MCP SERVER | NO CODE | CLOUD HOSTED

Audio Unit Converter MCP for AI Agents

Perform precise frequency and sample rate math for music production.

Audio Unit Converter MCP. It handles the math for music production and audio engineering, moving between frequencies, sample counts, and decibel levels. Stop guessing your MIDI numbers or sample timings and let your agent do the heavy lifting.

A+ Quality Score 100/100

audio | music | frequency | tempo | decibels | midi

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vinkius.com/mcp/audio-unit-converter

SCAN TO VIEW

The connectivity layer between AI and the world's software.

Vinkius sits between AI and every application. All communication passes through Vinkius Cloud via the Model Context Protocol (MCP) — with governance, observability, and security at every layer.

Your AI Connections Run Through Vinkius Cloud

The world's largest managed MCP catalog

Vinkius is the connectivity layer where AI connects to the software your business already runs. We handle the hosting, the security, the credentials, the uptime — you get agents that actually do things.

We operate the world's largest managed MCP catalog. Major SaaS platforms, CRMs, databases, and cloud providers — running, monitored, production-ready. This MCP server is hosted and maintained by the Vinkius Cloud for AI Agents.

> *The agent doesn't manage credentials, doesn't manage uptime, doesn't manage security. Vinkius does.*
>
> — Architecture principle

Four Pillars of the Vinkius Runtime

01 — Security by design

Credentials stay encrypted at rest via AES-256. The AI agent never touches raw keys — they're injected into a sandboxed V8 isolate at runtime. Actions are logged, and connections have an emergency kill switch.

02 — Built on MCP Fusion

This MCP server was built with **MCP Fusion**, the open-source framework (Apache 2.0) that powers the entire Vinkius catalog. Schema-as-firewall strips undeclared fields, compiled PII redaction runs at zero overhead, and cryptographic lockfiles produce git-diffable audit trails.

03 — Deterministic observability

Eight immutable metrics per endpoint: request volume, p95 latency, error rate, active connections, cost attribution. A live payload feed logs every tool call with mutation detection.

04 — Autonomous operations

Servers are deployed, monitored, and patched autonomously. New capabilities and security patches ship weekly. Zero-downtime deployments ensure continuous availability across all managed MCP servers.

AES-256	Ed25519	24h TTL	V8 Isolate
Encryption at rest	PKI vault signatures	Ephemeral session keys	Sandboxed execution

One Token. Instant Access.

Every MCP server on Vinkius is accessed through a **Connection Token**. Tokens are generated in the cloud dashboard and produce a unique MCP endpoint URL. Paste this URL into any MCP-compatible client — no SDK required.

A single token can serve **multiple AI clients simultaneously**, or you can issue separate tokens per client for granular access control. Each token tracks its own request count, last activity timestamp, and can be individually enabled or revoked.

MCP ENDPOINT

```
https://edge.vinkius.com/{token}/mcp
```

Claude · Cursor · VS Code · Windsurf · Grok · Gemini

Security Is the Architecture

Security in Vinkius is not a feature — it's the foundation of the runtime. The gateway enforces multiple independent protection layers between AI agents and third-party APIs.

01 — Ed25519 PKI Vault

Every workspace has an Ed25519 Master Key. Session keys are generated ephemerally (24h TTL) and signed by the Master Key. Credentials never leave the vault boundary.

02 — V8 Isolate Sandboxing

Tool code runs inside isolated-vm V8 isolates with 64 MB memory caps and per-request timeouts. No filesystem access, no network access except through the SSRF-guarded fetch bridge.

03 — SSRF Guard

All outbound HTTP requests are DNS-resolved and validated before execution. Private IP ranges (10.x, 172.16-31.x, 192.168.x, AWS metadata 169.254.x) are blocked at the network layer.

04 — DLP & PII Redaction

A ResponseGuard pipeline intercepts every tool response. Configurable redaction patterns strip sensitive fields (emails, SSNs, card numbers) before data reaches the AI agent.

05 — Cryptographic Audit Trail

Every request is signed into a SHA-256 hash chain with Ed25519 signatures. Events form a tamper-proof, SIEM-exportable forensic record.

06 — Honeytoken Trap System

Phantom credentials are injected into isolated environments. If a honeytoken is used outside Vinkius infrastructure, the server is quarantined instantly.

Emergency Kill Switch

EU AI Act Art. 14(1) Compliant

The kill switch is an **emergency halt** mechanism — not a simple toggle. When triggered, it executes three actions atomically:

01 — Server deactivated

The MCP server is immediately taken offline across the entire cluster.

02 — All tokens revoked

Every connection token is invalidated. Total lockout — reconnection blocked until new tokens are issued.

03 — WebSocket connections killed

Active connections terminated via Redis pubsub broadcast. Propagates to every runtime node in the cluster.

Full Visibility. Zero Guesswork.

The Vinkius cloud dashboard includes a full MCP Governance suite — real-time analytics and security controls for production AI operations.

