m SoundField mic cable, the microphone head can be situated up to 1.25 Kilometres from the DSF-2 controller. This can be a major benefit in situations where the OB vehicles have to be sited some distance away from the venue or performance.

The DSF-2 outputs stereo Left/Right (digital and analogue), stereo M/S (digital only) and four channels of SoundField B-Format called W, X, Y and Z (digital only) which is the surround sound information. A single lightweight multiway cable is used to connect the microphone to the DSF-2 controller which as well as carrying the individual capsule signals also supplies the necessary power to the microphone allowing unrestricted use in OB and ENG applications as well as in the studio. All microphone parameters can be remotely adjusted from the DSF-2 controller’s front panel whilst monitoring the results on the provided headphone monitoring.

The DSF-2 is designed to function as either a variable pattern single (mono) microphone, a variable pattern, variable width, coincident stereo microphone array or to generate full surround from the four B-Format outputs which will then be decoded into 5.1 by the DSF-3 Digital Surround Processor or Surround Zone software. This is achieved using four sub-cardioid capsules set in a regular tetrahedron, and by adding or subtracting the outputs from these four capsules in different proportions, it is possible to derive all possible polar patterns from omni, through cardioids to figure-of-eights.

For surround recording applications the engineer should use the four B-Format output signals. These contain the three dimensional information (Height, Width, Depth and Sub Bass LFE) required for all current and future surround sound formats. In live broadcast applications the B-Format outputs of the DSF-2 should be connected to the digital B-Format inputs of the DSF-3 Digital Surround Processor which will output full 5.1 surround on six discrete channels (Left, Centre, Right, Surround Left, Surround Right and Sub-Bass). In addition to 5.1 the DSF-3 can also output Left/Right stereo. If the surround and stereo mixing will be done at a later time in post production the B-Format signals should be recorded on four tracks and introduced to the DSF-3 or Surround Zone software in a studio environment.

For further information on using the DSF-2 in conjunction with the DSF-3 see the ‘Interfacing the DSF-2 with the DSF-3 for Live Surround Broadcast’ section of this manual.

HOW DOES IT WORK?

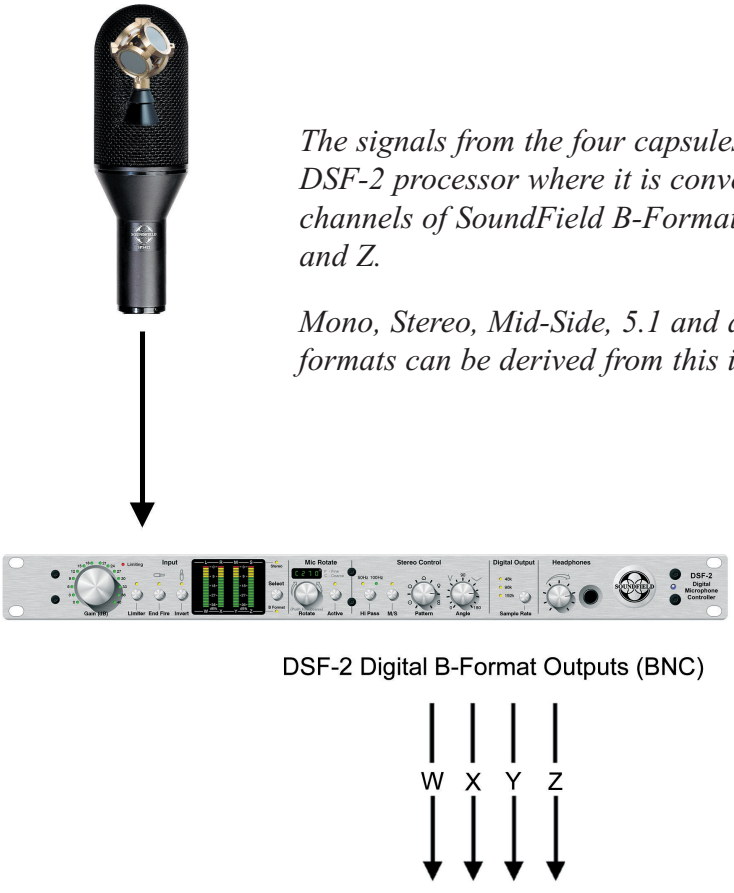
SoundField B-Format:

The capsules are placed tightly together to eliminate the phase problems associated with 'spaced' multi-microphone set-ups.

From a single point source sound is received from all directions, reproducing a realistic listening experience.

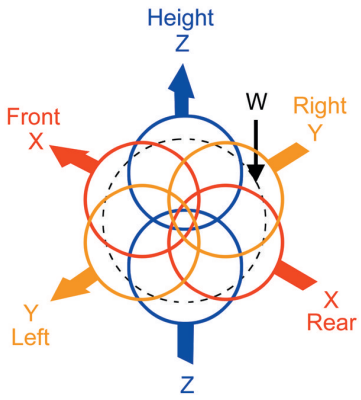
The SoundField Four Capsule Array

The four outputs from the capsules of SoundField microphones (called SoundField A-Format audio signals) are converted by the DSF-2 processor into four components known as SoundField B-Format. These convey all of the information of the entire sound field, and are the three directional vectors - Left/Right, Front/Rear and Up/Down - and absolute pressure.



The signals from the four capsules are fed to the DSF-2 processor where it is converted into four channels of SoundField B-Format, entitled W, X, Y and Z.

Mono, Stereo, Mid-Side, 5.1 and all future surround formats can be derived from this information.



