

# Turn any desktop computer into a 3D metrology lab.

*Precision 3D measurement, at cost.*

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An instrument maker and optical computation company. Reconstruction software, live today. A sealed measurement head on a desk stand, in design. One way to buy: a paid pilot, credited in full to an instrument built to order.

# Precision surface measurement is a locked box with a queue.

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## One box, twenty people

A profiler or interference microscope is shared by a department. The wait is one to three weeks and a re-measure costs a day.

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## No audit trail

Reconstruction lives inside the vendor's software or in someone's script. A result cannot be re-derived by a reviewer, an auditor or the next student.

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## Nothing in between

Below the six-figure instrument there is a loupe and a scratch-dig card. Labs that cannot buy the box build nothing.

# An instrument maker and an optical computation company.

## I

### The reconstruction kernel

Live on the hosted API. An off-axis or inline hologram in; amplitude, phase and height out, with an evidence record that names the version, input and settings.

Deterministic: same bytes every run.

## II

### The one product in development

The bench surface profiler: the H1 sealed reflection head on the D1 desk stand, built from catalog parts and a printed or purchasable enclosure. One sensor, one lens, one task. In design, not built. Inline head, transmission module and the optical computing card are portfolio, unpriced, after it qualifies.

## III

### The pilot, then the purchase

A free bounded benchmark on your frames; \$4,800 of milestone-paid pilot engineering (M1 build and bench acceptance, M2 signed readout), credited in full to the instrument; the unit built to order.

Two ten-billion-dollar industries.  
One instrument that fits on a desk.

~\$10B

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MICROSCOPY

labs, core facilities, biopharma,  
semiconductor labs

~\$11.6B

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3D METROLOGY

manufacturing QA, aerospace,  
electronics, metrology institutes

At cost

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OUR POSITION

a complete head from catalog parts;  
the value is the kernel, the  
design and the pilot readout

# One product in development.

A sealed reflection head over a  $150 \times 150$  mm stage behind a lift-off front door on a short column: a small drill press for light: the bench surface profiler, \$12,900. Dock mode: a lensless dock clips under the head for polished and mirror-like parts (wafers, optics, flats), about  $5.7 \times 4.3$  mm per shot at about 10  $\mu$ m lateral. Lens mode: a removable nose looks down at the stage and measures the form of matte, machined, printed, anodised or ceramic parts, about  $50 \times 39$  mm at about 0.1 mm sampling; not a microscope. Height below a micrometre on smooth surfaces; rougher than about 0.16  $\mu$ m needs the second-wavelength option. Indoor light fine; window daylight with the shroud and its door seated; direct sun no. Designed as a Class 1 laser product in both modes: a four-sided light shroud with a lift-off front door; the laser enables only with door and back wall seated and nose or dock present. Catalog parts, no machining; designed so the operator runs the reference capture, a procedure to be timed on the first build. Every number is a design value.

For one, after the first product qualifies and unpriced until then: the same head on a belt flange (inline inspection head), the I1 transmission module, the optical computing card (research only).



CAD render, design values; front door, lid and light sleeve shown translucent for illustration; the laser is off whenever the door is open. Hardware qualification planned. Nothing built, nothing measured; every figure in the design files is a design value.

# Paid pilot, then purchase. Not software by the token.

| O                                                                                                                       | I                                                                                                                                                                                                          | 2                                                                                                                                                                                                                                                          | +                                                                                                                                                                          |
|-------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Free benchmark                                                                                                          | Pilot engineering, \$4,800                                                                                                                                                                                 | The instrument                                                                                                                                                                                                                                             | Custom work                                                                                                                                                                |
| Up to about twenty of your frames, one reference, one pass/fail threshold agreed before we run, ten business days. \$0. | Milestone-paid development, not a fee: M1 \$2,400 on signing for build and bench acceptance of the demo configuration for your task; M2 \$2,400 at the signed readout. Credited in full to the instrument. | The bench surface profiler, H1 head on the D1 stand, \$12,900; second-wavelength option +\$2,400. Software and ninety days of onboarding included. Fifty percent on order, balance on delivery. The one product in development; the portfolio is unpriced. | Design partnerships, \$10,000 software or \$25,000 hardware, for labs that need something built around them. Research and industrial-QA units: not certified, not medical. |

Parts cost is a design value; the first unit has not been built; every price is an offer, not a quote book.

