

RENTAL FLEET

3D scanner comparison sheet 2026

The Volumet rental fleet side by side: accuracy, speed, outputs and weekly rates.

6

Devices in the fleet

4 mm

@ 10 m, the fleet accuracy benchmark

S\$1,200

Lowest weekly rate

S\$3,500

Highest weekly rate

01 SPECIFICATIONS

The fleet at a glance

	LIXEL K2 flagship	LIXEL K1	LIXEL L2 PRO	PORTALCAM	MATTERPORT PRO3	LEICA BLK360 G2
Type	Handheld SLAM LiDAR	Compact handheld SLAM	Long-range handheld LiDAR	3DGS capture camera	LiDAR tour camera + cloud	Tripod terrestrial laser scanner
Capture method	Walk-through SLAM, real-time colourised preview	Walk-through SLAM	Walk-through SLAM, long range	Image-based for Gaussian Splatting	Static positions, cloud processing	Static tripod stations
Point rate	200,000 pts/s	n/a	320,000–640,000 pts/s	n/a (image-based)	100,000 pts/s	680,000 pts/s
Range	≥40 m @10% · 100 m max	0.1–40 m	120 m · up to 300 m	Scene / venue scale	20 m models · 100 m e57	0.5–45 m
Relative accuracy	≤1 cm (within 10 m)	Centimetre-class	≤1 cm post / 2 cm live	Visual-fidelity focus	±20 mm @10 m	4 mm @10 m
Absolute accuracy	≤3 cm RMSE (RTK)	~3 cm	≤3 cm RMSE (RTK)	Not survey georeferenced	Presentation-grade	Registration-dependent
Georeferencing	Built-in RTK	Control-point assisted	Attachable RTK module	None	GPS tag only	Targets / control points
Weight	~1.2 kg	~1 kg	~1.7 kg excl. battery	Compact	~2.2 kg	~0.85 kg
Battery	~1.5 h, hot-swap	~90 min	~90 min	n/a	n/a	Swappable · ~20 s/dome
Outputs	Point cloud · mesh · 3DGS	Point cloud · mesh	Point cloud · mesh · 3DGS	Photoreal 3DGS scenes	Tour · twin · mesh · e57	Point cloud · HDR imagery · e57
Weekly rate	\$2,300	\$2,200	\$3,500	\$1,200	\$2,000	\$2,800

All rates GST-exclusive, 2-day minimum, deposit required. Dry rental subject to experience approval; onboarding available (\$250 pickup / \$400 delivered).

02 PROFILES

The fleet in practice

XGRIDS Lixel K2: the default answer

The K2 is what most renters should start with, and what most end up booking: walk-through capture at 200,000 pts/s with real-time colourised preview on the phone mount, built-in RTK for absolute coordinates outdoors, and ≤ 1 cm relative accuracy that satisfies the bulk of as-built, renovation and Scan-to-BIM briefs. Its honest limitation is the flip side of SLAM itself: accuracy depends on operator technique (loop closures, steady turns), it will not hit millimetre-grade tolerances, and glass-heavy spaces need cleanup. The pipeline is mature: raw scenes process in LixelStudio, export to .las/.laz/.e57, into ReCap for a Revit-ready .rcp, plus mesh and photoreal 3DGS via LCC CyberColor from the same capture. One device, one walk, every mainstream deliverable.

XGRIDS Lixel K1: the compact sibling

The K1 does the same walk-through SLAM job in a lighter, simpler package with a 0.1–40 m range envelope, well matched to single floors, apartments, retail units and compact interiors where the K2's RTK and longer range would go unused. Limitations: no built-in RTK (georeferencing is control-point assisted), centimetre-class rather than spec-leading accuracy, and ~90-minute batteries that set your scene rhythm. The pipeline mirrors the K2 (LixelStudio processing, point cloud and mesh exports), so teams that learn one can run the other. At S\$2,200/week against the K2's S\$2,300, most renters take the K2 unless compactness genuinely matters; the K1 earns its keep as a second unit for parallel capture crews.