B-Format Illustration

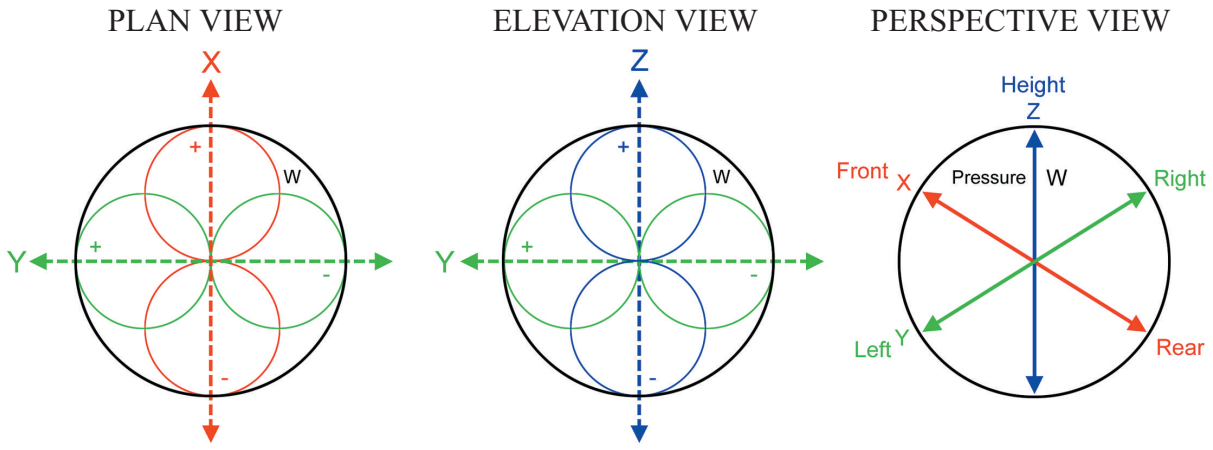
B-Format is three dimensional acoustical information and consists of three figure of eight polar patterns called X, Y and Z plus one omni called W.

X gives Front to Rear depth information, Y gives Left to Right horizontal information and Z gives vertical height information. From the omni W sub-bass (LFE) is extracted.

SoundField are the only microphones in the world that generate B-Format.

The four channels of the B-Format signal are represented by three bidirectional and one omnidirectional pickup, all centred at a single point in space, and are labelled W (pressure), X (Front/Rear), Y (Left/Right), and Z (Up/Down). These signals contain all of the information required to describe a soundwave and are the essential elements needed to create any conventional mono, stereo, or surround format where the microphone positions and polar patterns can be fully variable. By recording the four B-Format outputs from the DSF-2 controller these components can be preserved for subsequent production and processing of current and all future surround formats.

THE FOUR PRIME COMPONENTS GENERATED BY SOUNDFIELD MICROPHONES



X: HORIZONTAL VECTOR: FRONT/REAR PRESSURE-GRADIENT COMPONENT

Y: HORIZONTAL VECTOR: LEFT/RIGHT PRESSURE-GRADIENT COMPONENT

Z: VERTICAL VECTOR: HEIGHT PRESSURE-GRADIENT COMPONENT

W: PRESSURE (OMNIDIRECTIONAL) COMPONENT

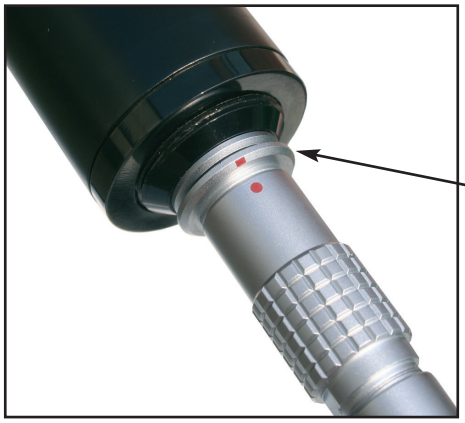
GETTING STARTED

WARNING: The DSF-2 microphone is not compatible with other SoundField Control Units in the product range. SoundField Ltd will not accept any responsibility for damage caused by the interconnection of these units.

WARNING: The DSF-2 1U digital controller should be sited in a cool operational environment in a well ventilated rack with 1U free space above the unit.

BEFORE USE

Before applying mains power to the DSF-2 system, connect the microphone to the controller with the interconnection cable provided. When connecting the microphone, make sure the red dot on the Lemo Female 12 Pin In-Line Connector is aligned with the red dot at the base of the microphone before insertion. To disconnect the cable push the disc forward on the base of the microphone and release the connector.



Push silver disc on microphone base at the ‘red dot’ position to release connector.

When connecting the microphone cable to the DSF-2 controller, ensure the red dot is facing upwards. To disconnect, pull back on the silver connector grip and release.

