Ambisonics Plugin

USER GUIDE

SOUND DEVICES

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WEEE Statement
If you wish to discard a Sound Devices product in Europe, contact Sound Devices (Germany) for further information.

Warning! This device can drive headphones to potentially dangerous levels. Do not listen at high volume levels for long periods.

Read and fully understand this manual before operation.

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This table provides the revision history and cross-reference links to "what's new" in this guide.

DATE	DESCRIPTION
08/19	v4.00 Initial release
11/19	v5.00

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About Ambisonics

An ambisonic recording uses a multi-capsule microphone to capture a spherical representation of sound from a single point.

Ambisonic recordings are captured in A-Format or B-Format.

A-Format is the raw audio captured from each capsule on the microphone.

B-Format is the decoded audio, representing the sperical sound space with 4-channels, W, X, Y, Z:

- W = Sum of all signals from all directions
- X = Front minus rear signal
- Y = Left minus right
- Z = Up minus down

B-Format comes in two versions, with different orderings of the formatted channels:

- FuMa = W,X,Y,Z
- AmbiX = W,Y,Z,X

Recording Ambisonics

To use the Ambisonics Plugin, you will need an ambisonics microphone, such as the Sennheiser AMBEO. The MixPre must be set to Advanced Mode, with a bit depth of 16 or 24. Ambisonics is not supported with 32-bit float depth. Sample rates of up to 192 kHz may be recorded, but binaural monitoring is not supported above 48 kHz.

The Ambisonics Plugin may not be used in combination with other plugins, such as the Musician or MixAssist Plugins.

INSTALLING AND ACTIVATING THE PLUGIN

1. Visit the Sound Devices Store to purchase the Ambisonics Plugin.
2. Download the license—a .LIC file—and transfer to an SD card. The license file may only be used once.
3. Insert the SD card into the MixPre and turn on the recorder.
4. Tap .
5. Navigate to System > Plugins.
6. Tap Apply Plugins. This installs the license, activates the plugin, and reboots the device.

ENABLING AMBISONICS

1. Navigate to Inputs > Ambisonics.
2. Select the desired Mode. [Off, A -> B (AmbiX), A->B (FuMa), A->B(AmbiX + FuMa), A (Direct), A (Direct) + AmbiX, A (Direct) + FuMa, B (AmbiX), B (FuMa)]
3. Select the Mic Position. [Up, Down, Endfire]
4. In the menu screen, tap

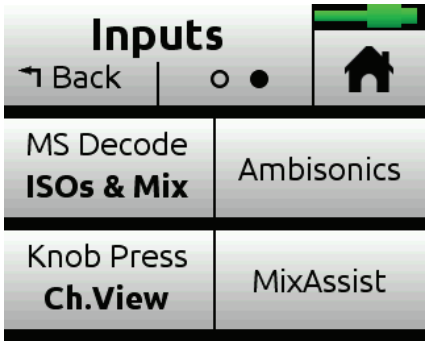
.
5. Select LR Stereo or Binaural monitoring.
6. Plug in the ambisonics microphone according to the manufacturer's instructions.
7. Enable phantom power and set appropriate gain on channel 1. Channels 1-4 are automatically linked.
8. Arm channel 1 when ready to record.

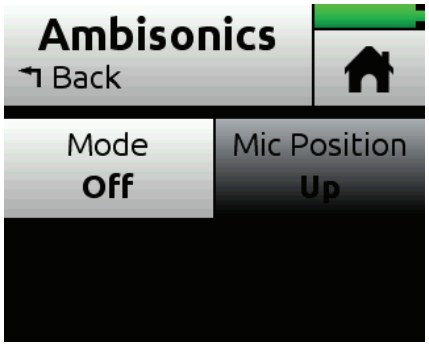
RECORDING MULTIPLE FORMATS

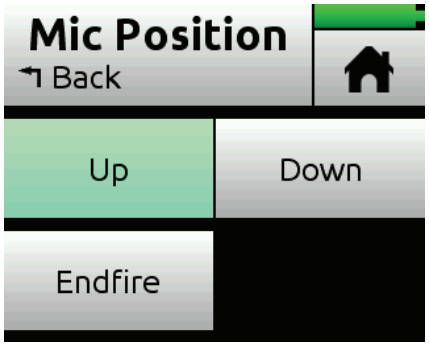
1. Navigate to Menu > Record.
2. Select Rec L,R to record a stereo WAV.
3. Select Rec Binaural to record a binaural WAV.

The MixPre-6 and MixPre-6 II can record one ambisonic format (such as A->B (AmbiX)) and a stereo WAV and/or a binaural WAV. If two ambisonic formats are being recorded (such as A->B (AmbiX+FuMa)), it is not possible to record a stereo WAV/binaural WAV.

The MixPre-10T and MixPre-10 II can record up to two ambisonic formats, a stereo WAV, and a binaural WAV file simultaneously.