XGRIDS Lixel L2 Pro: range and rate

The L2 Pro is the outdoor workhorse: 320,000–640,000 pts/s, 120 m standard range stretching to 300 m-class, ≤ 1 cm relative within 100 m, with an attachable RTK module for georeferenced site work. That makes short work of large hardstandings, road corridors, facades, plants and infrastructure that would take the K2 several extra passes. Its limitations are practical: at ~1.7 kg it is the heaviest handheld in the fleet, it is overkill indoors where its range advantage evaporates, and the bigger data rate means bigger files and longer processing. Same LixelStudio pipeline (cloud, mesh, 3DGS), and the S\$3,500/week rate prices it as a specialist: rent it when the site is measured in hectares, not rooms.

XGRIDS PortalCam: photoreal, not survey

The PortalCam is an image-based capture camera purpose-built for 3D Gaussian Splatting: walk a venue, process through LCC CyberColor, and get a browser-viewable scene that looks like being there (reflections, lighting, materials) in a way no point cloud rendering approaches. It is deliberately not a measurement tool: no survey georeferencing, no accuracy statement worth specifying against, and the output is radiance, not dimensioned geometry. The pipeline runs to web viewers and Unreal/Unity plugins rather than Revit. At S\$1,200/week it is the cheapest device in the fleet, and the correct one whenever the brief says "make people feel the space": venue marketing, XR, media, simulation backdrops, especially paired with a K2 capturing measurable geometry of the same site.

Matterport Pro3: the turnkey tour machine

The Pro3 combines LiDAR (100,000 pts/s, 20 m model range, 100 m for e57 export) with Matterport's cloud processing to produce the most polished, shareable deliverable in the fleet: a hosted virtual tour with dollhouse view, floor plans and measurements, familiar to every property marketer in Singapore. Its limitations are structural: capture is station-by-station rather than walk-through, accuracy is presentation-grade (± 20 mm @ 10 m) rather than survey-grade, and the processed tour lives on a Matterport subscription: the renter needs their own account, and the slick outputs are tied to that ecosystem (e57/mesh export exists, but it is the side door, not the front). Rent it when the audience is buyers, tenants and stakeholders rather than modellers.

Leica BLK360 G2: the accuracy benchmark

The BLK360 G2 is the fleet's tripod terrestrial laser scanner: 680,000 pts/s, dome scans in roughly 20 seconds per station, 4 mm @ 10 m accuracy, HDR imagery, in a package light enough (~0.85 kg) to carry all day. When a spec says millimetres (structural verification, tight-tolerance fit-out, heritage recording, dispute evidence), this is the honest answer, and no handheld in the fleet substitutes. The trade-offs are the classic TLS ones: station-based capture is slower per square metre than SLAM, coverage depends on station planning (shadows behind every obstruction), and absolute accuracy is registration-dependent: targets or control points, planned in advance. Pipeline: register the stations, then export e57 into ReCap/Revit or any survey workflow. Slower, stricter, and worth it precisely when the tolerance demands it.

03 APPLICATIONS

Use cases by industry

How these device classes are actually used in the field, and which of the fleet fits each brief. Workflows described are the commonly reported patterns for each industry, not promises about any specific project.

Construction progress tracking & QA

Contractors typically scan at milestone dates (before slab pours, before ceilings close, at each trade handover), and compare the cloud against the design model to catch deviations while they are still cheap to fix. Laser scanning is also commonly used for concrete QA: floor flatness and levelness deviation reports (ASTM E1155-style analysis) can be generated from a single scan, reportedly while corrective action is still possible. **Rent:** Lixel K2 for weekly walk-through progress records of whole floors; BLK360 G2 where the verification is contractual. Deliverable: dated point clouds overlaid on the coordination model, plus deviation heatmaps.

Scan-to-BIM / as-built documentation

The workhorse use case: capture existing conditions as a point cloud, deliver a Revit-ready .rcp, and let a modelling team trace an

as-built model against an agreed LOD and tolerance. Handheld SLAM is now widely used at the ± 25 mm modelling-tolerance class because it covers occupied, multi-storey buildings in days rather than weeks; tripod TLS remains the standard where the spec is tighter. **Rent:** Lixel K2 (most briefs) or BLK360 G2 (millimetre briefs), commonly paired. Deliverable: .rcp + .e57 cloud, then a modelled Revit file downstream.