# Built without outside capital. Built to order. Deposits fund units.

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## One demo unit

The first H1 head on its D1 stand is built from the founder's own capital. It is the pilot unit and the showroom. Nothing else is built until it is ordered.

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## Deposits fund units

Every further unit is built to order on a fifty percent deposit that exceeds its parts cost. No inventory, no hires, no conference budget, no loan.

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## Parts you can buy

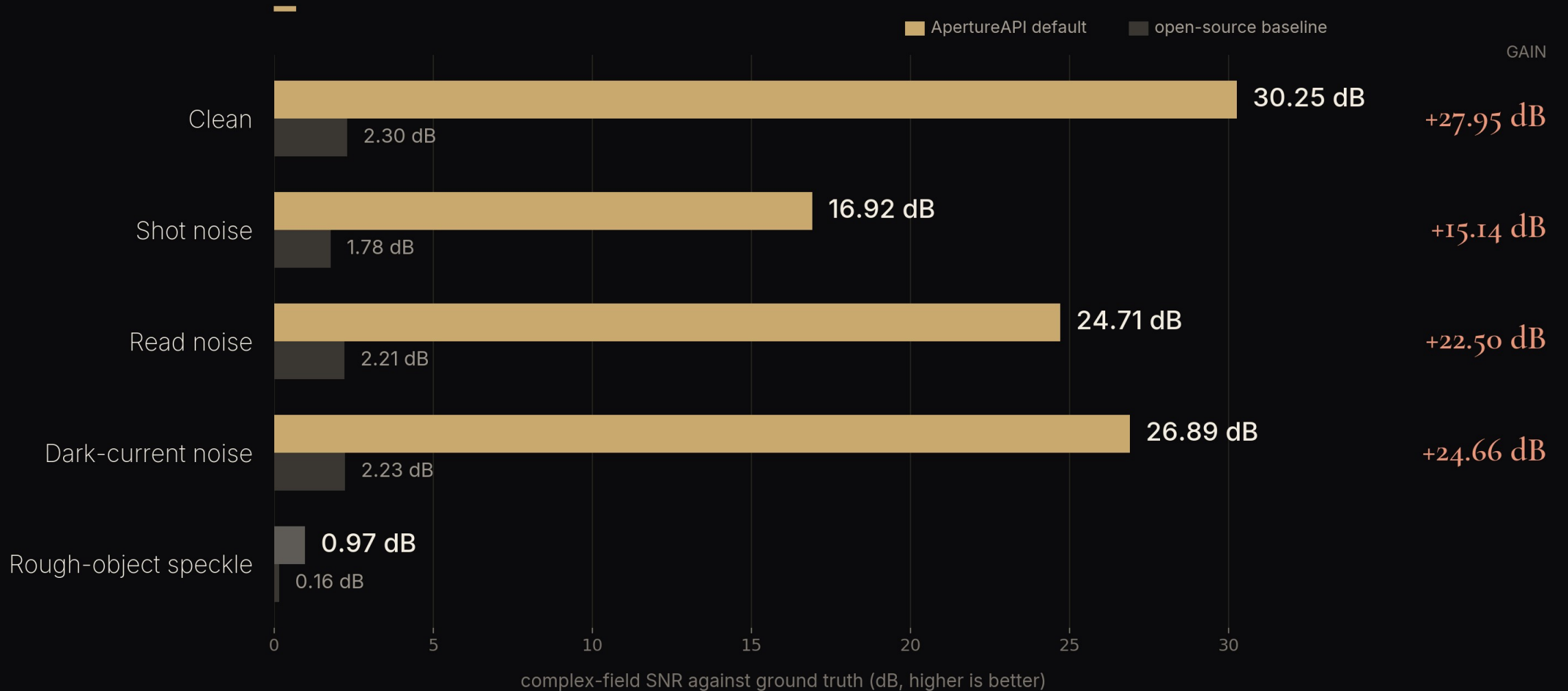
Catalog sensor and source, a purchasable or printed enclosure, no machining. A lab can assemble its own; the price buys the pilot, the software and the onboarding.