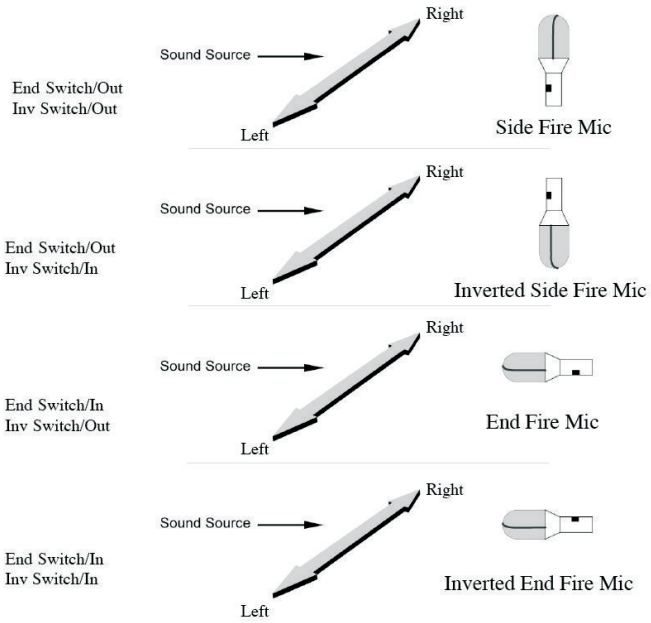
It is essential that the microphone be powered up a few minutes before use to allow the capsule charging process to stabilise. If the microphone has been used recently, the time taken to stabilise may be shorter, but turning the microphone on fifteen minutes or so before it is needed is a good habit to acquire.

In conditions where condensation is likely to be a problem, for example, when bringing the microphone from a cold vehicle to a warm venue, it is advisable to leave the microphone switched on for up to half an hour before use so that the internal heating system can clear the capsules of all condensation.

The DSF-2 system does not require Phantom Power (48V) if it is connected to a mixing console. Please ensure that the Phantom Power on the mixer input channels is turned off.

MICROPHONE ORIENTATION GUIDE

The illustrations below show the correct status of the End-Fire and Invert switches on the DSF-2 controller relative to the orientation of the microphone.



KEYS TO PROPER PLACEMENT OF SOUNDFIELD MICROPHONES

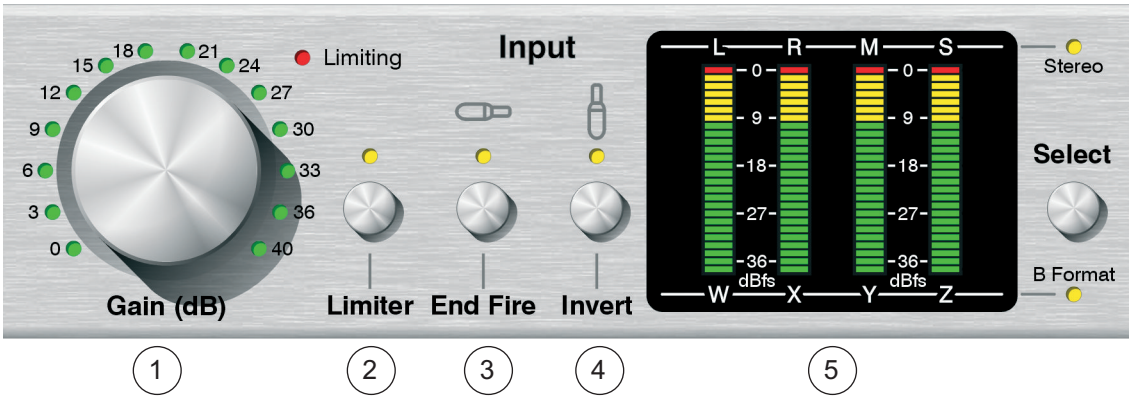
Getting the mic in the right place is the first step in making a good recording. With SoundField microphones, it is too easy to be lulled into complacency by the excellent stereo and surround sound pick-up they provide. The temptation is to put it up, turn a few knobs, and go with it. However, with a little more attention to detail this “good” sound will always become even better.

Be sure to set the appropriate Orientation mode (Side Fire or End Fire) to tell the DSF-2 processor how the microphone is facing. Then, before ever opening the mic up to stereo, it is important to listen to the microphone as a monophonic pick-up. Set the Pattern control to Omni and the Width control to 0° and listen to the overall sound. Pay particular attention to the balance within the sound source - i.e. the balance among the performers, the relationship of direct-to-reverberant sound, extraneous noises, etc. If it doesn’t sound right, move the microphone around until it does. At this point adjust the Pattern control to focus more on the sound source and less on the surrounding environment by utilising the cardioid and figure-of-eight patterns.

Remember that the essence of SoundField microphones is based on the Mid/Side technique, where the Mid microphone provides the basic sonic balance. Therefore, once it sounds good in mono, it always will sound great in stereo; the converse, however, is not necessarily true. Only after you are satisfied with the mono pick-up, should you open-up the microphone into stereo. Set the Pattern control to the polar pick-up you think will be a good starting point and adjust the Width control for your desired stereo image. You can adjust both controls to achieve exactly the right stereo perspective for your recording. Pay particular attention to the direct-to-reverberant sound. Remember that too much reverb makes a recording sound “mushy” and vague. The beauty of SoundField microphone systems is their unequalled clarity and articulation. Don’t waste this by including too much extraneous sound - unless, of course, that is want you want to do! Also keep an eye on the level meters to be sure that you are not likely to overload the microphone’s electronics.

CONTROLS

INPUT SECTION - provides all parameters relating to gain, microphone pick-up orientation and bargraph metering.



1. Gain

The Relay Switched Gain control adds up to a further 40dB of microphone gain in 3dB steps. A circular LED display illuminates the selected gain position.

2. Limiter

A switchable fixed threshold soft limiter is provided to eliminate the possibility of 'digital overload' and any resulting distortion. It is recommended that the limiter is engaged at all times, particularly in wide dynamic range environments such as concert halls or sporting events where sudden crowd applause can create high sound pressure levels. An amber status LED shows when the limiter is engaged and a red LED displays limiter activity.