Renovation & fit-out

Design teams scan before design starts to replace assumed drawings (which for older Singapore stock are routinely wrong or missing) with measured reality. The commonly cited payoff is fewer errors and fewer site re-visits: door positions, ceiling heights, riser locations and structural quirks are all in the cloud, measurable from the desk. Above-ceiling capture with selected tiles lifted is the trick

most fit-out teams learn on their second project. **Rent:** Lixel K2, or K1 for single compact units. Deliverable: colourised cloud + decimated review copy.

Facilities management & digital twins

Building owners scan portfolios to create a measurable, navigable record: accurate floor areas for lease and space planning, remote walkthroughs that reduce site visits, and a base layer that maintenance and vendor coordination hang off. Reported benefits centre on space-utilisation planning and fewer physical inspections. **Rent:** Matterport Pro3 where the twin is primarily visual and navigational; Lixel K2 where the twin must also be measured against. Deliverable: hosted tour and/or cloud tied to floor and room naming.

03 APPLICATIONS · CONTINUED

Heritage, marketing, production and XR

Heritage documentation & HBIM

Conservation practice worldwide combines TLS with photogrammetry to record heritage fabric before and during works: the scan is both the design base and the permanent record if anything is lost. Published HBIM case studies (churches, theatres, city walls, shophouse-scale buildings) typically pair millimetre-grade tripod capture of significant fabric with faster coverage of the surrounding volume. **Rent:** BLK360 G2 for the fabric that matters, K2 for volumetric coverage, PortalCam where a photoreal public-facing record is wanted alongside. Deliverable: archival e57 with HDR imagery.

Real estate marketing

The most mature commercial use of tour cameras: hosted 3D tours with dollhouse views and floor plans, embedded in listings. Matterport's own commercial studies report listings with 3D tours attracting materially more engagement and, in some markets, faster closings at better prices. Figures vary by market

and should be treated as indicative. **Rent:** Matterport Pro3 (bring a subscription); PortalCam where the marketing brief wants maximum photorealism or self-hosted delivery. Deliverable: hosted tour links, floor plans, stills.

Film, VFX & virtual production

Productions routinely LiDAR-scan sets and locations so VFX teams can match digital elements to real geometry. A commonly reported pattern is a thorough base scan of the set, then quick between-takes scans to record anything that moved. 3DGS has entered this pipeline fast: splat scenes of real locations are used for previs, virtual scouting and photoreal backdrops in game-engine-driven virtual production stages. **Rent:** BLK360 G2 for set survey, PortalCam for photoreal 3DGS location capture. Deliverable: registered e57 for the VFX pipeline; 3DGS scenes for Unreal/Unity.

XR & game environments

Real venues captured as navigable photoreal scenes (offices, galleries, retail, streets) are increasingly delivered as 3DGS rather than

meshes, because splats preserve reflections and lighting at a fraction of the authoring effort. Mesh exports still serve engines and collision geometry. **Rent:** PortalCam as the primary tool; K2 where the same environment also needs measurable geometry underneath the visuals. Deliverable: 3DGS scene + optional mesh/cloud.

Robotics & simulation training data

Research and industry teams reconstruct real environments to train and test robots in simulation. Recent published work uses Gaussian-splat reconstructions to generate photorealistic synthetic training data and sensor simulation, with reported small sim-to-real gaps. A geometric cloud of the same site grounds the physics; the splat layer supplies the visuals. **Rent:** Lixel K2 + PortalCam from one site visit. Deliverable: cloud/mesh for collision and navigation, 3DGS for photoreal rendering.

03 APPLICATIONS · CONTINUED

Site, industrial and evidential capture

Stockpile & earthworks volumetrics

Quarries, contractors and bulk-material yards measure stockpile volumes by scanning the pile surface and computing against a base surface: walk-around SLAM capture is commonly used at yard scale, and reported volumetric accuracy for LiDAR-based stockpile work is typically in the low single-digit percent range, comfortably inside inventory-reconciliation needs. Faster and far safer than climbing piles with a GNSS pole. **Rent:** Lixel K2 for yards, L2 Pro for large sites with long sightlines. Deliverable: georeferenced .las + volume report per pile.

Marine, offshore & plant retrofit

Brownfield engineering's standard de-risking move: scan the engine room, plant floor or process area as-installed, and design the retrofit against the cloud rather than against drawings that no longer match reality. Commonly reported benefits are pre-fabrication that fits first time, desktop clash-checking before load-out, and fewer offshore or dry-dock revisits. **Rent:** BLK360 G2 for congested

pipework at engineering tolerance; K2 for rapid coverage of larger volumes. Deliverable: registered e57 into plant-design or CAD tools.

