MCP SERVER | NO CODE | CLOUD HOSTED

FOV to Focal Length Converter MCP for AI Agents

Accurate Camera Optics Calculations and Sensor Geometry

The FOV to Focal Length Converter helps you calculate the precise relationship between a lens's focal length and its resulting field of view (FOV). It supports multiple sensor types, including Full Frame, APS-C, M4/3, and 1-inch cameras. Simply tell your AI agent what angle you need or what lens you are using, and it gives you the exact math required for accurate photography planning.

A+ Quality Score 100/100

camera | lens | fov | focal-length | sensor | photography-math

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vinkius.com/mcp/fov-to-focal-length-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.

FOV to Focal Length Converter MCP

3 tools available
Cloud-hosted on Vinkius

Figuring out camera gear is complicated. You might know your desired field of view in degrees, but not how to pick a specific focal length for the job. This MCP handles those tricky optical calculations instantly. It converts between horizontal Field of View (FOV) and lens focal lengths across several popular sensor formats: Full Frame, APS-C, Micro Four Thirds (M4/3), and 1-inch. Your agent uses this math to solve complex camera geometry problems so you don't have to open a spreadsheet or cross-reference multiple guides. When your workflow needs reliable optical data—for example, determining the precise lens needed for a specific angle—you can rely on it. Vinkius hosts this MCP alongside thousands of others, making it one place to get all the math help your creative process demands.

Core Capabilities

01 — Determine Required Focal Length from FOV

Calculates the precise focal length needed for a lens to achieve a specific angle of view.

02 — Predict FOV from Given Focal Length

Takes a known lens focal length and predicts the resulting horizontal field of view in degrees.

03 — Understand Sensor Scaling Factors

Determines crop factors, showing how different sensor sizes (like 1-inch vs. Full Frame) affect apparent magnification.

One Click on Vinkius — From Prompt to Execution

Available at **vinkius.com/mcp/fov-to-focal-length-converter** — connect your AI agent in three steps.

01 You provide your agent with the starting variables: either a target FOV and sensor type, or a specific focal length and sensor type.

02 The MCP runs the necessary mathematical formula, considering the chosen sensor's physical dimensions (e.g., Full Frame vs. APS-C).

03 Your agent returns the precise calculated value—either the required focal length in millimeters or the predicted FOV in degrees.

The bottom line is: you get immediate, mathematically verified camera geometry calculations without manual math.

Built For

This MCP is essential for professional photographers and videographers who can't afford to shoot test shots just to check their framing. If your work requires precision—whether you're shooting architecture, wildlife, or product photography—you need this math tool in your agent.

Photographer

Uses it to determine the best lens focal length when they know exactly how wide or narrow their final shot needs to be.

Videographer

Calculates FOV changes across different cameras (e.g., swapping from an M4/3 body to a Full Frame body) while maintaining cinematic consistency.

Content Creator

Needs to advise clients on optimal camera gear purchases by providing accurate focal length recommendations based on desired framing angles.

What Changes When You Connect

01 Calculate the exact lens required. Instead of guessing, use calculate_focal_length_from_fov to nail down the precise focal length needed for any angle.

02 Plan shots instantly. Know your field of view before you leave the house by running a prediction with calculate_fov_from_focal_length.

03 Compare gear accurately. Use get_sensor_equivalence to understand how different camera bodies (like 1-inch vs Full Frame) will affect your image size.

04 Save time on set. You immediately get mathematically sound answers, cutting out hours of manual calculation and guesswork in post-production planning.

05 Maintain consistency across projects. Quickly model how lens choices change the apparent magnification when switching sensor formats.

Real-World Applications

Framing a Landscape Shot

A photographer needs to capture a specific mountain peak that must fill 30 degrees of the frame. They ask their agent, and using calculate_focal_length_from_fov, they immediately get the required lens focal length for their APS-C body, preventing wasted time on inaccurate gear testing.

Checking Gear Compatibility

A client wants to use a 50mm prime lens but isn't sure how it looks on their compact 1-inch camera. The agent runs get_sensor_equivalence and tells them the actual crop factor, giving the correct sense of scale.

Pre-visualization for Video

A videographer needs to know if a standard 24mm lens will capture enough scope for an interior shot. They use calculate_fov_from_focal_length and get the precise degree reading, allowing them to adjust their camera angle before shooting day.

Comparing Sensor Options

A new shooter is deciding between a Full Frame body and an M4/3 body. They use get_sensor_equivalence to understand the magnitude of difference in crop factor, helping them make an informed purchasing decision.

Patterns to Avoid

Assuming Focal Length Scale

✗ AVOID

Thinking that a 50mm lens will behave identically on all sensors, ignoring the sensor's unique crop factor and resulting FOV difference.

✓ INSTEAD

Always run get_sensor_equivalence first. This tells you how to correctly scale focal lengths or understand true equivalent measurements before calculating anything else.

Relying on General Photography Guides

✗ AVOID

Reading an online guide that gives rough estimates (e.g., 'use a 35mm for street shots') without accounting for the specific sensor format you're using.

✓ INSTEAD

Use calculate_focal_length_from_fov with your exact sensor type specified. This grounds the recommendation in real mathematics, not generalizations.

