

MMA - Multichannel Monitoring and Authoring

The pioneering solution for immersive audio live production.
Readily available, high tech solution for your needs
in MPEG-H 3D Audio authoring and monitoring.



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With the Multichannel Monitoring and Authoring system – MMA – Jünger Audio is presenting its pioneering solution for immersive audio live production. MMA is a readily available, high tech solution for your needs in Next Generation MPEG-H 3D Audio authoring and monitoring. Next Generation Audio is key to modern Ultra HD productions sound and opens up a whole new acoustical perspective for the listener. While enabling the content creator to place sound in a virtual 3D-soundfield, it not only yields its advantages for listeners with complex loudspeaker setups. Instead, it also offers the possibility to instantly adapt to any playback format, from higher order immersive sound to down-mixed stereo or even mono mixes. And it provides additional services like language selection and voice amplification to increase speech intelligibility. With the MMA the broadcasters and content providers are enabled to author and monitor even the most complex mixes to create a thrilling, yet easily accessible end-user listening experience.

The system is enabled for loudspeaker setups ranging from one mono output to up to 7.1 surround and 4 overhead loudspeakers (7.1+4H), fulfilling all current MPEG-H 3D Audio requirements and configurations.

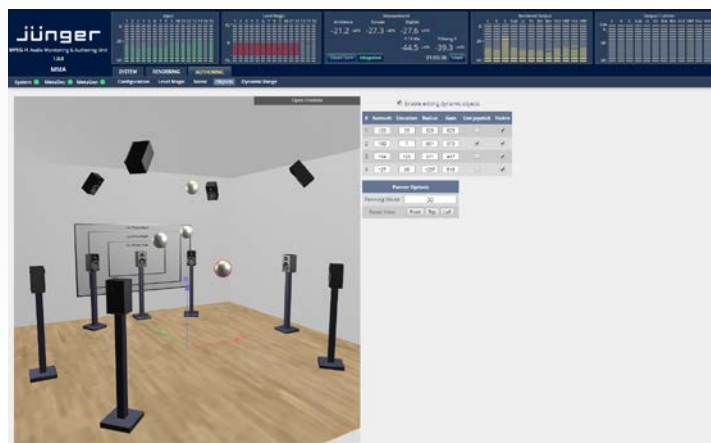
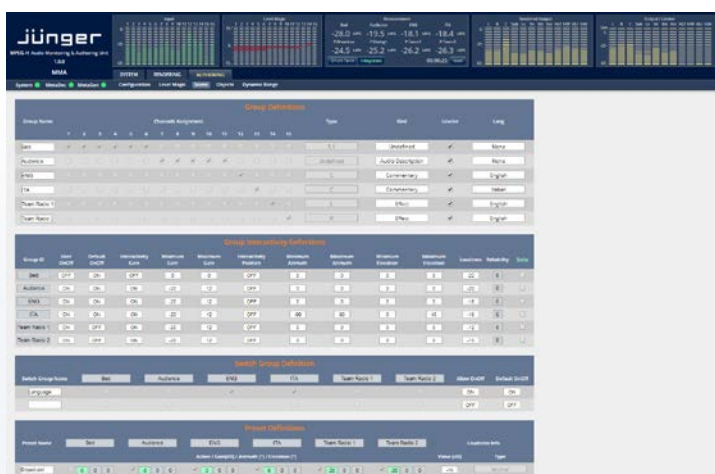


Jünger Audio – number one MPEG-H partner

Jünger Audio was chosen as trusted technology partner for the FRAUNHOFER IIS MPEG-H 3D Audio project. Employing FRAUNHOFER's MPEG-H 3D Audio authoring algorithms, the MMA is the basis for the MPEG-H 3D Audio demonstrations worldwide, aiding the MPEG-H 3D Audio Alliance to convince broadcasters and standardization committees of the advantages of the MPEG-H 3D Audio Next Generation Audio and TV format. MPEG-H 3D Audio eventually was chosen to be part of the ATSC 3.0 standard and is now getting adopted by many countries and stations.

