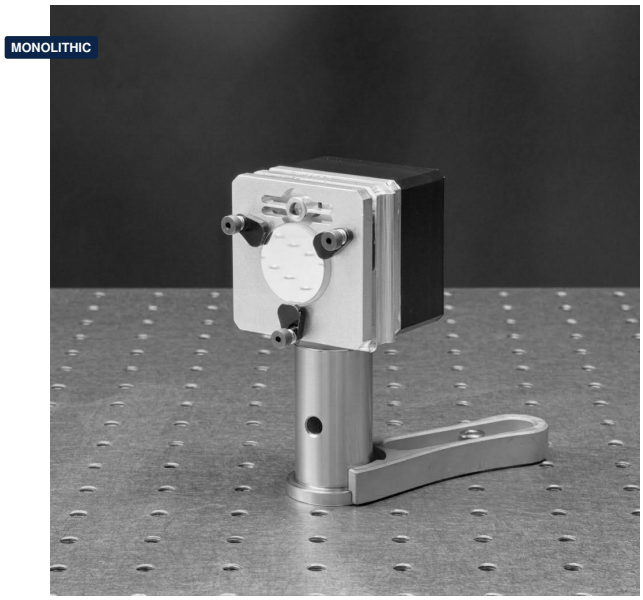
ALIGNFLOW™ • SMART MIRROR • OPEN-SOURCE CONTROL

Motorized Monolithic Mirror Mount

A smart mirror with an open-source control library. Sub-10-nrad alignment (< 10 nrad/step), zero backlash, and full Wi-Fi control — in a single-piece body for vacuum chambers and sealed optical setups.



AT A GLANCE

ANGULAR RANGE
8° total ($\pm 4°$/axis)

STEP RESOLUTION
< 10 nrad/step

DRIVE
Geared stepper • UHD threads

INTERFACES
Wi-Fi (2.4 GHz) • USB serial

THERMAL DRIFT
< 0.1 µrad/°C

HANDS-OFF ALIGNMENT, WITHOUT COMPROMISE

Conventional motorized mounts trade rigidity for actuation: bolted assemblies, multi-part flexures, and exposed leadscrews introduce hysteresis, drift, and microphonic noise. The Motorized Monolithic Mirror Mount keeps the mechanical integrity of our signature single-body platform and drives it with geared stepper motors on ultra-high-density threads, integrated into the structure — closed by a Hall-effect tilt sensor that watches the mirror itself.

The result is *AlignFlow*™ — a smart mirror you can program. Drive it over Wi-Fi from Python — audit and extend the open-source control library on GitHub — or let your own closed-loop alignment run while you go grab a coffee.

> *"Grab a coffee — by the time you're back, the mirror has aligned the beam itself."*

FEATURES

- Monolithic single-body construction — no bolted joints in the optical path
- Geared stepper motors on ultra-high-density threads — <10 nrad step resolution
- Zero backlash, zero virtual play
- Closed-loop tilt feedback via integrated Hall-effect sensor
- Platform thermal drift <0.1 µrad/℃
- Vacuum-compatible
- Wi-Fi (2.4 GHz) and USB serial control interfaces
- Open-source Python control library
- 12-month warranty; custom variants on request

APPLICATIONS

- ▶ Sealed laser enclosures and interlocked cabinets
- ▶ Remote or automated alignment in production
- ▶ Continuous beam stabilization with custom feedback loops
- ▶ Ultra-high vacuum chambers and beamlines
- ▶ Quantum optics and atom-trapping experiments
- ▶ Long-baseline interferometry alignment

INTERFACES & SOFTWARE

Wi-Fi (2.4 GHz)	Wireless command and feedback link to the mount — no cabling into vacuum chambers or sealed enclosures.
USB serial	Direct wired command and feedback, and initial setup (network credentials and login password are provisioned over USB).
Open-source library	The Python control library is open source (MIT) — read it, fork it, extend it, or write your own alignment loop on top: `github.com/physiverse/physiverse_monolithic_motorized_mirror_mount_client`

SPECIFICATIONS

Angular range	8° total ($\pm 4^\circ$ per axis)
Step resolution	<10 nrad/step (≈ 0.002 arcsec)
Actuator type	Geared stepper motor with ultra-high-density threads
Feedback	Closed-loop via integrated Hall-effect tilt sensor
Backlash	Zero (monolithic flexure body)
Thermal drift	<0.1 µrad/℃
Control interface	Wi-Fi (2.4 GHz) and USB serial
Environment	Vacuum-compatible (not for cryogenic use)
Included	Mount, drive electronics, power supply, software
Warranty	12 months

CUSTOM VARIANTS

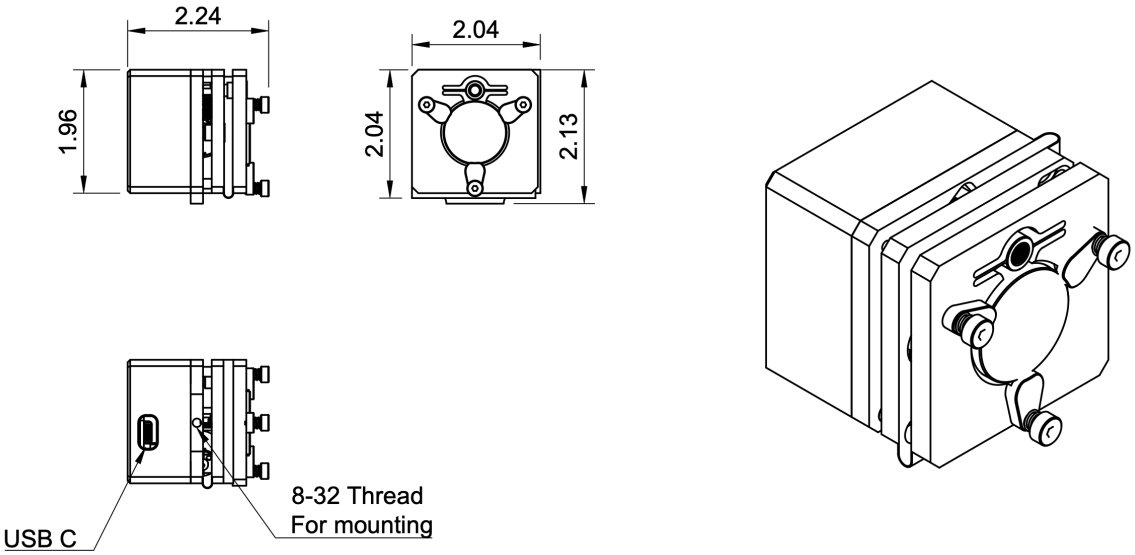
Need ultra-high vacuum, custom optical apertures, or radiation-hardened operation? We build custom variants on request — including vacuum feedthrough integration and rad-hard electronics. Need a different feedback loop? The library is open — start there.

Ready to specify your setup?

Custom configurations available — 1-business-day response.

hello@physiverse.com
physiverse.com

DIMENSIONS



All dimensions in inches.