Tunnel & infrastructure inspection

SLAM scanners are widely used underground precisely because GNSS is absent and tripod workflows are slow in linear environments. Mining and tunnelling teams report using handheld and vehicle-mounted SLAM for convergence monitoring, clearance checks and condition records of shafts and drives. Feature-poor tunnels demand disciplined technique (control, closures). **Rent:** Lixel L2 Pro for range and point rate in large bores; K2 for shorter drives, basements and service tunnels. Deliverable: cloud with cross-sections at chainage intervals.

Forestry & vegetation surveys

Under-canopy SLAM scanning is an established research-to-practice workflow for forest inventory: walk the plot, extract stem positions and diameters (DBH) from the cloud, with

studies reporting DBH accuracy in the 1–2 cm class and plot capture times measured in minutes rather than field-crew days. In Singapore the same approach serves urban tree audits and landscape baseline surveys. **Rent:** Lixel K2 (canopy denies GNSS; SLAM does not care). Deliverable: .las cloud + per-tree extraction downstream.

Forensics, public safety & insurance

Agencies worldwide use tripod scanners to freeze a scene (crime, crash or fire) in minutes without disturbing evidence, producing a measurable record that is increasingly presented in court. The insurance parallel is pre-loss and post-loss documentation: a dated, navigable capture of a property's condition that turns claims arguments into measurements. **Rent:** BLK360 G2 for the defensible, station-based record (~20 s per dome scan); Matterport Pro3 for rapid, navigable condition documentation at portfolio scale. Deliverable: registered e57 with imagery; hosted tour for condition records.

04 CHOOSING

Which scanner for which job

YOUR JOB	RENT THIS	WHY
As-built capture of an occupied building	Lixel K2	Walk-through capture around people; cm-class accuracy; Revit-ready outputs
Renovation / interior design existing conditions	Lixel K2 or K1	Fast room-and-floor capture; K1 for compact single-floor jobs
Scan-to-BIM reference	Lixel K2	≤3 cm RMSE with RTK; exports to .rcp/.e57 for Revit
Large outdoor site, corridor, infrastructure	Lixel L2 Pro	300 m class range, 640k pts/s
Survey-grade verification, tight-tolerance AEC	Leica BLK360 G2	4 mm @10 m; the accuracy benchmark of the fleet
Real estate marketing / virtual tour	Matterport Pro3	Turnkey cloud tours (requires Matterport subscription)
Photoreal venue scene, media, XR	PortalCam	Purpose-built 3DGS; browser-viewable photoreal scenes
Robotics / simulation training data	Lixel K2 + PortalCam	Geometry + photoreal 3DGS from the same site

05 CHOOSING

Decision tree

Work top to bottom; the first branch that matches is your answer.

Does any tolerance in the spec say millimetres (under 1 cm)?

- YES** **Leica BLK360 G2.** No handheld honestly meets it. Budget extra capture time for station planning.
- NO** Continue.

Is the deliverable "looks real" rather than "measures right"?

- YES** Who is the audience? Property buyers / tenants, and a hosted tour with floor plans is the goal → **Matterport Pro3** (bring a subscription). Media, XR, events, simulation: maximum photorealism, self-hosted or engine-bound → **PortalCam** (3DGS via LCC CyberColor). Both audiences from one project → PortalCam + K2 is the common pairing.
- NO** The deliverable is a measurable cloud/model. Continue.

Is the site primarily large-scale outdoor (hectares, corridors, facades, 100 m+ sightlines)?

- YES** **Lixel L2 Pro**, with the RTK module if you need absolute coordinates.
- NO** Continue.

Do you need absolute coordinates (SVY21 tie-in, survey integration)?

- YES** With outdoor sky view → **Lixel K2** (built-in RTK). Indoors / no sky → **Lixel K2** + surveyor-provided control points.
- NO** Relative accuracy is enough. Continue.

Is the job a compact interior (single floor, apartment, one retail unit)?

- YES** **Lixel K1** covers it; take the K2 anyway if it is available for your dates. The S\$100/week difference rarely decides anything.
- NO** Multi-floor, mixed indoor–outdoor, general as-built → **Lixel K2**. This is the branch most projects end on.

