
# ST350 Portable Microphone System

## User Guide

Version 1.0

**System comprises:**

• ST350 Microphone • ST350 Control Unit
• Stand Adapter • 5 Metre 12 pin Lemo Mic Cable (Mic to Controller)
• B-Format Output Cable (10 pin Lemo Connector to 4 male In Line XLR)
• External DC Power Supply

# SOUNDFIELD ST350 MICROPHONE SYSTEM

# ! SAFETY CONSIDERATIONS !

## CAUTION - EXTERNAL MAINS POWER SUPPLY

THE MAIN POWER SUPPLY SUPPLIED WITH EACH ST350 IS FOR INDOOR USE ONLY AND HAS NO USER SERVICEABLE PARTS INSIDE.

DO NOT PERFORM ANY SERVICING; REFER ALL SERVICING TO QUALIFIED PERSONNEL.

SHOULD ANY DAMAGE OCCUR TO POWER SUPPLY OUTER CASING, STOP USING THE POWER SUPPLY IMMEDIATELY.

**CAUTION - SERVICING**

DO NOT PERFORM ANY SERVICING. REFER ALL SERVICING TO QUALIFIED SERVICE PERSONNEL.

**CAUTION**

RISK OF ELECTRIC SHOCK
DO NOT OPEN

## TABLE OF CONTENTS

## SOUNDFIELD HISTORY

In 1933, British scientist Alan Blumlein was issued a patent that stands today as a landmark in the development of stereophonic recording and reproduction. Among its numerous declarations, it defined the basis for all coincident microphone techniques, including the Mid/Side and crossed bidirectional configurations. (The latter, in fact, is commonly referred to as a "Blumlein Stereo" pair.) In the 1970s, British mathematicians Michael Gerzon, Peter Craven and colleagues expanded upon the stereo concepts pioneered by Blumlein to develop the concept of a microphone system that could reproduce a full three-dimensional soundfield. Both Blumlein and Gerzon realised that only when a soundwave is captured at a single point in space can it be reproduced faithfully and without the phase distortion anomalies inherent in spaced microphone techniques.

Early SoundField prototype models were developed using Gerzon's theory in conjunction with the National Research Development Corporation of Great Britain and Calrec Audio. Chief Designer at Calrec, Ken Farrar, and colleagues played a leading role in turning Gerzon's theory into a real product and Ken Farrar's contribution was later recognised by his appointment as a Fellow of the Institution of Electrical Engineers (F.I.E.E.). In 1993, the company SoundField Ltd. was formed specifically to manufacture and further develop the range of products and their application in both stereo and multi-channel audio environments. SoundField Ltd. is the owner of all patent and intellectual property rights relating to SoundField Technology.

Today, the SoundField range enjoys a reputation as the ultimate microphones for recording both stereo and the new developing multi-channel surround formats. These unique microphones employ a patented tetrahedral array of closely spaced subcardioid capsules to capture the complete three-dimensional soundfield at a single point in space. This single point source pick-up principle avoids all of the time - or phase-related anomalies generated by spaced microphone arrays. Thus, surround recordings made with SoundField microphones can be collapsed to stereo - or stereo recordings to mono - without the phase problems that result in "comb-filtering" (phase cancellation) distortions. Furthermore, a single point source system is the only one that allows a truly phase coherent sub-channel to be derived. Spaced microphone arrays are unable to be reduced without introducing significant phase errors unless some of the microphone signals are discarded, which consequently results in loss of essential audio information.

# INTRODUCTION

The ST350 Portable Microphone System has been specifically developed for location recording and in the design process both the microphone and control unit have been considerably 'downsized' in comparison to all other previously available SoundField models. The ST350 simultaneously provides both surround and stereo soundscapes and its big advantage over alternative methods is that the multi-channel audio it generates from a 'single point' source is completely phase coherent. This enables the recordist to collapse the surround to stereo or mono without loss of information, frequency imbalance or any of the other phase problems associated with spaced microphones or multi capsule 'dummy head' arrangements.