Authoring and Monitoring – Live and direct

The Jünger Audio MMA provides all tools required to handle and create static as well as dynamic audio channels and objects, author metadata and measure the loudness of each of the possible MPEG-H 3D Audio presentations. The monitoring unit also allows for listening to each dynamic range control (DRC) profile and individual channel downmixes. It also offers full supervision over interactive user-content to guarantee comprehensive quality control. All tools are tailored to work in real-time, enabling the operator to easily handle even the most complex tasks in a live-production. Interactive control of 3D audio objects can be obtained with a dedicated 3D-panner, a 3D-mouse or simply by entering detailed coordinate parameters. 3D-audio objects can be displayed in a customizable 3D-workspace offering graphic feedback to maintain perfect overview even with high object counts.



Easily accessible

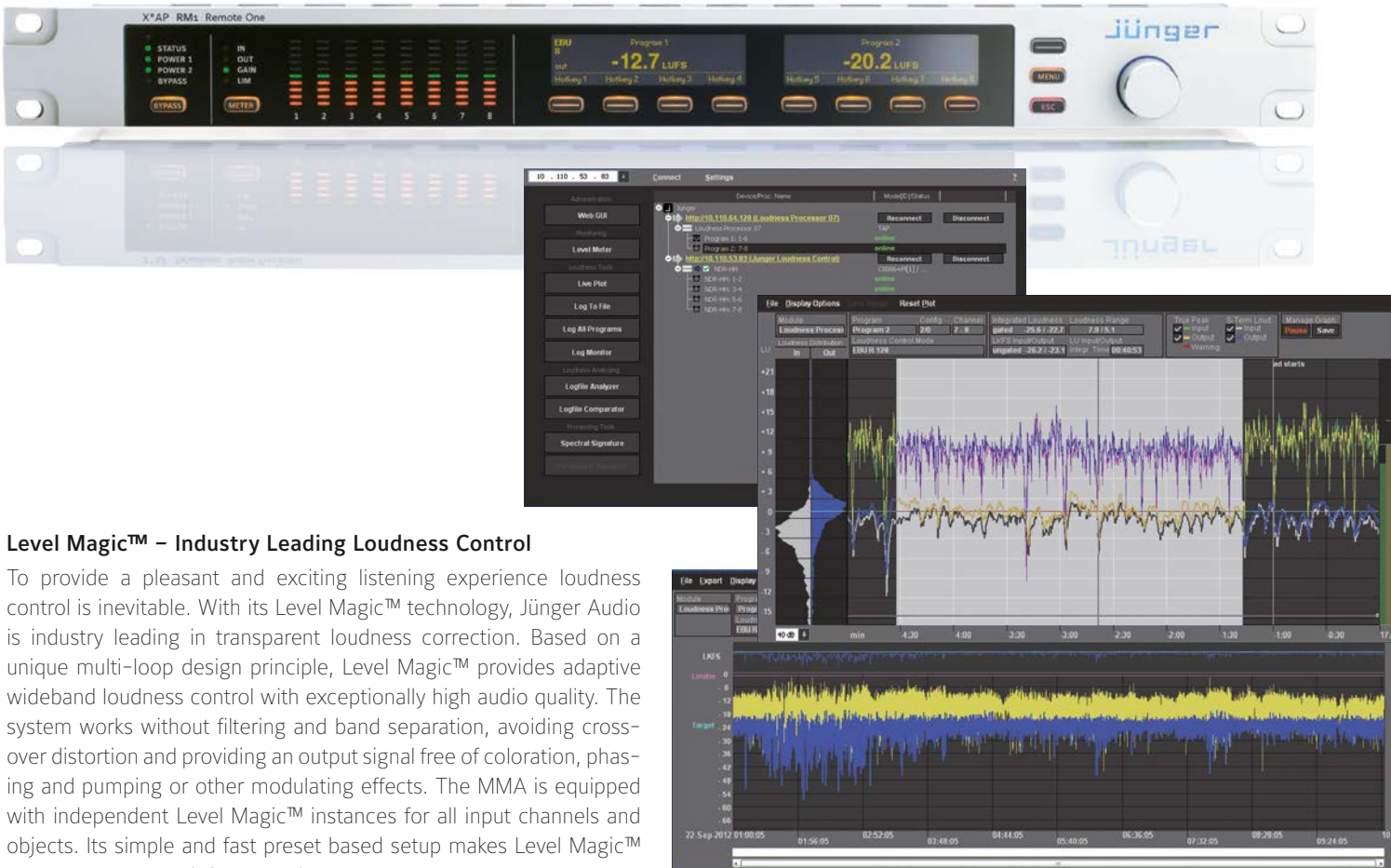
Jünger Audio's user interface fully relies on common internet technology and is accessible through a standard web browser. It follows a strict HTML5 only policy, avoiding any need for additional browser plug ins and keeping the control interface independent from operating system choice.



