MCP SERVER | NO CODE | CLOUD HOSTED

Cycling FTP Calculator MCP for AI Agents

Accurate Power Metrics for Endurance Cycling Performance Tracking

The Cycling FTP Calculator MCP helps you turn raw cycling data into quantified performance metrics. Use it to determine your Functional Threshold Power (FTP) from either a standard 20-minute test or an advanced ramp test, and then calculate the Intensity Factor (IF) and Training Stress Score (TSS) for any training ride.

A+ Quality Score 100/100

cycling | ftp | training | watts | performance

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vinkius.com/mcp/cycling-ftp-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.

Cycling FTP Calculator MCP

3 tools available
Cloud-hosted on Vinkius

This MCP gives cyclists a way to move past simple averages. Instead of guessing your fitness level based on mileage alone, you quantify it using standardized tests. You input data from various efforts—like a sustained 20-minute maximum effort or an intense ramp test—and the tool estimates your Functional Threshold Power (FTP). This core number then allows you to accurately grade any subsequent ride. When you run `calculate_session_stress`, for instance, it takes your established FTP and the normalized power from that session to generate key metrics like Intensity Factor (IF) and Training Stress Score (TSS). These numbers don't just look good; they tell coaches exactly how hard you pushed and what kind of load your body handled. By connecting this MCP through Vinkius, your AI client can act as a real-time performance analyzer, turning complex power meter data into simple, actionable training insights.

Core Capabilities

01 — Determine FTP from 20-Minute Efforts

Calculates an estimated Functional Threshold Power (FTP) using data recorded during a specific 20-minute maximal effort.

02 — Calculate FTP from Ramp Tests

Estimates your Functional Threshold Power (FTP) based on the unique power curve data generated by a ramp test.

03 — Grade Training Load and Stress

Generates both the Intensity Factor (IF) and the Training Stress Score (TSS) for any given cycling session using your established FTP and measured normalized power.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/cycling-ftp-calculator** — connect your AI agent in three steps.

01 Start by providing the MCP with raw data from a structured effort, such as an average power output and duration for a 20-minute test, or the full curve of a ramp test.

02 The tool processes this input using established physiological cycling formulas to calculate your core metrics like FTP. This sets your baseline performance number.

03 Next, you feed it data from any other ride—the normalized power and duration—and it spits out quantifiable training load scores (IF and TSS) that grade the session's difficulty.

The bottom line is, this MCP takes complex cycling metrics and converts them into standardized numbers that tell coaches exactly how hard you trained and what your current fitness ceiling is.

Built For

This MCP is for endurance athletes who take their training seriously. If you're tired of generic advice and need to quantify the actual stress or power output from every ride, this tool delivers precise data points that coaches and sports scientists rely on.

Professional Cyclist

Uses the MCP to precisely calculate FTP after race efforts and track TSS/IF for recovery planning.

Cycling Coach

Generates specific power zones and assesses client training load (TSS) from varied test data to adjust weekly plans.

Sports Scientist

Quantifies the intensity of various efforts, comparing IF scores across different types of training sessions.

What Changes When You Connect

01 Get precise power zones. Instead of guessing, the tool calculates your specific training zones using data from `calculate_ftp_20min`, ensuring every pedal stroke targets the right effort level.

02 Grade any ride's difficulty instantly. Use `calculate_session_stress` to generate TSS and IF for a session, giving you an objective measure of how hard that day was, regardless of distance or perceived effort.

03 Compare test results accurately. If your training changes, use either `calculate_ftp_20min` or `calculate_ftp_ramp` to get a consistent FTP number against which all future efforts can be measured.

04 Move beyond simple wattage averages. The MCP provides metrics like IF that tell the story of power application relative to effort, giving deeper insight than basic average speed.

05 Improve training specificity. By accurately determining your true FTP, you tailor subsequent workouts so they maximize gains without risking overtraining.

Real-World Applications

Establishing a Baseline Fitness Level

A cyclist just started tracking their power data and needs to know where they stand. They run `calculate_ftp_20min` using their latest test data, immediately getting an estimated FTP and corresponding power zones to structure the next month's training plan.

Evaluating a Race Day Performance

After finishing a long race, the cyclist inputs the normalized power curve. They run `calculate_session_stress` to see the resulting TSS and IF score, allowing them to compare it objectively against their planned training load.

Optimizing Training Intensity

A coach wants to know if a client's recent interval training was hard enough. They use `calculate_session_stress` with the session data, verifying that the resulting IF score meets the required intensity target.

Adapting Training After Injury

A cyclist returns to riding after a break and wants an accurate current fitness marker. They use `calculate_ftp_ramp` on their most recent effort to establish a new, precise FTP benchmark for safe progression.

Patterns to Avoid

Using simple average power

✗ AVOID

A user calculates fitness by just taking the overall average wattage from a long ride and using that as their threshold. This ignores the varying intensity required for true FTP calculation.

✓ INSTEAD

Instead, use `calculate_ftp_20min` or `calculate_ftp_ramp`. These tools apply standardized formulas to your power data, giving you a far more accurate estimate of your functional threshold.

Ignoring session context

✗ AVOID

Manually trying to grade the difficulty of a ride by comparing total watts burned against an arbitrary number. This approach fails because it doesn't account for normalized power or time in zone.