The ST350 can be powered by either battery (see page 19) or mains electricity and the microphone can be used at close quarters on a hand held boom or alternatively situated up to 200 metres from the control unit on the relevant SoundField mic extension cables (see accessories on page 25). The ability to adjust all microphone parameters remotely from such a long distance is invaluable in situations where the microphone is placed in an area which is difficult to access.

The ST350 is connected to the control unit by a single lightweight multiway cable which delivers the four individual capsule signals to the control unit and carries the necessary power back to the microphone. A small heating element is located in the microphone head to keep the capsules condensation-free under normal operating conditions. The ST350 control unit outputs stereo Left/Right, M/S and four channels of SoundField B-Format called W, X, Y and Z which is the surround information. All outputs are at balanced line level.

The ST350 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 SP451 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 sound recording the recordist 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. The B-Format signals can be de-coded into surround by either the Surround Zone software or the hardware SP451 Surround Processor, both of which output six discrete channels (Left, Centre, Right, Surround Left, Surround Right and Sub Bass). The Surround Zone software also provides full stereo re-mixing enabling adjustment of polar patterns, stereo width and all other microphone parameters.

**Please note:** To maintain a high quality audio performance the ST350 microphone employs studio grade condensor capsules - in environments of high moisture and humidity (or other extreme weather conditions) their performance may be affected.

## HOW DOES IT WORK?

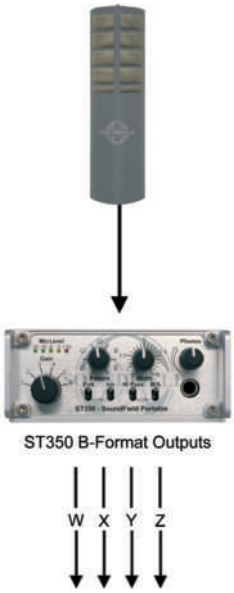
### SoundField B-Format

**The SoundField Four Capsule Array**

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

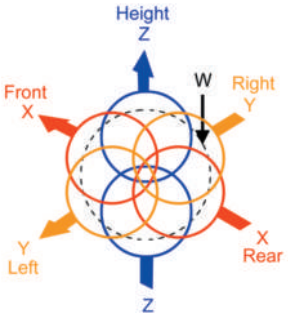
From a single point source sound is received from all directions, reproducing a realistic listening experience.

The four outputs from the capsules of SoundField microphones (called SoundField A-Format) are converted by the ST350 processor into four components known as SoundField B-Format. These convey all of the information of the entire soundfield, 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 ST350 processor where it is converted into four channels of SoundField B-Format, known as 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*

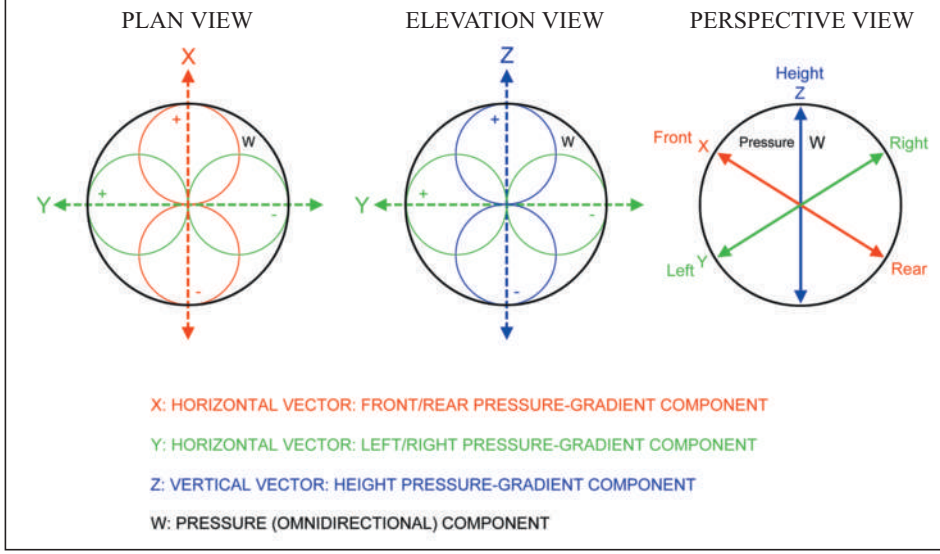
B-Format is three dimensional acoustical information and consists of three figure of eight polar patterns called X, Y and Z plus one omni called W.