The user interface provides full access to all configuration parameters, metadata and status information as well as interactive panning control for positioning 3D-objects in a virtual three-dimensional space.

Metering and Loudness measurement

Derived from our renowned D*AP loudness processor range, the MMA provides a comprehensive set of loudness measurements for all channels, objects, output busses and formats. Obtained loudness data can be used to add correction values to the metadata stream, enabling the decoder to play back audio signals compliant to international loudness regulations. All metering data can be logged and analyzed externally with our J*AM Application Manager software.



Level Magic™ – Industry Leading Loudness Control

To provide a pleasant and exciting listening experience loudness control is inevitable. With its Level Magic™ technology, Jünger Audio is industry leading in transparent loudness correction. Based on a unique multi-loop design principle, Level Magic™ provides adaptive wideband loudness control with exceptionally high audio quality. The system works without filtering and band separation, avoiding cross-over distortion and providing an output signal free of coloration, phasing and pumping or other modulating effects. The MMA is equipped with independent Level Magic™ instances for all input channels and objects. Its simple and fast preset based setup makes Level Magic™ a true set-once-and-forget tool.

Comprehensive I/O

The Jünger Audio MMA can be equipped with a comprehensive range of input and output interfaces. The standard configuration provides 3G and HD SDI interfacing with integrated video and audio delay to maintain lip-sync. Utilizing four 3G SDI cards enables full 4K processing, also including video and audio delay. To provide full access to network based audio workflows, the system can be equipped with a Dante network interface, making it fully compatible to the AES67 audio over IP and Ethernet standard. Additionally MAD1, AES3 (AES/EBU) and analog audio interfaces are available.

Key Features

- Up to 15 audio input channels and 1 metadata track
- Output formats from Mono up to 7.1+4H
- Audio and metadata monitoring
- Rendering and downmixing for various output formats
- Metadata authoring
- 3D panning with dynamic object metadata generation
- Output downmix emulation
- Output loudness emulation
- Dynamic range control (DRC) emulation
- Loudness control (Level Magic™)
- Loudness monitoring and metering, ITU-R BS.1770-4 compliant
- Monitor controller
- Scalable audio interfacing
- Network remote control via Ember+ protocol
- Industry grade hardware basis
- Fully redundant power supplies



Standard system configuration

MMA Core Processor

All processing is performed on the MMA Core Processor, connected with a proprietary MADI connection to hook up Interface Units in different configurations.

The MMA Core Processor features:

- Full MPEG-H 3D Audio license for authoring, monitoring and rendering
- Up to 15+1 input channels (one channel may be reserved for synchronization purposes)
- Up to 7.1 + 4H output rendering outputs with independent monitoring paths
- Full Level Magic™ license for all input channels and objects
- Based on industry grade server with dual power supplies for full redundancy
- Remote controller X*AP RM1

MMA HD Interface Unit

All interfacing is routed via a modular system in different configurations. The HD Interface Unit is the minimum requirement.

- 1x 3G SDI with 16 channel deembedder and embedder, video delay, BNC in and outputs
- 1x Proprietary MADI interface to interconnect with MMA Core Processor
- 1x 1RU Frame with frame controller and dual power supplies for full redundancy

MMA UHD Interface Unit

A UHD version for full-blown 4K production is available.

4K video is fed by four synchronized 3G SDI interfaces for each of the four video quadrants.

- 4x 3G SDI with 16 channel deembedder and embedder, video delay, BNC in and outputs
- 1x Proprietary MADI interface to interconnect with MMA Core Processor
- 1x 3RU Frame with frame controller and dual power supplies for full redundancy

Options and interfaces

Depending on the Interface Unit the MMA can be equipped with additional audio interface options.

- Dante, fully compatible to AES67
- 12-channel analog outputs
- AES3
- MADI



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Audio Monitoring and Authoring Unit for the MPEG-H TV Audio System licensed by FRAUNHOFER.
More info: www.iis.fraunhofer.de/de/ff/amm.html