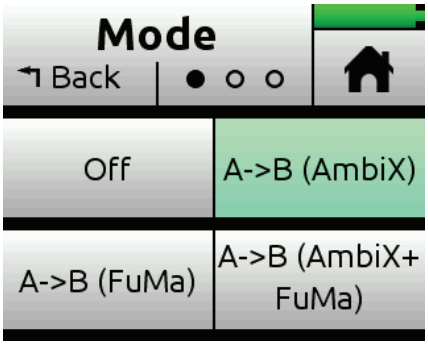


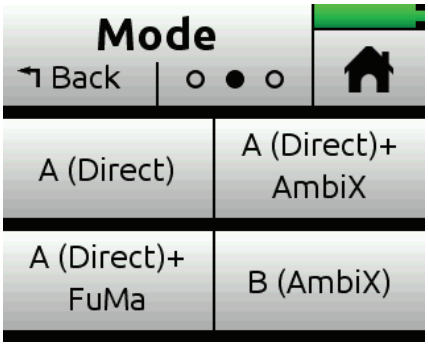


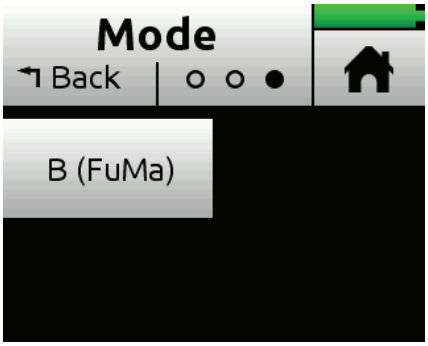


Modes

MODE	DESCRIPTION
Off	• Ambisonics Mode is disabled.
A->B (AmbiX)	• The incoming A-Format is converted to AmbiX B-Format (W,Y,Z,X) for recording on tracks 1-4. • Recording results in a single 4ch poly WAV.
A->B (FuMa)	• The incoming A-Format is converted to FuMa B-Format (W,X,Y,Z) for recording on tracks 1-4. • Recording results in a single 4ch poly WAV.
A->B (AmbiX+FuMa)	• The incoming A-Format is converted to AmbiX B-Format (W,Y,Z,X) for recording on tracks 1-4 plus FuMa B-Format (W,X,Y,Z) on tracks 5-8. Channel knob 1 controls the level going to all 8 tracks. • Recording results in two separate 4ch poly WAVs.
A (Direct)	• The incoming A-Format is routed directly to tracks 1-4 without any processing. Use this if you intend to do conversion to B-Format in post. • Recording results in a single 4ch poly WAV.
A (Direct) + AmbiX	• The incoming A-Format is routed directly to tracks 1-4 without any processing and also converted to AmbiX B-Format (W,Y,Z,X) for recording on tracks 5-8. Channel knob 1 controls the level going to all 8 tracks. • Recording results in two separate 4ch poly WAVs.
A (Direct) + FuMa	• The incoming A-Format is routed directly to tracks 1-4 without any processing and also converted to FuMa B-Format (W,X,Y,Z) for recording on tracks 5-8. Channel knob 1 controls the level going to all 8 tracks. • Recording results in two separate 4ch poly WAVs.
B (AmbiX) or B (FuMa)	• The incoming B-Format is routed directly to tracks 1-4 without any processing. Use this if the microphone source is already in B-Format e.g. Soundfield ST450 MKII. • Recording results in a single 4ch poly WAV.







Files

When recording multiple formats or a stereo/binaural WAV, the MixPre will store each file separately, with a unique suffix:

- LR is the decoded stereo mix.
- AmbiX is the decoded AmbiX B-Format.
- FuMa is the decoded FuMa B-Format.
- Bin is the decoded binaural file.
- A_Fmt is the raw A-Format file.

Software License

End-user license agreement for Sound Devices MixPre Series Software / Embedded Firmware

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Two Level Segregated Fit memory allocator, version 3.1. Written by Matthew Conte http://tlsf.baisoku.org
Based on the original documentation by Miguel Masmano: http://www.gii.upv.es/tlsf/main/docs
This implementation was written to the specification of the document, therefore no GPL restrictions apply.
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Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

—Reorient or relocate the receiving antenna.
—Increase the separation between the equipment and receiver.
—Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
—Consult the dealer or an experienced radio/TV technician for help.

FCC & ISED User Statement

This device complies with FCC and ISED RF Exposure SAR limits exposure limits for general population / uncontrolled exposure.

Cet appareil est conforme à la norme FCC et USED RF Exposure SAR limite les limites d’exposition pour la population générale / l’exposition incontrôlée.

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions: 1) this device may not cause interference, and 2) this device must accept any interference, including interference that may cause undesired operation of the device.

Cet appareil est conforme avec Industrie Canada, exempts de licence standard RSS (s). Son fonctionnement est soumis aux deux conditions suivantes: 1) ce dispositif ne peut pas causer d’interférences, et 2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l’appareil.