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 ST350 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**



## CONTROLS


### 1. Gain

A switched gain control adds further gain to the microphone in 6dB steps. A switch has been selected in preference to a potentiometer to provide excellent level matching of the four capsule signals.

### 2. LED Bargraph

A 5 segment LED bargraph meter displays the mic level over a range of -30dB to +10dB.

### 3. End Fire

The End Fire mode should be selected when the microphone is horizontally pointed at the sound source (  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 hardware SP451 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. 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.

**5. 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

**6. Hi-Pass**

100Hz hi-pass filter is available to attenuate unwanted low frequency rumble or wind noise.

**7. Width**

Offers continuous adjustment of the stereo width from mono (‘0’) through to wide angle stereo (‘10’).

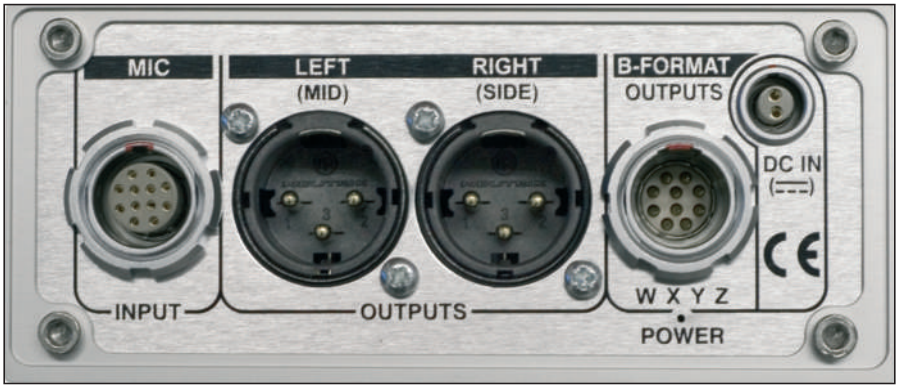
**8. Mid Side**

When the Mid/Side switch is engaged 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.

**9. 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.

## REAR PANEL




### 1. MIC INPUT

Lemo 12 pin female panel mount connector.

### 2. STEREO OUTPUT

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

### 3. B-FORMAT OUTPUTS

W, X, Y & Z analogue balanced line level outputs on 10 pin Lemo (see page 22 for wiring diagram). A 10 pin Lemo to 4 male XLR breakout cable is supplied as standard with each ST350 system (part no. 3101).

### 4. DC IN

The DC input can range between 9 and 18V DC and requires 7W of power consumption. Power is supplied by a 2 pin Lemo (pin 1 = DC, pin 2 = GND).

# RYCOTE ASSEMBLY INSTRUCTIONS

1

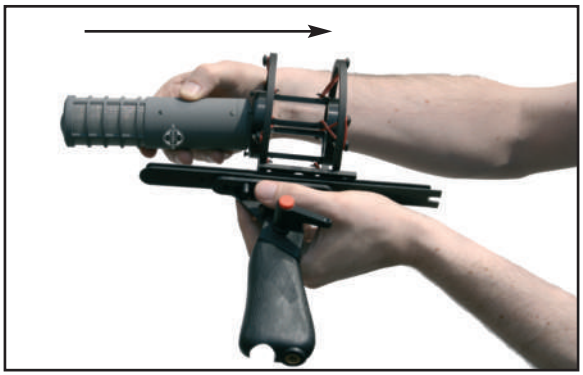
Remove end of Windshield by turning in an anti-clockwise direction.

2

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

3

Remove Windshield by gently sliding away from the Pistol Grip.