✓ INSTEAD

Always use `calculate_session_stress`. It accounts for both your FTP and the session's specific power output to generate reliable TSS/IF metrics.

Mixing test types

✗ AVOID

Attempting to calculate FTP by blending data from a 20-minute test with a short, high-power interval. The formulas require clean inputs for accurate results.

✓ INSTEAD

Use the specific tool designed for your effort: run `calculate_ftp_20min` only on 20-minute average power data, or use `calculate_ftp_ramp` only when available.

The Right Fit

You should use this MCP if you track cycling performance using quantifiable power meters and are focused on optimizing your training load. If your goal is to accurately measure how hard a workout was (TSS/IF) or establish a scientific fitness benchmark (FTP), this tool is essential. Don't use it if you only record distance, speed, and elevation via a phone app; in that case, a simpler cardio

tracker might suffice. However, even with basic GPS data, if you can get normalized power metrics, you must run the `calculate_session_stress` tool to gain actionable insights into training stress.

Cycling FTP Calculator: Pinpointing Your Functional Threshold Power (FTP)

Most riders rely on rough estimates or simple averages when trying to determine their true Functional Threshold Power. They look at race results and try to extrapolate a single number, often leading them to set goals that are too ambitious or too conservative for the next training block.

With this MCP, you feed your raw power data—whether it's from a controlled 20-minute effort or an exhaustive ramp test. The tool processes those inputs and gives you a reliable, quantified FTP number. You get a solid benchmark that lets you plan structured workouts knowing exactly what physical limit you are working toward.

Cycling FTP Calculator: Assessing Training Load with TSS and IF

Before this MCP, grading the difficulty of a ride meant comparing it to memory or relying on subjective 'Rate of Perceived Exertion' scales. You had no objective way to compare a hard 3-hour ride versus an equally intense but shorter interval session.

Now, you feed your post-test data into `calculate_session_stress`. The MCP returns the Intensity Factor and Training Stress Score. These metrics give coaches (and you) a universal language for effort: a single number that tells you exactly how much load was placed on your body, period.

3 Cycling FTP Calculator Tools for Advanced Training Performance

Use these tools to estimate functional threshold power (FTP) from various tests or grade the stress level and intensity factor (IF/TSS) of any recorded ride.

#	TOOL	DESCRIPTION
01	`calculate_ftp_20min`	Estimates your Functional Threshold Power (FTP) using data from a standard 20-minute power test.
02	`calculate_ftp_ramp`	Calculates your FTP after running a continuous ramp test to exhaustion.
03	`calculate_session_stress`	Determines the Intensity Factor (IF) and Training Stress Score (TSS) for any recorded cycling session data.

See It in Action

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

U I finished a 20-minute test with an average power of 300W and I weigh 75kg. What is my FTP and what are my power zones?

Based on your data, your estimated Functional Threshold Power (FTP) is **285 Watts** (or 285 W/kg).

Here's how that translates into structured training zones:

- **Zone 1:** 0–156.75W (Recovery)
- **Zone 2:** 159.75–213.75W (Endurance)
- **Zone 3:** 217.5–256.5W (Tempo)
- **Zone 4:** 261W–299.25W (Threshold)
- **Zone 5:** 303W–342W (VO2 Max)

U My FTP is 250W. I did a 60-minute ride at 220W normalized power. What was my IF and TSS?

For that specific session, your training load came out to:

- **Intensity Factor (IF):** 0.88
- **Training Stress Score (TSS):** 88.0

This indicates a moderate-high load for the duration of the ride, perfect for building aerobic endurance.

U Calculate my FTP from a ramp test where I reached exhaustion at 280W, weighing 70kg.

Your estimated Functional Threshold Power (FTP) is **280 Watts** (4.0 W/kg).

You can now use this benchmark to define your power zones:

- Zone 1: 0–154W
- Zone 7: Above 420W

Frequently Asked Questions

01 **How do I accurately calculate my FTP using the Cycling FTP Calculator MCP?**

You can use two methods: run `calculate_ftp_20min` if you completed a standard 20-minute maximal effort, or use `calculate_ftp_ramp` if you ran an advanced ramp test. The resulting number is your key fitness metric for planning future rides.

02 **What does TSS stand for and how does the Cycling FTP Calculator MCP help me understand my training load?**

TSS stands for Training Stress Score. When you use `calculate_session_stress`, it converts your ride's data into a single, standardized number that grades the total effort and fatigue of the day.

03 **Is this MCP better than using basic online calculators for my cycling fitness?**

Yes. This MCP is superior because it uses specific physiological formulas tied to your actual power data (normalized power). It provides a far more accurate and actionable estimate of your true FTP.

04 **I just finished a race, how do I use the Cycling FTP Calculator MCP results?**

You run `calculate_session_stress` on the ride data. The resulting IF score tells you if the intensity was appropriate for your goals, helping you determine if that race day pushed you to your maximum capacity.

05 **Does this tool work with my power meter data?**

Yes. You simply input the raw metrics—normalized power, duration, and weight—from your compatible cycling power meter into the MCP tools like `calculate_session_stress`.

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 `"cycling-ftp-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

Cycling FTP 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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