Cost model: parts (design value) + founder engineering hours (to be timed on the first build) + calibration time + rework + support hours + patent prosecution (four nonprovisional applications, counsel) + commercial + hosting (unmeasured). Development cost is unproven until the first timed build; the price holds until then.

Incumbent benchtop profilers and lensed holographic microscopes list in the \$40k to \$150k+ class (approximate public list prices, to be verified): a price comparison, not a performance claim.

# Signal recovered, not invented.

ApertureAPI default vs PyHoloscope 1.1.3 (open source, documented inline workflow) — same frames, same metric



Public dataset gokhankocmarli/inline-digital-holography-v3 (MIT), n = 6 frames per configuration. Benchmark similarity to synthetic ground truth, not measurement accuracy. Speckle-dominated inputs stay low and are out of scope today. Sources: inline\_v3.json (920119e04a89...), oss\_inline\_v3.json (f4b3e471a799...). 08

Upload to a 3D view in seconds.  
Every result carries its own evidence.

9.9 s

512 × 512, upload to 3D visualization  
mesh

median of 5 runs on the live API

26.5 s

1024 × 1024, typically under 30 s

median of 5; 2 of 9 runs on 10/13 exceeded 30 s

11 files

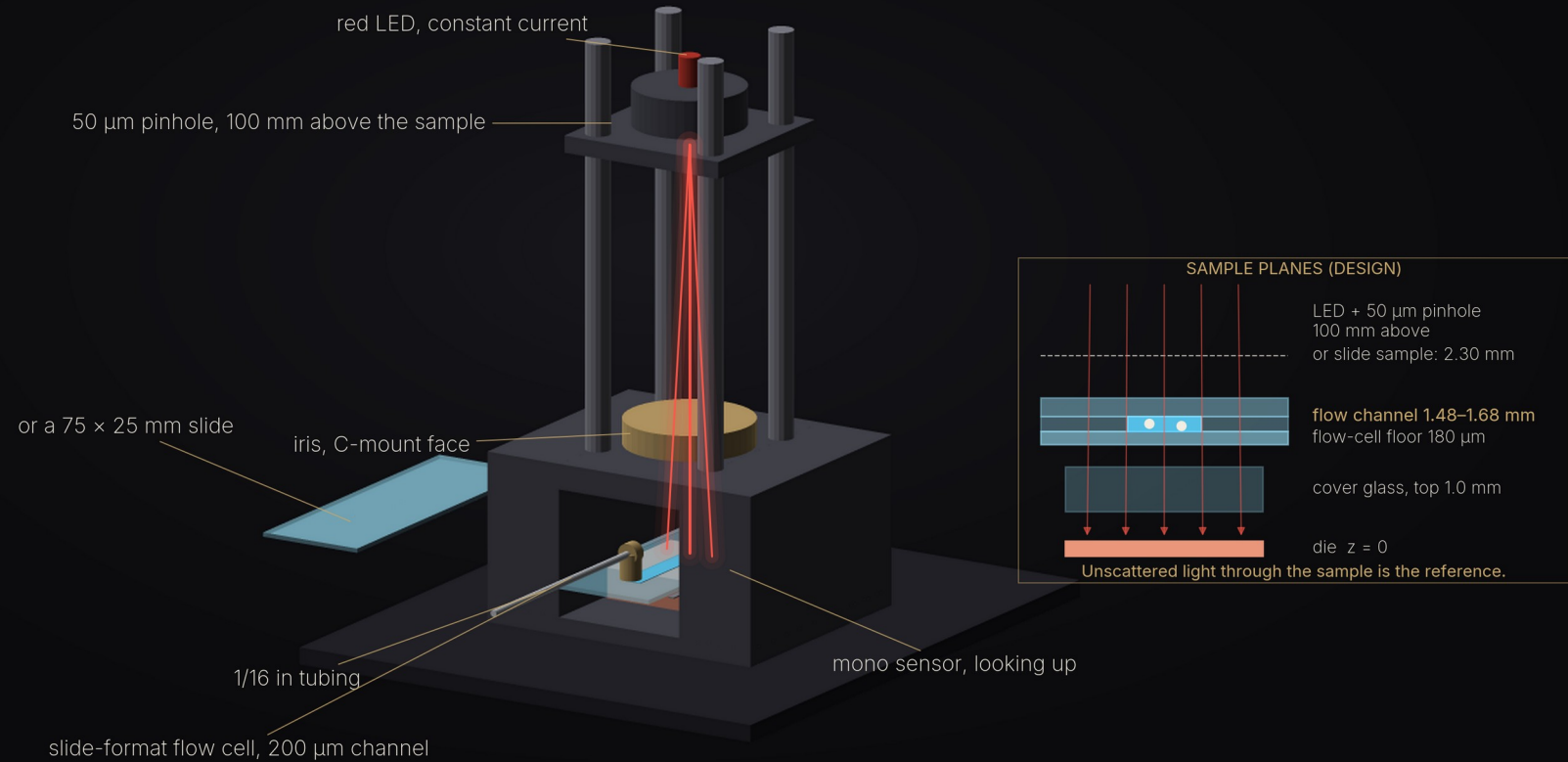
in every result ZIP

evidence record, provenance, quality report,  
methods supplement, mesh, data

The mesh is a visualization, not a measurement. Reports keep reconstruction similarity, measurement accuracy and traceability on separate lines.

# Slide or flow cell, straight through the unit.

Lensless inline transmission for translucent samples: a fiber-fed source on one side of the sample, a mono sensor on the other. The light that passes the sample unscattered is the reference. A gap open at both ends takes a microscope slide or a slide-format microfluidic flow cell. Schematic from the M3 reference design, hardware/designs/m3-inline (chassis.scad, BUILD\_PLAN v4.1, design\_check.py); fleet v6 I1 lineage; not built.



# Two columns we never mix.

## MEASURED

The software is live, with determinism and a recomputable evidence record on every result.

Benchmark similarity on a public ground-truth set, with the result files committed.