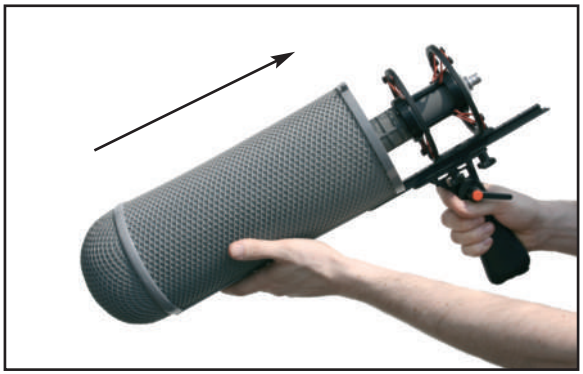


4

Insert microphone into the inner cradle making sure the SoundField logo (front of mic) is facing downward.

5

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.



6

Partly replace Rycote Windshield over the ST350 microphone.

7

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

8

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.

9

Insert Windshield into the Rycote Windjammer.

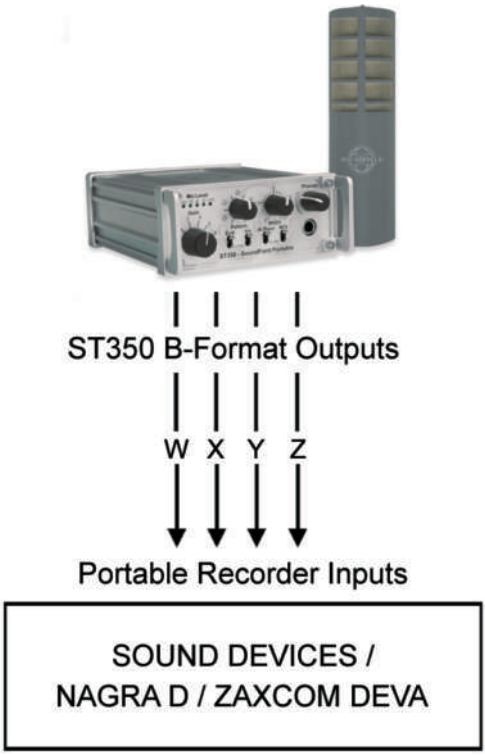
10

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

# OPTIONAL ST350 SHOCKMOUNT

The ST350 shockmount is available as an optional accessory (part no. HW3000) and is ideally suited for vibration isolation in indoor environments.

# RECORDING B-FORMAT FOR SURROUND POST-PRODUCTION




The ST350 shares many of the features of the other SoundField systems, but is unique in that it can record full surround without mains power. The ST350 will run from any DC source between 9V and 18V capable of providing 7W. For example, a 14.4V, 2.4Ah battery will provide approximately 3 hours of operation. Commonly used compatible multi track portable recorders at this time are Sound Devices, Nagra D, Zaxcom Deva and Aaton Cantar. The portable recorders then output the B-Format signals at line level directly into the SP451 Processor or Surround Zone software for surround sound post-production.

The advantage of recording an acoustic event in B-Format is that it can be de-coded by the SoundField SP451 Surround Processor or Surround Zone software into any surround format such as 5.1, 6.1, 7.1, etc and is therefore ideal for ‘surround archiving’.

