MCP SERVER | NO CODE | CLOUD HOSTED

RPM & Speed Gear Calculator MCP for AI Agents

Accurate Vehicle Performance Calculations Using Gear Ratios and Tire Diameter

The RPM & Speed Gear Calculator MCP precisely figures out the mechanical relationships between vehicle speed, engine revolutions per minute (RPM), and gear ratios. It lets you calculate the exact engine output for any specific gear at a given velocity, predict what your car's speed will be when holding a certain RPM, or even generate a full report of all gear performance across a target speed. This is essential for vehicle tuning and engineering analysis.

A+ Quality Score 100/100

rpm | speed | gear-ratio | transmission | automotive-tools

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vinkius.com/mcp/rpm-speed-gear-calculator

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.

RPM & Speed Gear Calculator MCP

3 tools available
Cloud-hosted on Vinkius

Understanding how gears affect an engine can be complex. Instead of relying on rough estimates or manual calculations involving multiple formulas, this MCP handles the mechanical math instantly. You simply input your variables—like tire size, final drive ratio, and current gear—and get precise results. For instance, you can use the calculator to find out exactly what RPM your engine will run in 4th gear when cruising at 65 MPH. Alternatively, if you're tuning for performance, you can tell it an engine speed (like 3000 RPM) and have it calculate the resulting vehicle speed, telling you instantly how fast you'll go. It even provides a complete overview of every gear in your transmission at once. This functionality means mechanical engineers or tuners don't waste time cross-referencing spreadsheets; they just let their AI agent do the heavy lifting. You connect this MCP through Vinkius and get access to professional-grade performance data right where you need it.

Core Capabilities

01 — Determine RPM for a Single Gear

It gives the exact engine revolutions per minute for one specific gear when traveling at a set speed.

02 — Predict Speed from Engine RPM

You input an engine speed and a selected gear, and it calculates what the resulting vehicle velocity will be.

03 — Get Full Gear Range Report

It generates a report showing the engine's RPM across every available transmission gear at one target speed.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/rpm-speed-gear-calculator** — connect your AI agent in three steps.

01 First, you give your AI agent the necessary vehicle parameters: tire diameter, final drive ratio, and the specific scenario (e.g., 'What is my RPM in 3rd gear at 45 MPH?').

02 The MCP processes these inputs using precise mechanical formulas to determine the corresponding engine performance metrics.

03 Finally, your agent returns a clear number—the exact RPM or the calculated speed—telling you precisely what's happening under the hood.

The bottom line is that this MCP turns complex automotive math into simple, actionable data points for performance analysis.

Built For

This calculator is built for mechanical engineers, professional car tuners, and advanced hobbyists who can't afford to guess when making vehicle modifications. If your job involves calculating ratios or predicting engine output based on speed, this MCP saves hours of manual spreadsheet work.

Automotive Tuner

Uses the full gear range report to determine which specific gear ratio change will best balance peak torque and top-end horsepower for a given driving profile.

Mechanical Engineer

Calculates theoretical vehicle speeds based on target RPMs, verifying if new components (like different axle ratios) meet design specifications before prototypes are built.

Performance Enthusiast

Checks engine output at various speeds to understand how gear shifts affect performance curves, ensuring the vehicle handles specific highway or track conditions reliably.

What Changes When You Connect

01 Know the precise engine performance. Instead of estimating, you can use `get_gear_rpm` to find the exact RPM for any single gear at a specific speed.

02 Test theoretical changes instantly. Use `calculate_speed_from_rpm` to see exactly how fast your vehicle will go if you maintain a certain engine rev count in a selected gear.

03 Get a complete performance picture. The `get_all_gears_at_speed` tool generates an instant report showing the RPM for every single gear at once, so you don't miss anything.

04 Save time on spreadsheets. You eliminate hours of complex manual math involving tire size and final drive ratios by letting your agent handle it all in one prompt.

05 Test modifications virtually. Before buying new parts or changing axle ratios, use this MCP to predict how the change affects both speed and engine output.

Real-World Applications

Determining Cruise RPM for a Highway Trip

A user needs to know if their car will run too high or too low on fuel efficiency at 70 MPH. They ask the agent to use `get_gear_rpm` with their specific tire and final drive numbers, getting an instant reading that confirms safe cruising RPM.

Testing Optimal Gear Ratios for Track Day

A tuner wants to know how performance changes across the whole range. They use `get_all_gears_at_speed` at 100 MPH, getting a clean report that shows exactly which gears provide the most optimal power band.

Calculating Speed After an Engine Swap

An engineer has swapped out an engine and needs to know if their current gearing works. They ask the agent to use `calculate_speed_from_rpm` with the new engine's peak RPM, verifying that the vehicle hits its target top speed.

Verifying Manual Transmission Performance

A hobbyist is checking their manual transmission. They input a specific gear and target speed into `get_gear_rpm` to confirm if the manufacturer's stated performance figures match reality with their current setup.

Patterns to Avoid

Treating gearing as simple multiplication

✗ AVOID

Assuming that a higher gear ratio always means lower RPM, without accounting for tire diameter or final drive ratios.

✓ INSTEAD

Always use the MCP's specialized tools. Use `get_gear_rpm` and provide all necessary inputs—tire diameter, gear ratio, and final drive—to get an accurate calculation.