Control Plane

KPI dashboard with request volume, latency, success rate, token consumption, and AI-generated operational briefings.

Agent Activity

Which AI clients are connecting, how often, and what they're doing — real-time session tracking.

FinOps

Cost tracking per tool, payload compression savings, budget optimization signals, and consumption trends.

Tool Health

Slowest and most error-prone tools, with actionable root-cause insights and performance baselines.

Firewall & DLP

PII redaction activity, sensitive data protection counters, and security event timeline.

Incident Log

Error trends, failure rates, status-code breakdowns, and forensic audit trail access.

> Get started at **cloud.vinkius.com** — connect your AI agent in under 60 seconds.

Audio Unit Converter MCP

4 tools available
Cloud-hosted on Vinkius

The Audio Unit Converter handles the math for audio engineering and music production. When you're deep in a mix or coding a synth, the math gets tedious. You need to know exactly how many samples are in a 500ms window at 48kHz, or what a specific note in C# translates to in MIDI. This tool takes that weight off your shoulders. Instead of pulling out a calculator or hunting for a reference table, you just tell your agent what you need. It handles the conversion between Hertz and note names, calculates rhythmic subdivisions like sixteenth notes based on your BPM, and switches between linear amplitude and decibel levels like dBFS. It's built for people who need precision in audio engineering without the manual overhead. You can find this in the Vinkius catalog to quickly link it to your favorite tools. It makes the technical side of music production feel like a conversation rather than a math homework assignment. You no longer have to worry about rounding errors or incorrect MIDI values stalling your progress. Whether you're adjusting gain levels or syncing complex percussion, the math stays consistent. This tool ensures that your technical data is always accurate, letting you spend more time on the actual sound design. It's a reliable way to keep your project's data consistent across different software environments.

Core Capabilities

01 — Convert Hertz to MIDI notes

Translate any frequency into its corresponding musical note and MIDI value instantly.

02 — Calculate sample counts from milliseconds

Determine the exact number of samples in a duration based on your project's sample rate.

03 — Determine note durations from BPM

Find the millisecond length of eighth, sixteenth, or other notes based on your current tempo.

04 — Switch between dBFS and linear ratios

Convert between logarithmic decibel levels and linear amplitude for precise gain staging.

05 — Translate note names to exact frequencies

Get the precise Hertz value for any musical note name including cents deviation.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/audio-unit-converter** — connect your AI agent in three steps.

01 Connect the Audio Unit Converter MCP to your AI client.

02 Provide the specific audio parameters like sample rate or BPM.

03 Get the exact numerical values for your project.

The bottom line is you get instant, accurate audio math without leaving your workspace.

Built For

The Audio Unit Converter is for the audio engineers and music producers who are tired of manual math. It solves the headache of calculating sample-accurate timings and MIDI values on the fly.

Audio Engineer

Calculating sample-accurate timings for complex edits without manual math.

Music Producer

Finding exact MIDI numbers for unique frequencies during synth programming.

DSP Developer

Converting between linear ratios and decibels for audio code development.

Sound Designer

Determining rhythmic subdivision durations for precise loop sequencing.

What Changes When You Connect

01 Stop manually calculating sample counts for 500ms windows using convert_sample_timing.

02 Get exact MIDI numbers for any frequency instantly with convert_pitch_identity.

03 Calculate precise rhythmic durations for complex sequences using calculate_tempo_rhythm.

04 Switch between dBFS and linear ratios accurately with convert_amplitude_magnitude.

05 Remove the need for external calculators or reference tables during your mix.

06 Ensure sample-accurate timing across different sample rates and project tempos.

Real-World Applications

Sample-accurate timing for edits

Someone asks how many samples are in 250ms at 96kHz. The agent uses convert_sample_timing to give the exact count for a perfect cut.

Mapping frequencies to MIDI

A producer needs the MIDI number for a specific frequency. The agent uses convert_pitch_identity to provide the note and MIDI value.

Calculating rhythmic subdivisions

A user wants to know the duration of a sixteenth note at 128 BPM. The agent uses calculate_tempo_rhythm to return the millisecond duration.

DSP gain staging

A developer needs to convert -6dBFS to a linear ratio. The agent uses convert_amplitude_magnitude to provide the exact value for their code.

Patterns to Avoid

Guessing sample counts

✗ AVOID

Asking the agent to just tell you how many samples are in half a second without specifying a rate.

✓ INSTEAD

Ask for the specific sample rate so the agent can use convert_sample_timing for an accurate result.

Using rounded numbers for MIDI

✗ AVOID

Asking for the pitch of a sharp note without providing a frequency.

✓ INSTEAD

Ask for the specific frequency so the agent can use convert_pitch_identity to get the exact MIDI number and cents.

Manual BPM math

✗ AVOID

Asking how long a triplet is at 100 BPM and doing the math yourself.

✓ INSTEAD

Ask the agent to calculate the duration using calculate_tempo_rhythm to avoid rounding errors in your sequence.