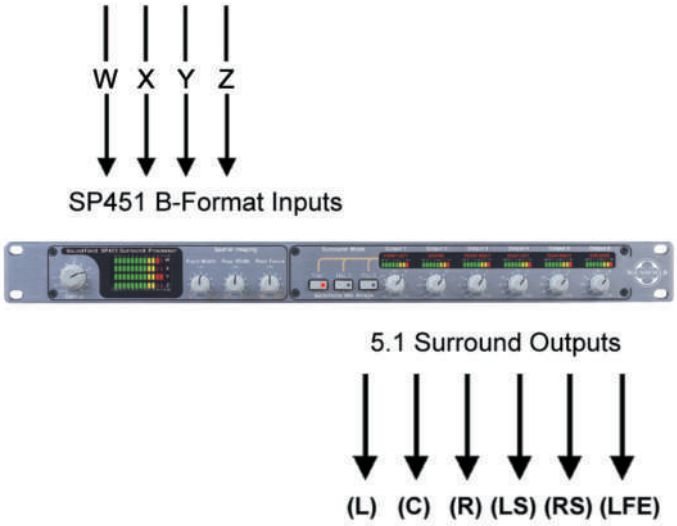
# SURROUND POST-PRODUCTION: PART ONE
# THE SOUNDFIELD SURROUND ZONE SOFTWARE


The SoundField Surround Zone software brings all the benefits of SoundField Technology to the digital domain. The plug-in is designed to accept the four B-Format signals (W, X, Y & Z) generated by the ST350. All plug-in features can be utilised either retrospectively in the studio after the recording has taken place or 'live' and provides the user with the most powerful stereo and surround sound recording/post-production package available.

Once the SoundField B-Format is in the Surround Zone environment the plug-in enables the user, either live or in post-production, to generate various surround mic-arrays with variable polar patterns. Specifically the Surround Zone provides a choice of three separate 5.1 arrays, individual 6.1 and 7.1 arrays, independently variable width of both the front and rear pairs, phase coherent LFE and individual level controls with Mute and Solo all with bargraph metering. The software also provides additional control over the sound such as *Rotate* - 360 degree horizontal rotation, *Tilt* - adjust the microphone pick-up angle by plus or minus 45 degrees in the vertical plane and *Zoom* - zoom in on sound sources. The Surround Zone can output mono, stereo, M/S, 5.1, 6.1, 7.1 or any future surround format.

## SURROUND POST-PRODUCTION: PART TWO
## THE SOUNDFIELD SP451 SURROUND PROCESSOR

B-Format playback from Portable Recorder




In this configuration the ST350/SP451 combination will deliver six discrete channels of 5.1 surround sound.

The SP451 offers a rugged 1U rackmount hardware alternative to the Surround Zone software. It is favoured by those wishing to bypass DAW's and commit up to eight tracks of surround sound directly to digital recorders 'live' as the performance takes place. It can also be used 'stand alone' in post-production where from pre-recorded B-Format material it will output a 5.1 surround mix and stereo mix simultaneously. It generates up to three surround mic arrays with differing polar pattern combinations for instant comparison. Front panel controls include individual 5.1 channel levels and metering with variable Front Width, Rear Width and Rear Pattern for each mic array. The SP451 has B-Format inputs (W, X, Y & Z) and up to eight surround outputs. Input/outputs are balanced XLR at line level.

# RECHARGEABLE BATTERY PROCEDURE FOR ST350

*(See Accessories on page 25, part no. ST350/BATT-KIT)*

## CHARGING INSTRUCTIONS

1. Do not connect the charger to the mains before it is connected to the battery.
2. Observe correct polarity when connecting to the battery terminals.
3. Connect the charger to the mains.
4. When charging is complete, disconnect from the mains before removing battery connections.

## CHARGE LED STATUS

**Fast Charge (ORANGE)**

The charger is in constant current mode. Charge current is maximum.

**Final Charge (YELLOW)**

The charge is in timer mode. Charge current is less than maximum. The battery is normally 80-95% charged when the LED indicator changes to YELLOW.

**Charge Completed (GREEN)**

The LED indicator changes to GREEN. The charge is stopped. Charge current is zero.

## BATTERY STORAGE

1. In order to avoid short circuits, handle batteries carefully. Always ensure that leads and contacts are insulated.
2. Keep in supplied packaging prior to use and preferably not exceeding 30ºC. Keep dry.
3. Initial state of charge of batteries before storage should be between 15% and 50% of capacity.

## IN USE

1. Use a specific charger designed for use with your Li-Ion batteries, otherwise irreparable damage to the battery electronics could ensue and dangerous overcharging could occur.
2. Do not heat above 60ºC - the batteries contain thermal fuses which could activate and render the batteries inoperable.
3. Do not dismantle the pack as this will invalidate the warranty and may be dangerous.