Calculating performance in stages

✗ AVOID

Doing separate calculations for each gear to determine the overall speed range of the transmission.

✓ INSTEAD

Use `get_all_gears_at_speed`. This tool handles the entire sequence at once, providing a comprehensive report that shows all gears relative to a single target velocity.

Ignoring real-world variables

✗ AVOID

Only calculating RPM based on gear ratio and speed, forgetting that tire diameter changes the outcome.

✓ INSTEAD

The MCP accounts for tire diameter and final drive ratios by default. Always include these parameters to ensure your calculated performance numbers are accurate.

The Right Fit

Use this calculator if you need precise mechanical data relating speed, RPM, and gear ratios for vehicle tuning or engineering validation. If your goal is simply 'rough estimates' or quick field checks without specific inputs like tire diameter, then a basic manual calculation might suffice. However, if you are working with complex variable sets—like verifying multiple potential axle ratio changes

against peak engine power—you need this MCP. Don't use it just because you want to know what the car *feels* like; it only gives numbers. If your requirement is simply 'list all possible speeds,' use a dedicated vehicle model simulator instead, as this tool requires specific inputs to function.

RPM & Speed Gear Calculator: Analyzing Vehicle Performance with Precise Gear Ratios

Before using this MCP, determining performance involved gathering massive amounts of data. You'd consult multiple engineering texts, cross-reference gear charts, and run complex spreadsheets just to figure out the RPM at 70 MPH in a specific transmission. It was slow, error-prone, and required assuming all your input variables were perfect.

Now, you tell your agent what scenario you want—say, 'What's my RPM in 4th gear at 65 MPH?' The MCP takes the tire diameter, final drive ratio, and gear ratio into account automatically. You get a single, accurate number that tells you exactly what's happening under the hood.

RPM & Speed Gear Calculator: Modeling Vehicle Speed Changes with Full Gear Range Reports

Previously, if you wanted to know the full performance profile of your transmission, you had to run a separate calculation for every gear ratio. This was tedious and often left gaps in the data set, making it hard to identify the true power band across all gears.

Using the `get_all_gears_at_speed` tool, you get an instantaneous report spanning your entire transmission range. You immediately see a clean breakdown of every gear's RPM at once. The difference is that you gain a full picture without running dozens of calculations.

3 Tools for Calculating Automotive Speed and Gear Ratios

Use these tools to determine exact engine revolutions per minute, predict vehicle speeds from RPM, or generate a full report of all gear ratios at any given velocity.

#	TOOL	DESCRIPTION
01	`get_gear_rpm`	Determines the exact engine revolutions per minute for a single specified gear at a target speed.
02	`calculate_speed_from_rpm`	Predicts what the vehicle's speed will be if the driver keeps the engine at a specific RPM in a chosen gear.
03	`get_all_gears_at_speed`	Provides an overview of the engine’s RPM across every available transmission gear when traveling at one target speed.

See It in Action

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

U At 65 MPH, what will the engine RPM be in my manual transmission?

RPM Report @ 65 MPH

GEAR	RATIO	CALCULATED RPM
1st	3.5	2104
2nd	2.1	1262
3rd	1.4	817
4th	1.0	609

Calculations account for a 26-inch tire diameter and a final drive of 3.73.

U How fast can I go if the engine hits 4500 RPM in 3rd gear?

Vehicle Speed Prediction

Based on your current setup (26-inch tires, final drive 3.73):

- Target RPM: 4500
- Gear: 3rd (Ratio: 1.4)
- Predicted Speed: **78 MPH**

This assumes you maintain a steady engine speed.

U Show me the performance curve for all gears at 100 KMH.

Performance Overview (100 km/h)

The following RPMs are calculated for your transmission at a target speed of 100 km/h:

- **1st Gear:** 3852 RPM
- **2nd Gear:** 2287 RPM
- **3rd Gear:** 1574 RPM
- **4th Gear:** 1169 RPM

Frequently Asked Questions

01 **How do I use the RPM & Speed Gear Calculator to check my car's top speed?**

You can predict your maximum achievable speed by using the calculator. Input an estimated peak engine RPM and select the highest gear ratio you plan to use. The MCP will then calculate the corresponding vehicle velocity for that setup.

02 **Is this better than just looking up ratios online?**

Yes, because it's dynamic. Online charts often assume fixed variables. This MCP calculates everything on the fly using your specific tire diameter and final drive ratio, giving you a precise number that matches your actual vehicle hardware.

03 **Does the RPM & Speed Gear Calculator account for tire size?**

Absolutely. Tire diameter is one of the core inputs. By including it, the calculation corrects for any difference between standard and non-standard tires, ensuring your speed predictions are accurate.

04 **What if I change my final drive ratio? Can I recalculate?**

Yes. Just update the final drive ratio parameter in the input fields. The MCP will instantly regenerate all performance data—the RPMs, speeds, and gear reports—to reflect your new setup.

05 **Can I see how every gear performs at once with this tool?**

Yes. Using the comprehensive report function allows you to input one target speed and immediately see the engine RPM for every single gear in the transmission, giving you a complete performance picture.

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 `"rpm-speed-gear-calculator": { "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

RPM & Speed Gear Calculator 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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