3. End Fire

The End Fire mode should be selected when the microphone is horizontally pointed ( ) at the sound source as you would with a flashlight. Selecting End Fire maintains the correct three-dimensional perspective in both surround and stereo when the mic is used in the horizontal position.

If you do not select this mode when the microphone is horizontal it will result in the Front/Back depth information and the Up/Down height information being reversed. When making B-Format recordings for later surround or stereo post production with the Surround Zone software or DSF-3 Digital Surround Processor, it is important to document the status of the End Fire switch. This mode is particularly necessary when the microphone is mounted in a Rycote or on a fishpole and pointed directly at the sound source.

4. Invert

The INVERT mode maintains the correct three-dimensional perspective in both surround and stereo when the microphone is suspended upside down above the sound source ( ). Not selecting this mode with the mic suspended will result in the Left/Right width information and

Up/Down height information being reversed. It is important to document the status of the Invert switch when making B-Format recordings for later post production.

5. Bargraph Metering

The four bargraph meters are switchable to monitor either the four B-Format signals (W, X, Y and Z) or the stereo Left/Right and Mid-Side. An amber status LED permanently indicates which monitor mode has been selected. The bargraphs display levels ranging from -37.5dBfs up to 0dBfs.

MIC ROTATE

1. Rotate

Rotates the microphone's pick up through a full horizontal 360º and redefines the front centre of the stereo and surround image. A four character display shows the degree of rotation and whether the 'Course' or 'Fine' mode is selected. In the Course mode rotation is in 10º steps and in Fine mode the rotation is in 1º steps for more precise pin-pointing of sound sources.

When setting up to record surround sound without 5.1 monitoring, the Rotate control can also be used to monitor the rear surround image. Setting the Rotate to 180º, the Pattern control to cardioid and the Angle control to 90º will give a representation of Surround Left/Surround Right.

NOTE: Any use of the Rotate control during a live broadcast or recording will be embedded in the 5.1 audio.

2. Active

Rotate 'Active' button switches the control in or out of the signal path. An amber status LED is permanently illuminated when Rotate is activated.

STEREO CONTROL SECTION - the controls in the Stereo Section have no effect on the four B-Format output signals.

1. Hi Pass

A switchable 50Hz or 100Hz high pass filter is available to attenuate unwanted low frequency rumble or wind noise. An amber LED indicates 50Hz active and a green LED indicates 100Hz active.

2. M/S

The Mid/Side control switches the digital AES 3-id stereo outputs from L/R to M/S. When the Mid/Side button is enabled the stereo outputs will be M/S encoded. The Left output channel provides the Mid signal and the Right output channel provides the Side signal.

A further analogue stereo output is provided which always remains in standard Left/Right (X/Y) format. This is particularly useful in broadcast applications for feeding back to the commentator as opposed to the signals available from the O/B vehicle which have incurred significant delays in order to be synchronised with the video.

3. Pattern

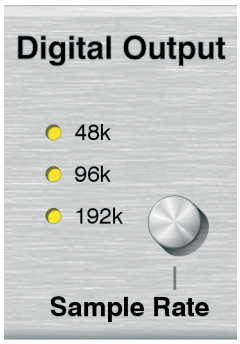
The Polar Pattern control is continuously variable ranging from Omni through Sub-Cardioid, Cardioid, Hyper-Cardioid to Figure-of-eight and sets the polar patterns used for the stereo pair.

This control dictates the pattern of both the mono or a stereo pair depending on whether the Angle control is utilised.

4. Angle

This control varies the stereo image from zero degrees (mono) through 90 degrees (standard stereo coincident pair) to an extra wide stereo 180 degrees. The effect of the Angle control can be viewed on the Left/Right bargraph metering.

DIGITAL OUTPUT



Sample Rate
The DSF-2 system will operate at the current broadcast sample rate standard of 48K and in addition offers 96K and 192K sample rates. A sample rate selector button enables the user to cycle through the sample rate options and a green status LED displays the selected sample rate. The unit's outputs automatically go into mute during sample rate changes.

HEADPHONES

Headphone Monitoring
Front panel headphone monitoring is provided with a continuously variable volume control. The headphone section monitors the Left/Right stereo output. Connection is via a stereo 1/4 inch jack socket (TRS) and is for use with headphones having an impedance of 400 ohms or greater.

POWER DISPLAY LED

Power LED Display
A blue LED is permanently illuminated when the DSF-2 is powered up. When the unit is first turned on the DSF-2 will go through its 'start-up routine' during which time the blue power LED will flash on and off and the four LED bargraphs will be in full display. When fully initialised the blue LED will stop flashing and remain on and the bargraphs will subside. The unit will then commence to pass audio.

REAR PANEL

1. MAINS POWER - ON/OFF mains power switch / IEC mains power inlet.

2. FUSE HOLDER - containing IEC127-2 replaceable fuse (250mA - 250V anti-surge and 500mA - 115V anti-surge). Switchable voltage selector (230V - 115V).

3. DIGITAL OUTPUT SECTION - the DSF-2 outputs digital stereo and B-Format simultaneously on 75 ohm AES 3-id via BNC connectors. The digital audio signals can be sent down up to one kilometre of coaxial cable (subject to correct cable specification) without loss of quality.

4. STEREO OUTPUT - Left/Right stereo analogue balanced line outputs on XLR conncetors. (Pin 1 = ground, Pin 2 = + (positive) and Pin3 = - (negative).

5. MIC INPUT - Lemo 12 pin female panel mount connector. The DSF-2 system will drive up to 250m of SoundField mic cable with no loss of quality or signal level.