## BATTERY LIFE

A fully charged battery will provide approximately 3 hours of operation (based on 14.4V, 2.4Ah battery *(part no. 800-001)* under normal operating conditions).

# 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**

If a fault develops in the unit, notify SoundField Ltd. or their nearest service facility giving full details of the difficulty. On receipt of this information, service or shipping instructions will be forwarded to you. No equipment should be returned under the warranty without prior consent from SoundField Ltd. or their authorised representative.

# SHIPPING AND QUALITY ASSURANCE

Authorised returns should be prepaid and must be insured. All SoundField products are packaged in specially designed containers for the best possible protection. If the unit is returned the original container should be used. If this is not possible, a new container can be obtained from SoundField Ltd.; please specify the model number when requesting a new container. If the specially designed container is not used ensure that a suitable rigid container of adequate size is used, wrap the instrument in paper and surround it with a good thickness of shock absorbing material.

**Claim for damage during transit**
The instrument should be thoroughly inspected immediately upon delivery to the purchaser. If the instrument is damaged in any way a claim should be filed with the carrier immediately. A quotation to repair shipment damage can be obtained from SoundField Ltd or their certified representative. Final claims and negotiations with the carrier must be completed by the customer.

**Applications problems**
SoundField Ltd. will be happy to answer any applications questions to enhance your use of this equipment. Please address all correspondence to:

SoundField Ltd.
Charlotte Street Business Centre
Charlotte Street
Wakefield
West Yorkshire
WF1 1UH
ENGLAND
Tel: +44 (0) 1924 201089
Fax: +44 (0) 1924 290460
email: info@soundfield.com
www.soundfield.com

**Quality Assurance and Service Policy**
Over the years SoundField products have gained an enviable reputation for their quality of design, performance and reliability, however, in the unlikely event that problems are encountered with this unit, please contact SoundField Service at the appropriate address above or alternatively inform one of our world wide network of distributors who will be able to assist with any of your queries.

# 10 PIN LEMO B-FORMAT OUTPUT WIRING DETAILS

## B-Format output on 10 pin Lemo

| | | |
|---|---|---|
| Pin 1 | - | W (+) |
| Pin 2 | - | W (-) |
| Pin 3 | - | X (+) |
| Pin 4 | - | X (-) |
| Pin 5 | - | Y (+) |
| Pin 6 | - | Y (-) |
| Pin 7 | - | Z (+) |
| Pin 8 | - | Z (-) |
| Pin 9 | - | Signal GND |
| Pin 10 | - | Signal GND |

# 12 PIN CONNECTOR WIRING DETAILS FOR MIC 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.

# TECHNICAL SPECIFICATION

SPECIFICATIONS (+/- 1dB)

| | |
|---|---|
| Microphone acoustic line up at 0dB gain | 80dB SPL |
| Maximum input for less than 0.5% THD | 135dB SPL |
| Frequency range | 20Hz - 20kHz |
| Frequency range with 100Hz Hi Pass Filter | 100Hz - 20kHz |
| Equivalent self noise, IEC 179 (cardioid) | 14dB - A SPL |
| Control Unit outputs at line up | 0dBu, Balanced |
| Maximum output levels | +22dBu |

Minimum loads:

| | |
|---|---|
| Stereo and B-Format outputs | 600 ohms |
| Headphones | 400 ohms/side |

Output connections (balanced / line level) - XLR connectors

*(Pin 1 = ground, Pin 2 = + (positive) and Pin3 = - (negative)*

*If the ST350 is to be connected to unbalanced inputs it will be necessary to bridge Pin 1 to Pin 3.*

| | |
|---|---|
| Output impedance | 100 ohms balanced |
| Powering | DC9 / 18V (7W) |

*All specifications are subject to change without prior notice.

