
Architects and Engineers Specification – TiMax SoundHub Spatial Processor 1025

The device shall be a specialised rack-mountable spatial processing and audio playback unit, primarily for immersive spatial audio performance, events and experiences. It shall feature an internal FPGA, CPU, SSD, and MADI or Dante 32x32 or 64x64 I/O modules, with optional AES or Analogue audio 16x16 I/O modules.

The device shall be housed in a steel chassis measuring not more than 2U high and 450mm / 17.5" deep, with an approximate weight of 10kg / 22lbs. The device shall feature a forced air-cooled design with low fan noise, with dual-redundant fans. The unit shall be EMC shielded to conform to CE / UKCA interference emission and susceptibility requirements. It shall include dual-redundant PSUs with separate IEC connectors.

The device will have proprietary FPGA dsp processing with internal processing and I/O sample rate selectable between 48 and 96kHz. The fixed latency shall be less than 2ms @ 48 kHz (discounting Dante network latency). The device shall feature a headroom of +22dBu, a dynamic range of 114dB, and THD+Noise of less than 0.002%, 20-20KHz.

The input processing shall provide input gain ($-\infty$ to +10 dB), switchable polarity ($0^\circ/180^\circ$), mute switch and an 8 band PEQ with high/low shelf. It shall also feature an Input Source Submixer for Analogue (or AES) / Playback Track / Network on each input channel.

The matrix processing shall provide level control ($-\infty$ to +10 dB) and a delay of up to 1000 ms for every crosspoint. The crosspoint level and delay shall be transparently morph-able in real-time to facilitate the continuous localisation of static or moving audio objects.

The output processing shall provide output gain ($-\infty$ to +10 dB), switchable polarity ($0^\circ/180^\circ$), an 8-band PEQ with high/low shelf, as well as a mute switch.

All input and output channels shall be link-able for fader level and EQ adjustment, and be assignable to any of up to 32 nestable DCA groups. All input and output channels shall feature a Solo button with switchable latching or "X-OR" logic.

The device shall feature two MIDI in/out DIN socket pairs to send/receive MIDI Prog / Note / MTC. The device shall allow MIDI Controllers to control Group faders 1-32 on Port1-In, and to control sound object changes on Port2-In. An Ethernet port (RJ45 - LAN 100/1000 Mbps) shall be provided (UDP) for PC/Mac control by up to four TiMax client computers, or XML/UDP remotes, or show controllers. The device shall also have 256 GPIO input trigger ports matrixed on DB25. Audio object position, fader level, mute status, and Cue recall and playback shall all be controllable via external OSC commands from an ADM-OSC-compatible library or custom-programmable strings. This shall also allow for the 3D live tracking of performers when interfaced with an external tracking system.

The device shall feature object-based graphical pan spatialisation programming, scaleable between different venues, with the ability to create multiple interactive spatial layers, with input objects pannable between layers under TimeLine control. A user-programmable Cue and TimeLine-based spatialisation and audio file playback system shall be recallable manually, or through hot-keys, MTC, Midi Prog / Note, OSC, XML/UDP or through the internal system show clock/time-of-day. This shall allow for the playback of up to 32 or 64 simultaneous audio tracks, with or without static or moving spatialisation. Each Cue shall be able to store parameters within system Snapshots, and the user shall be able to program cross-fades between these Snapshots.

The full "S-Version" software license will allow sound object positional rendering, showcontrol and external TiMax TrackerD4, or other, performer stagetracking functionality, with per-channel tracking Enable/Disable functionality within Cues.

The device shall be the TiMax SoundHub from www.timaxspatial.com