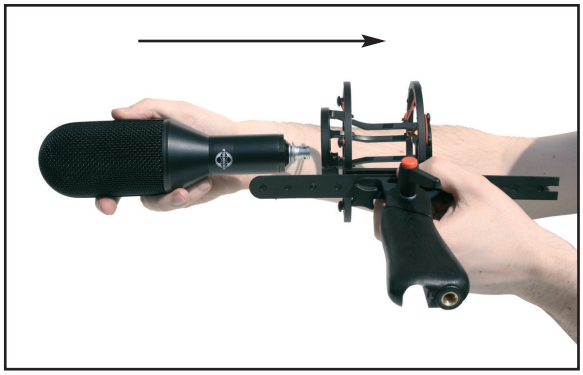
RYCOTE ASSEMBLY INSTRUCTIONS

1 DSF-2 Microphone and Rycote kit in flightcase.

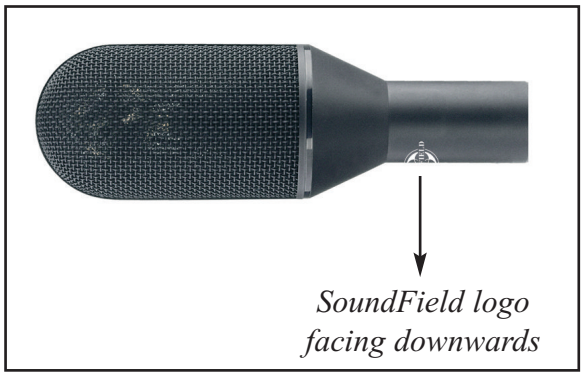
2 Remove end of Windshield by turning in an anti-clockwise direction.

3 Loosen the two black plastic bolts situated on the Pistol Grip under the Windshield.

4 Remove Windshield by gently sliding away from the Pistol Grip.

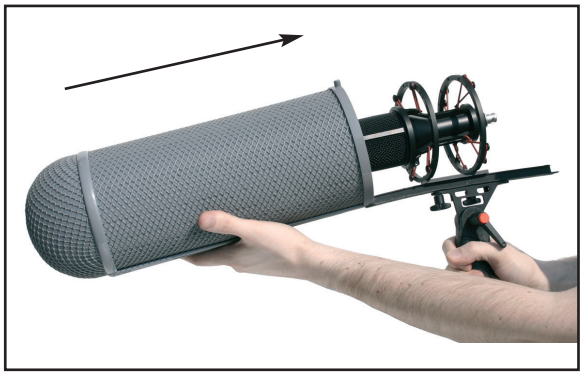


5 Insert microphone into the inner cradle.



6 **IMPORTANT: WHEN THE MIC IS RIGGED IN ITS FINAL POSITION IN THE STADIUM FOR END-FIRE USE, THE SOUNDFIELD LOGO ON THE MIC BODY MUST BE FACING DOWNWARDS.**

7 When microphone is fully inserted, tighten the two Allen bolts with the Allen key provided. Make sure the microphone is securely mounted in its inner cradle.



8 Partly replace Rycote Windshield over the DSF-2 microphone.

9 Connect microphone cable ensuring that the red dot on both the microphone and cable connector are lined up.

10 Insert the microphone cable into the groove provided on the underside of the Windshield before replacing end of Windshield. Ensure the Windshield end is securely located in its original position.

11 Insert Windshield into the Rycote Windjammer.

12 When the Windjammer completely covers the Windshield, secure its position by tightening the pull-strings and place excess string inside Windjammer.

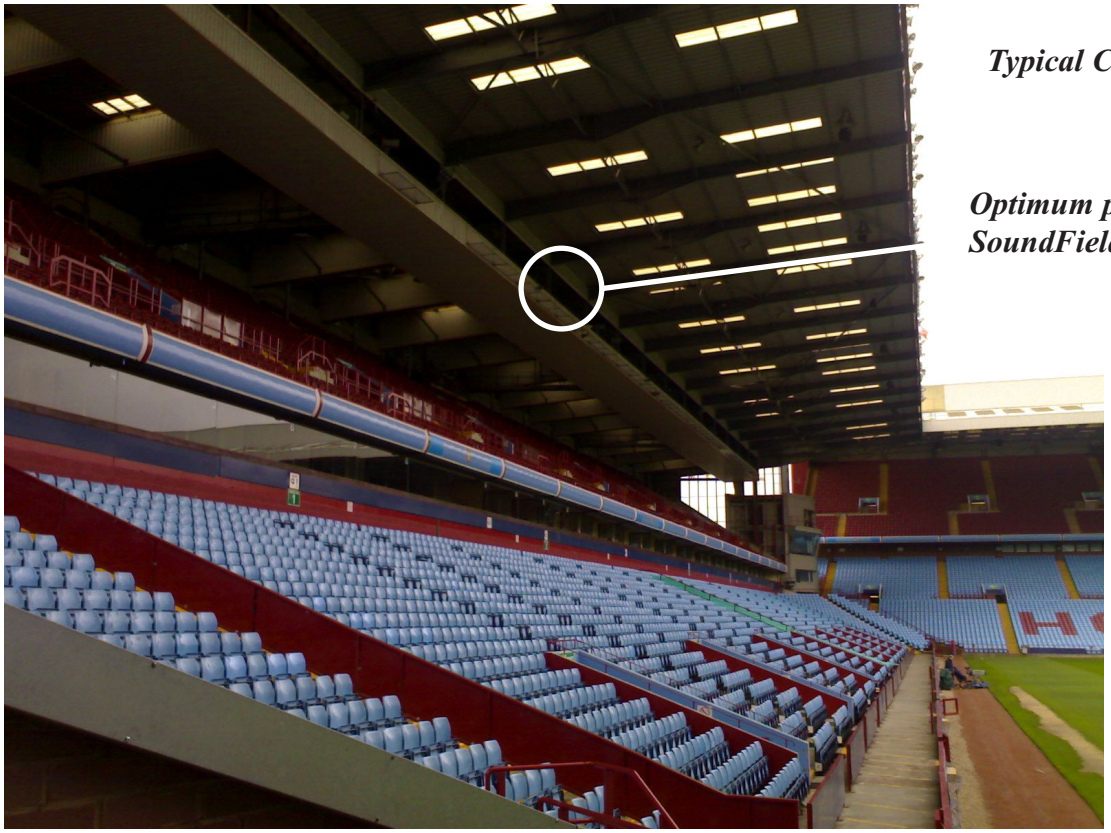
A PRACTICAL GUIDE FOR USE ON 5.1 OUTSIDE BROADCASTS