The Right Fit

Use this if you need high-precision math for audio engineering, MIDI sequencing, or DSP development. It is perfect for sample-accurate timing or converting between log and linear scales. Don't use it if you just need a general music theory quiz or a basic metronome. This tool is built for technical audio data, not for general musical inspiration or broad music theory questions.

Audio Unit Converter for Precise Music Engineering

Most audio engineers waste time switching between different tools to do basic math. You might have a calculator open for decibel conversions, a reference sheet for MIDI numbers, and a separate app to check sample counts for

This MCP puts all that math into your agent. You just ask for the conversion and get the answer immediately. You get to stay in your DAW or code editor while the agent handles the heavy lifting of audio math.

specific durations. It's a constant flow of context switching that breaks your focus.

Audio Unit Converter for Sample-Accurate DSP Work

Writing DSP code or complex MIDI sequences requires perfect accuracy. If your sample count is off by even one, your timing feels weird or your audio glitches. Manually calculating these values every time you change a sample rate is a recipe for errors.

You get consistent, reliable data every time. It removes the human error from your workflow and ensures your audio projects stay perfectly in sync.

Audio Unit Converter: 4 Tools for Music Engineering

Get precise conversions for frequencies, sample timings, rhythmic durations, and decibel levels in one place.

#	TOOL	DESCRIPTION
01	`convert_amplitude_magnitude`	Switch between decibel levels like dBFS and linear amplitude ratios. This helps you understand your signal levels accurately during a mix.
02	`convert_pitch_identity`	Translate between Hertz, note names, and MIDI numbers including cents. Use this to quickly map specific frequencies to your MIDI controller.
03	`calculate_tempo_rhythm`	Find the exact duration of eighth or sixteenth notes based on a BPM. This ensures your rhythmic subdivisions stay perfectly in sync with your project.
04	`convert_sample_timing`	Calculate the number of samples in a duration based on a specific sample rate. This is essential for achieving sample-accurate timing in your audio edits.

See It in Action

Real prompts you can use once this MCP is connected to your AI agent through Vinkius Cloud.

U What's the MIDI number for a frequency of 330.59 Hz?

The frequency of 330.59 Hz corresponds to the note **E4**. In MIDI, this is note number **64**.

U How many samples are in 100ms at a 48000Hz sample rate?

At a sample rate of 48,000 Hz, 100 milliseconds contains exactly **4,800 samples**.

U How long is a sixteenth note at 128 BPM?

At 128 BPM, a sixteenth note lasts exactly **187.5 milliseconds**.

Frequently Asked Questions

01 **Can the Audio Unit Converter MCP help with MIDI numbers?**

Yes, it translates frequencies into exact MIDI numbers and note names. This saves you from looking up pitch tables when you're trying to map specific frequencies to your synth.

02 **How does the Audio Unit Converter MCP handle sample counts?**

You can ask it to calculate how many samples occur in a specific millisecond duration based on any sample rate. It's great for ensuring sample-accurate timing in your projects.

03 **Can I use the Audio Unit Converter MCP for decibel conversions?**

Yes, it handles conversions between logarithmic decibel levels like dBFS and linear amplitude ratios. This is useful for audio engineering and understanding your signal levels.

04 **Does the Audio Unit Converter MCP work with different BPMs?**

It can calculate the exact duration of subdivisions like eighth or sixteenth notes for any BPM you provide. This helps you plan complex rhythmic patterns accurately.

05 **Can the Audio Unit Converter MCP convert Hertz to note names?**

It does exactly that. You can provide a frequency in Hertz, and it will tell you the corresponding musical note and its MIDI value.

06 **Is the Audio Unit Converter MCP good for DSP development?**

It's a great tool for developers who need to move between linear ratios and decibels or calculate precise timing without doing the math manually.

Go Live in 60 Seconds

Get your connection token from **cloud.vinkius.com**, then paste the endpoint URL into any MCP-compatible client.

YOUR MCP ENDPOINT

```
https://edge.vinkius.com/[TOKEN]/mcp
```

CLIENT	WHERE TO CONFIGURE
Claude AI	Profile → Customize → Connectors → "+" → Add custom connector → Paste endpoint
Cursor	Settings → Features → MCP Servers → "+ Add New MCP Server" → Type: SSE → Paste endpoint
VS Code	Ctrl/Cmd+Shift+P → "MCP: Add Server" → add `"audio-unit-converter": { "url": "…" }`
Windsurf	MCP Settings → `mcp_settings.json` → Add endpoint URL
ChatGPT	Settings → Tools & plugins → Add MCP server → Paste endpoint
Gemini	Extensions → Add MCP Server → Paste endpoint URL

ASK AN AI ABOUT THIS

Let your preferred AI explain this MCP server

- Ask ChatGPT
- Ask Claude
- Ask Perplexity
- Ask Gemini
- Ask Grok

READY TO CONNECT

Audio Unit Converter is live on Vinkius Cloud.

Get your connection token, paste it into your AI agent, and start building. No SDK. No deployment. Just results.

Start at cloud.vinkius.com →

vinkius.com · support@vinkius.com

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