**Humidity and Condensation**

Condensation which is caused by rapid changes in humidity and cold, damp conditions can be a problem to ALL polarised condenser microphones. Moisture from the atmosphere or from the breath, if used close to the mouth, may condense on the capsules resulting in noise and reduced signal. The ST350 microphone includes a heater in the capsule cluster to minimise this effect and normal performance is restored when this moisture has completely evaporated. The heater is operational when powered by both battery and mains electricity. It is therefore advisable when the microphone has been stored in a cold place, such as in a vehicle overnight, to bring the microphone into a warm dry environment prior to use and full performance will be achieved more quickly. For outdoor use it is desirable - and in many cases essential - to use a shockmounted windshield such as Rycote.

## ST350 Accessories

| | Part No. |
|---|---|
| **ST350 Compact Rycote Kit** | **ST350/RY/C** |
| Comprising: Pistol Grip with Suspension • Mic Inner Cradle<br>105mm diameter Windshield • Rycote Windjammer<br>Rycote Anti-vibration Mic cable | |
| **ST350 Standard Rycote Kit** | **ST350/RY/S** |
| Comprising: Pistol Grip with Suspension • Mic Inner Cradle<br>140mm diameter Windshield • Rycote Anti-vibration Mic cable | |
| **ST350 Battery Kit** | **ST350/BATT-KIT** |
| Comprising: Rechargeable Battery • Battery Charger<br>Battery Power connection cable | |

**Cables**

| | |
|---|---|
| ST350 B-Format Output Cable<br>(10 pin female Lemo to 4 Male XLRs - length 50cm) | **NN3101** |
| ST350 5 Metre Microphone Cable - Lemo Connectors | **NN3001** |
| ST350 10 Metre Microphone Cable - Lemo Connectors | **NN3002** |
| ST350 20 Metre Microphone Cable - Lemo Connectors | **NN3003** |
| ST350 50 Metre Microphone Cable on Drum - Lemo Connectors | **NN3004** |
| ST350 100 Metre Microphone Cable on Drum - Lemo Connectors | **NN3005** |
| SoundField Microphone Cable per Metre | **NN310-353** |
| Battery Power Connection Cable (2 pin Lemo to 4 pin XLR) | **NN8181** |
| Battery Power Connection Cable (2 pin Lemo to bare ends) | **NN8182** |
| Rycote Anti-vibration Mic Cable | **NN9203** |

**Connectors**

| | |
|---|---|
| 12 pin Lemo Male In line Connector | **410-301** |
| 12 pin Lemo Female In line Connector | **410-302** |
| 2 pin Lemo In Line ST350 Power Connector | **410-303** |
| 10 pin Lemo Female In Line ST350 B-Format Connector | **410-304** |

**Shockmount**

| | |
|---|---|
| ST350 Shock Mount System - complete | **HW3000** |
| Replacement Elastics for HW3000 (2 pieces) | **HW755-008** |

**Batteries & Chargers**

| | |
|---|---|
| Rechargeable Battery | **800-001** |
| Battery Charger (for 800-001) | **810-001** |
| Battery Power Connection Cable (2 pin Lemo to 4 pin XLR) | **NN8181** |

**Power Supply**

| | |
|---|---|
| Replacement ST350 Mains Power Supply | **ST350/PSU** |

## ST350 Accessories

| | Part No. |
|---|---|
| **Rycote** | |
| ***Standard Rycote*** | |
| Pistol Grip with Suspension | **430-385** |
| ST350 Mic Inner Cradle to fit 430-385 | **440-183** |
| 140mm diameter Windshield | **430-384** |
| Rycote Anti-vibration Mic Cable | **NN9203** |
| Rycote Windjammer | **430-398** |
| *Optional Accessory:* | |
| High Wind Cover | **430-400** |
| **Rycote** | |
| ***Compact Rycote*** | |
| Pistol Grip with Suspension | **420-380** |
| Mic Inner Cradle to fit 420-380 | **440-183** |
| 105mm diameter Windshield | **420-381** |
| Rycote Anti-vibration Mic cable | **NN9203** |
| Rycote Windjammer | **430-397** |
| *Optional Accessory:* | |
| High Wind Cover | **430-399** |

## Notes

## Notes