Upload-to-mesh wall clock on the live API, median of five.

A closed-loop calibration example that is synthetic and labelled synthetic.

## DESIGNED, NOT MEASURED

Every H1 and D1 number: field, working distance, resolution, room-light margin, parts cost.

Development cost: unproven until the first timed build; the price holds until then.

Accuracy against a physical reference: not established until a pilot measures it.

Any shipped instrument: none. Any frame rate: none quoted.

The P1 optical-computing card: research only, zero revenue in every plan.

# Live, honest, and early.

## Live

Public API and a no-account upload form for evaluation; an evidence record on every result.

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## Designed

One product, the H1 head on the D1 stand: specs, parts lists and renders exist, the optics check passes, nothing built. Next spend: the fiber-fed core on a flat mirror, the one test that can kill it.

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## Gated

A nightly benchmark against public ground truth guards every release; a number goes public only with its result file committed; a claims gate refuses banned copy.

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## Early

Pre-revenue. One founder, built to order, no outside capital; the parent company covers payroll, legal and accounting; hosting costs \$35 a month. Research use only.

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# Two ways in.

## RUN A PILOT

\$4,800

Labs and QA benches with a surface-measurement task and a reference they trust. Milestone-paid pilot engineering: M1 \$2,400 on signing, M2 \$2,400 at the signed readout, both credited in full to the instrument you buy.

## BUY THE BENCH PROFILER

\$12,900

The H1 head on the D1 stand; second-wavelength option + \$2,400. Built to order on a fifty percent deposit, software and ninety days of onboarding included. Parts cost is a design value; the first unit has not been built; the price is an offer.

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[apertureapi.com](https://apertureapi.com)

Benchmark figures are similarity to synthetic ground truth, not measurement accuracy. Hardware figures are design values. ApertureAPI is a wholly owned subsidiary of Start Motion Media LLC.