by Robert Edwards, VSS Ltd.

Only now have the true benefits of SoundField microphones become apparent to the sound mixers in the live television community who are now being asked to deliver 5.1 audio and more, to accompany live High Definition Broadcasts. Many such HDTV Broadcasts are for sporting events where there is no rehearsal and a limited amount of set-up time.

Where should the microphone go in the stadium? The microphone is simplicity itself to rig and is very tolerant of positioning. It has been said that as long as the microphone is in the same stadium as the event, the ambience captured will be very enjoyable! However, there are some basic rules that should be followed...

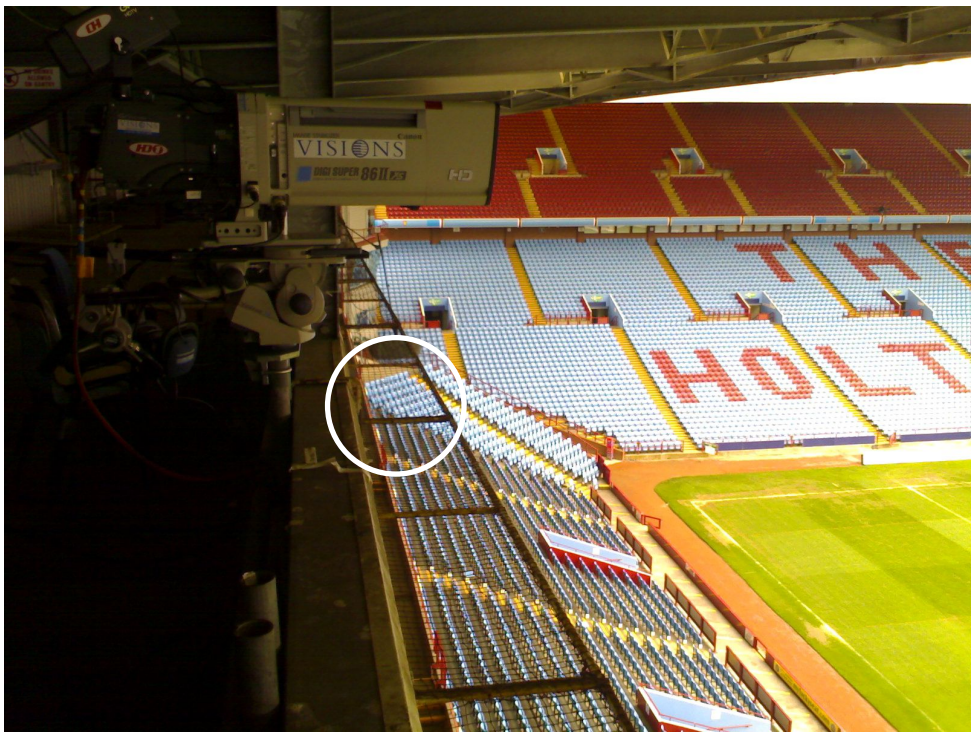
The microphone must be placed at least five metres from any individual crowd members, and in such a position so as not to be physically disturbed. Individual claps or voices that are too close to the microphone will result in making the rest of the ambience difficult to control. The microphone must be securely mounted, generally clamped to a stadium structure, protected from the elements (direct wind and rain) with suitable wind and rumble isolation. Generally, the higher and more centrally-placed above the main crowd or audience, the better the overall sound experience will be.



Typical Crowd Stand

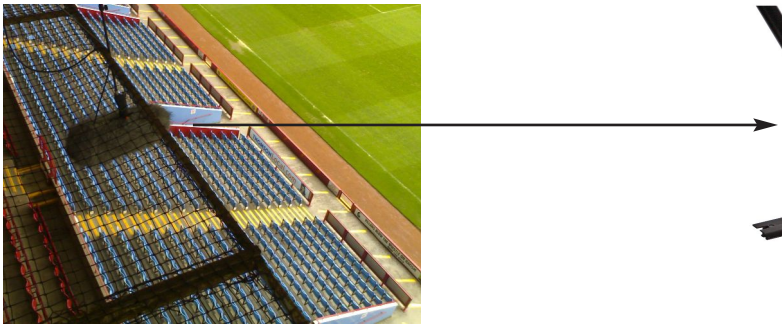
Optimum position for SoundField Microphone

The main wide-shot camera position for any event should be used as the reference position for the SoundField, although this camera position may sometimes not be placed where the main crowd reactions occur. If the microphone has good free space around it, then the aural image will be impressive.