Mixing FOV and Focal Length Units

✗ AVOID

Inputting degrees for one value but millimeters for another, leading to an unusable, arbitrary calculation result.

✓ INSTEAD

Ensure your inputs match the required units. If you know the desired angle, use calculate_focal_length_from_fov; if you know the lens, use calculate_fov_from_focal_length.

The Right Fit

Use this MCP if your process requires absolute mathematical certainty when relating camera optics. You need to know: 'If I want X degree view, what focal length do I need?' or 'If I use Y lens, how wide is my view?' It's critical for pre-production planning and gear selection.

Don't rely on this if you just need general advice (e.g., 'use a zoom lens'). For that, search for an advisory MCP. You should also know its limitations: it doesn't account for real-world factors like lens distortion or diffraction; it only handles the core geometric math. If your question involves lighting ratios, aperture effects, or depth of field calculation, you need a different tool.

FOV to Focal Length Converter MCP for AI Agents: Solving Field of View Math

Right now, figuring out the right lens is a manual mess. You might be in the field and know you need to capture everything from 40 degrees to 90 degrees, but you have three different camera bodies—Full Frame, APS-C, and M4/3. Switching between sensor types means recalculating every focal length estimate by hand or opening up a dozen tabs of complex formulas. It's slow, it’s error-prone, and it kills your momentum.

With this MCP, you ask your agent for the calculation. You specify the desired FOV (say, 50 degrees) and which sensor body you are using. The agent instantly returns the exact focal length needed in millimeters, adapting the math automatically for that specific format. You get immediate, reliable optical data.

FOV to Focal Length Converter MCP for AI Agents: Understanding Sensor Equivalence

The biggest headache is sensor size confusion. Manufacturers use terms like 'crop factor' and 'Full Frame equivalent,' which means nothing if you

This MCP solves that confusion with get_sensor_equivalence. It tells you exactly what your effective crop factor is for any given size, so

don't know the math behind them. You end up comparing apples to oranges, guessing how much a 1-inch sensor magnifies an image compared to a Full Frame setup.

you stop guessing and start shooting knowing the true scale of your final output.

3 FOV to Focal Length Converter Tools for Camera Optics Math

These tools allow you to perform mathematical conversions, calculating required focal lengths from field of view or predicting the final angle from a given lens and sensor setup.

#	TOOL	DESCRIPTION
01	`calculate_focal_length_from_fov`	Finds the necessary lens focal length when you specify a target field of view and sensor type.
02	`calculate_fov_from_focal_length`	Predicts what your horizontal field of view will be, given a specific focal length and sensor size.
03	`get_sensor_equivalence`	Calculates the crop factor or Full Frame equivalent for various camera sensors (e.g., 1-inch).

See It in Action

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

U What focal length do I need to shoot a 60 degree view on an APS-C sensor?

Here's the breakdown for that shot:

- **Target FOV:** 60 degrees
- **Sensor Type:** APS-C
- **Required Focal Length:** 24.1mm

You need a lens with a focal length of approximately 24.1mm to hit the 60-degree target on your current body. This is based on standard sensor geometry.

U If I use my 50mm lens on an M4/3 camera, what's the FOV?

Using a 50mm focal length on Micro Four Thirds (M4/3) yields a horizontal field of view of approximately 25.81 degrees. This is great for general-purpose shots in tighter spaces.

PARAMETER	VALUE
Focal Length	50mm
Sensor Type	M4/3
FOV Result	**25.81°**

U What is the crop factor for a 1-inch sensor compared to Full Frame?

The crop factor for a 1-inch sensor is approximately 2.3x.

This means that while your lens might be rated at, say, 50mm, it will appear about 2.3 times more magnified than the same lens on a Full Frame camera. Always account for this when planning your composition.

Frequently Asked Questions

01 **How does the FOV to Focal Length Converter MCP help me plan my shots?**

It lets you calculate precise lens requirements based on the angle you want. Instead of guessing, you tell it your desired degrees of view, and it outputs the exact focal length in millimeters for any sensor type.

02 **Can I use this MCP if I switch from a Full Frame camera to an APS-C one?**

Yes. The MCP handles multiple popular sensors, including Full Frame and APS-C. It automatically adjusts the math so you can reliably compare gear across different body types.

03 **What is sensor equivalence? Do I need to use get_sensor_equivalence?**

Sensor equivalence tells you how much a smaller camera's image size (like 1-inch) is magnified compared to the industry standard Full Frame. It helps you understand your true crop factor instantly.

04 **Does this MCP just give me general advice, or does it use real math?**

It uses precise optical geometry formulas. You get mathematically verified calculations for focal lengths and fields of view; no estimates or general rules are used here.

05 **What if I know the lens but not the FOV? Which tool should I use?**

Use calculate_fov_from_focal_length. You input your known focal length and sensor type, and it predicts the exact horizontal field of view you'll get.

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 `"fov-to-focal-length-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

FOV to Focal Length 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 →

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DOCUMENT INFORMATION

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Platform	Vinkius Cloud for AI Agents
Endpoint	`https://edge.vinkius.com/{token}/mcp`

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