Fraunhofer Institut
Integrierte Schaltungen

MP3 Stereo eXtended

These days, surround sound is becoming increasingly popular, especially in combination with video material. However, most of the audio-only content available to the consumer is still legacy stereo. Supporting a seamless transition from stereo to surround sound, Fraunhofer Institute for Integrated Circuits IIS is introducing MP3 SX (MP3 Stereo eXtended), an addition to the well-known MP3 Surround technology.

MP3 SX

MP3 SX offers the possibility to upgrade two-channel content into the MP3 Surround format. It guarantees playback with a stable localization of singers and solo instruments even off the sweet spot. Additionally, it creates an impressive feeling of envelopment using the ambience sounds already present in the stereo source.

MP3 SX music can be enjoyed both on a surround loudspeaker setup and on portable devices enabled for Fraunhofer's Ensonido® virtual surround headphone technology.

MP3 SX Technology

MP3 SX analyzes the existing natural ambience of the stereo material and plays it back through the rear channels. The sound sources remain in the front channels, but are played back through the left, center and right channel, providing a stable front image even for off-sweet-spot listening.
Existing MP3 files can be augmented with this sound redistribution by encoding them into the MP3 Surround file format, i. e. by simply attaching additional side information to the MP3 stereo file.
Thus, MP3 SX enhances MP3 files from stereo to surround sound without affecting the original stereo MP3 quality.
Other stereo audio sources, such as uncompressed ».wav« (PCM) files, can be directly encoded into the MP3 Surround format using the MP3 SX encoder.

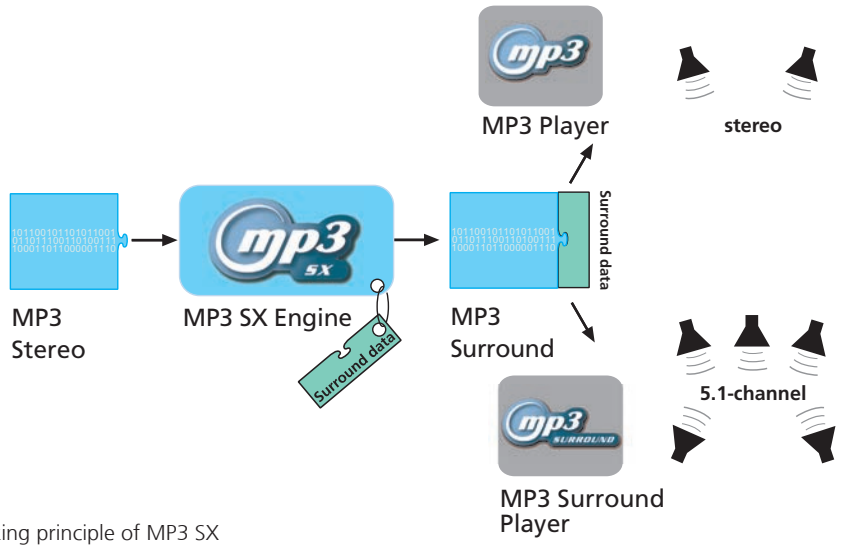
Fraunhofer Institute for Integrated Circuits IIS

Executive Director
Prof. Dr.-Ing. Heinz Gerhäuser
Director
Prof. Dr.-Ing. Günther Elst

Am Wolfsmantel 33
91058 Erlangen, Germany
Phone +49 (0) 91 31/7 76-0
Fax +49 (0) 91 31/7 76-9 99
info@iis.fraunhofer.de
www.iis.fraunhofer.de

Contact
Dipl.-Ing. Oliver Hellmuth
Fax +49 (0) 91 31/7 76-3 99
amm-info@iis.fraunhofer.de

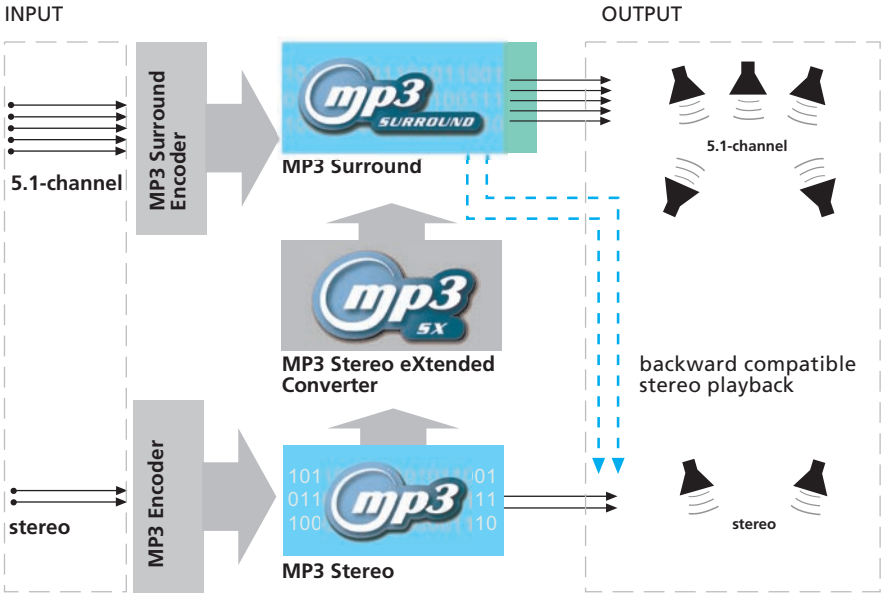
03/07 egerue



Working principle of MP3 SX

Key Features

- MP3 SX preserves the original stereo sound stage while creating additional surround envelopment.
- MP3 SX keeps the sound image stable even off the sweet spot by an intelligent integration of the center channel.
- MP3 SX creates natural surround sound as it does not apply artificial reverberation.
- MP3 SX uses the existing MP3 Surround file format, i. e.: MP3 SX files can be played back with any MP3 player in high quality stereo sound. Played back with an MP3 Surround player, listeners will enjoy surround sound.
- MP3 SX does not change the original MP3 stereo sound. The user has the choice to listen to the original MP3 stereo or the new SX version of an MP3 SX file.
- MP3 SX files are just slightly larger than stereo MP3 files.



MP3 SX in the context of MP3 Surround and MP3

- Like MP3 Surround content, MP3 SX material can also be enjoyed using Fraunhofer's Ensonido® virtual surround headphone technology.

Applications

Collections of stereo MP3 files can be enhanced towards SX surround sound without changing the original MP3 quality.
For Internet music download shops, MP3 SX provides an attractive possibility for offering an added value to conventional stereo MP3 files.
The next generation MP3 Surround encoders include optional MP3 SX processing and therefore can be used both for compressing 5.1-channel audio and for enhancing stereo material to surround sound in SX quality.

The MP3 Family

MP3 is a stereo (or mono) digital audio coding scheme. In 2004, Fraunhofer IIS introduced MP3 Surround, a backward compatible 5.1-channel extension of MP3. MP3 Surround files consist of standard MP3 data and an extremely compact set of spatial parameters.
MP3 SX is a tool to create impressive MP3 Surround files from stereo input (see fig. 2).

Software and Licensing

Fraunhofer IIS is offering MP3, MP3 Surround and MP3 SX demo software for private use at www.mp3surround.com.
MP3 SX licenses will be available as part of the MP3 and MP3 Surround licensing program. For further information, please visit www.mp3licensing.com.