SoundField Microphone position near Main Camera Platform

The microphone itself is housed in a Rycote-type windshield. The body of the microphone lays flat in the mounting clips with the SoundField badge on the microphone downwards. The multi-pin connector is mated with the microphone and sealed inside the Rycote basket. The microphone, inside this windshield is then pointed at the main on-field action. In this position the microphone is said to be in “End-fire” mode, and the “End-fire” switch on the Control Unit should be selected. If the microphone is rigged so that the SoundField badge is upward, then the “Invert” switch must be selected. The multi-pin cable is connected from the microphone to the Control Unit. This outputs four channels of SoundField “B-Format” signals which are algebraic vectors W, X, Y and Z that are derived from the capsules. The Control Unit is where the gain and orientation of the microphone is adjusted. The SoundField microphone has a small heating element inside the body, which keeps the capsules warm and dry. It is therefore essential that the microphone is powered-up well before use when conditions are humid.



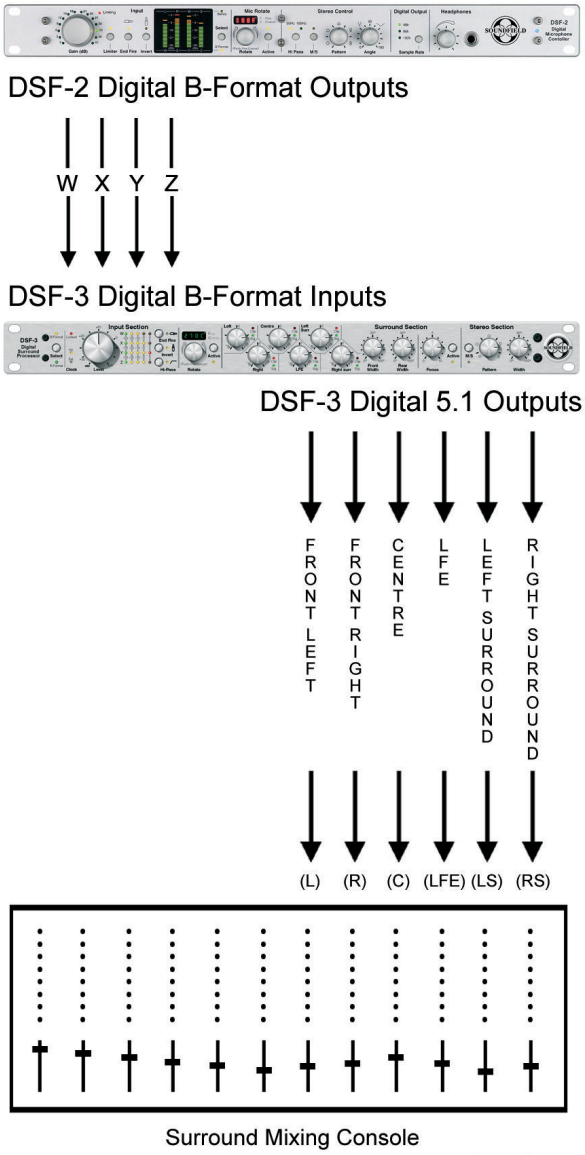
Close-up of optimum position of SoundField Microphone in full Rycote kit

SoundField Microphone before Rycote Windshield and Windjammer are fitted

The SoundField has a very low noise-floor and can cope with a wide dynamic range. This is good, since the crowd reactions of sporting events also tend to have a wide dynamic range. The gain is best set while the stadium is performing tests on the PA system for safety announcements, as these are generally very loud and offer a guide to the high SPL achieved in the stadium.

SoundField DSF-2 Microphone in Rycote as seen from Crowd Stand

INTERFACING THE DSF-2 WITH THE DSF-3 DIGITAL SURROUND PROCESSOR FOR LIVE SURROUND BROADCAST



In this configuration the DSF-2/DSF-3 combination will deliver six discrete channels of digital 5.1 surround sound. It is a very quick and effective way to record surround. After some practice and once you know how to get the best from your system, it will yield consistent results. Although not vital, it is a big advantage to be able to monitor in full surround when choosing your mic position. If monitoring in full surround is not possible during set-up, engaging the Rotate control at 180º with the Pattern control set to Cardioid and the Angle control set to 90º will provide a representation of the rear sound field (Surround Left, Surround Right).

NOTE: Any use of the DSF-2's Rotate control during a live broadcast or recording will be embedded in the 5.1 audio.

If post-production capability is required at a later date for the audio material it is essential to record the four B-Format signals. A live stereo feed is provided by the DSF-2 or the DSF-3 will provide a stereo feed in post-production.

SPECIFICATION

Audio Specification - Control Unit

Analogue Inputs: maximum input level 26.5dBu
Analogue Limiter: when enabled threshold set to 24.5dBu
Analogue Bandwidth: 10Hz – 40KHz +/- 0.1dB
Analogue to Digital Converter: 2 x CS5381
Supported Sample rates: 44.1K, 48K, 88.2K, 96K, 176.4K and 192K

Mic Pre/Analogue to Digital Converter performance:
All performance specifications are rms, un-weighted and band limited 20Hz – 20KHZ

	Mic Pre Gain: 0dB	Mic Pre Gain: 40dB
THD + N, 1KHz / -1dBfs	-102dBfs, <0.0005%	-100dBfs, <0.0007%
Dynamic Range, 1KHz / -60dBfs	-112dBfs	-103dBfs
SNR	-110dBfs	-100dBfs
Idle Channel Noise	-110dBfs	-101dBfs

Audio Specification - Microphone

Frequency Response: 20H to20KHz, +/-3dB
Capsule Sensitivity: 13mV/Pa
Signal to Noise Ratio DIN/IEC: 81dB
Equivalent Noise DIN/IEC: 13dB
Maximum SPL: 145dB

Word Clock I/O Specification

Word Clock input: 75Ohm BNC, 200mVpk-pk minimum input level
Word Clock output: 75Ohm BNC, 4.5Vpk-pk into 75Ohm load

Mains Requirements

AC Input: 115VAC or 230VAC switchable - requires different fuses (see below)
• 115VAC (95VAC to 125VAC) 50/60Hz
• 230VAC (210VAC to 245VAC) 50/60Hz

Power Consumption: ~20W
Fuse Rating - IEC127 2, ratings depend on voltage selected:
115VAC: 500mA, 250V anti-surge
230VAC: 250mA, 250V anti-surge

Dimensions - Control Unit
Case Size: 482mm (w) x 44mm (h) x 259mm (d)

Dimensions - Microphone
Microphone Size – 69mm (width at widest point) x 240mm (length without connector)
Weight: 500g

All specifications are subject to change without notice.

WARRANTY

Limited Liability

SoundField Ltd., herein after known as the manufacturer, guarantees this equipment from defects in material and workmanship under normal use and service for a period of one year. This guarantee extends to the original purchaser only and does not apply to fuses or any product or parts subjected to misuse, neglect, accident or abnormal conditions of operation. The guarantee begins on the date of delivery to the actual purchaser or to his authorised agent or carrier. In the event of failure of a product covered by this guarantee, the manufacturer or their certified representatives will repair and calibrate equipment returned prepaid to an authorised service facility within one year of the original purchase and provided that the guarantors examination discloses to its satisfaction that the product was defective, equipment under this guarantee will be repaired or replaced without charge. Any fault that has been caused by misuse, neglect, accident, act of god, war or civil insurrection; alteration or repair by unauthorised personal; operation from an incorrect power source or abnormal conditions of operation, will not fall under this guarantee. However, an estimate of the cost of the repair work will be submitted before work is started. The manufacturer shall not be responsible for any loss or damage, direct or consequential, resulting from machine failure or the inability of the product to perform. The manufacturer shall not be responsible for any damage or loss during shipment to and from the factory or its designated service facility. This guarantee is in lieu of all other guarantees, expressed or implied, and of any other liabilities on the manufacturers part. The manufacturer does not authorise anyone to make any guarantee or assume any liability not strictly in accordance with the above. The manufacturer reserves the right to make changes or improvement in the design and construction of this unit without obligation to make such changes or improvements in the purchaser's unit. Any dispute arising from this warranty shall be subject to the laws of England.

What to do if a fault is found or you need support

In the unlikely event that a fault develops with your product, please contact support as follows:

By email using **support@tsl.co.uk**
By telephone on +44 (0)1628 676221

Claim for damage during transit

All products should be thoroughly inspected immediately upon delivery. If there is any damage to the product a claim should be filed with the carrier immediately. A quotation to repair shipment damage can be obtained from SoundField Ltd. Final claims and negotiations with the carrier are the responsibility of the customer.

Repair process and how to return your goods

In the first instance you should contact support using the contact details above. In the event that your product needs to be returned, a unique return number will be provided which should be used for all further correspondence.
Repairs and returned goods are subject to the following conditions:

- No equipment should be returned without the prior consent of SoundField/TSL Professional Products Ltd.
- Shipping/Insurance costs for returned items are the responsibility of the customer.
- All returned goods must be suitably packaged to avoid damage and preferably in the original purpose built SoundField packaging. If this is not possible, packaging may be available from SoundField.
- In the event of transit damage, you will be advised immediately and the repair of the unit may be subject to additional costs which will be quoted before repair work commences.
- Warranty repairs will be returned free of charge (subject to the limited liability terms detailed elsewhere in this document)
- Non - warranty repairs will be inspected and an estimated cost provided before work starts.
- If after initial inspection we find the product is beyond economic repair (BER) you will be notified and charged for inspection only.
- Non-warranty repairs will be subject to additional return shipping costs.

Application support or help

SoundField Ltd will be happy to answer any applications questions to enhance your use of this equipment. Please contact support using the details provided above.

12 PIN CONNECTOR WIRING DETAILS FOR MICROPHONE CABLES

12 Pin Male				12 Pin Female
Pin 1	-	LB (+)	-	Pin 1
Pin 2	-	LB (-)	-	Pin 2
Pin 3	-	RB (+)	-	Pin 3
Pin 4	-	RB (-)	-	Pin 4
Pin 5	-	RF (+)	-	Pin 5
Pin 6	-	RF (-)	-	Pin 6
Pin 7	-	LF (+)	-	Pin 7
Pin 8	-	LF (-)	-	Pin 8
Pin 9	-	Voltage GND	-	Pin 9
Pin 10	-	-V	-	Pin 10
Pin 11	-	+V	-	Pin 11
Pin 12	-	Signal GND	-	Pin 12

SOUNDFIELD COLOUR CODING

Pin 1	-	White
Pin 2	-	Purple
Pin 3	-	Grey
Pin 4	-	Pink
Pin 5	-	Green
Pin 6	-	Yellow
Pin 7	-	Red
Pin 8	-	Blue
Pin 9	-	Black
Pin 10	-	Brown
Pin 11	-	Orange
Pin 12	-	Screen (plus link to connector chassis)

Important Note: Use colour coding as above as some wires have a different number of strands.