Still unsure?

- Send site type, tolerance and dates to sales@volumet.net: honest read on fit, rental not a sales pitch.

06 VALUE

Cost per deliverable: what a week actually buys

Weekly rate divided by what you walk away with is the fairer comparison than rate alone.

Lixel K2, S\$2,300/week. A competent operator covers a mid-size building (several floors, thousands of m²) in a week and exports the full stack: .las/.laz master, .e57, Revit-ready .rcp, mesh, plus a 3DGS scene of key spaces. One rental, every mainstream deliverable, data owned outright. This is why it is the fleet's value benchmark.

Lixel K1, S\$2,200/week. The same deliverable types (cloud, mesh) across a week of compact interiors: realistically several complete units or floors at centimetre class.

Lixel L2 Pro, S\$3,500/week. Hectare-scale georeferenced site clouds. Measured against engaging a survey team for the same coverage, a week that captures a full campus or corridor typically justifies the fleet-highest rate on the first project.

PortalCam, S\$1,200/week. Multiple photoreal 3DGS venue scenes: a week comfortably covers several venues or one large one done properly, at a price point where a single marketing use case usually pays for it.

Matterport Pro3, S\$2,000/week. A week of station-based capture yields tours for a portfolio of units or one large property (dollhouse, floor plans, hosted links) with ongoing hosting on your Matterport subscription, not included.

Leica BLK360 G2, S\$2,800/week. Fewer square metres than SLAM, but each of them defensible to 4 mm @ 10 m with HDR imagery: the deliverable here is certainty, for the parts of a project where certainty is the product.

07 LOGISTICS

Rental logistics

What ships in the case: scanner, batteries, charger, phone mount (where applicable), storage, and the transport case itself, contents verified both ways against a handover checklist at collection and return. Photograph the open case at handover; it settles deposit questions before they start.

Batteries: handhelds run ~90 minutes per battery with hot-swap on the K2: plan one scene per battery and cycle charging nightly. The BLK360 G2 uses swappable batteries across its ~20 s/dome stations.

Minimums and terms: rentals run by the week with a 2-day minimum; all rates GST-exclusive; security deposit required, returned after inspection at handback.

Experience and onboarding: dry rental is subject to experience approval. First time on the platform? Onboarding is S\$250 at pickup or S\$400 with delivery and on-site onboarding: a device walkthrough, a supervised test capture and the processing workflow.

Collection and return: 59 Ubi Avenue 1, #03-02, Bizlink Centre, Singapore 408938. Collection 9:00–11:00am, return by 6:00pm. Island-wide delivery available.

Data: you keep every dataset captured during the rental; device storage is wiped after return, so copy off and verify before handback.

Booking: availability confirmed within 1 business day; quotation PDF within minutes.



Handheld SLAM fleet: PortalCam, K1, K2 and L2 Pro side by side

FAQ

The five comparison questions we hear most

1. K2 or BLK360 G2 for Scan-to-BIM?

Check the modelling tolerance in your spec. At ± 25 mm modelling tolerance (most renovation and as-built work), the K2's centimetre-class capture is sufficient and dramatically faster: walk the floors instead of planning stations. If the spec demands millimetre-grade capture or ± 10 mm modelling on critical elements, take the BLK360 G2, or pair them: K2 for coverage, BLK for the tight-tolerance zones.

2. Is handheld SLAM "accurate enough" for professional work?

For centimetre-class briefs, yes: ≤ 1 cm relative, ≤ 3 cm RMSE absolute with RTK is inside the tolerance of most as-built, renovation and coordination work. What it is not is a substitute for a tripod scanner on millimetre specifications, and a good rental partner will say so rather than let the spec fail at QA.

3. Matterport Pro3 or PortalCam for showing off a space?

Matterport when you want the turnkey package: hosted tour, dollhouse, floor plans, links your sales team can send today (subscription required). PortalCam when you want maximum photorealism, self-hosted or engine-embedded 3DGS output, and freedom from a hosting ecosystem. Marketing suites tend to Matterport; media, XR and simulation tend to PortalCam.

4. Why is the L2 Pro the most expensive when the BLK360 G2 is "the accurate one"?

Different axes. The L2 Pro buys range and point rate (hectares per day, 300 m-class sightlines), which is a different scarce capability from the BLK's millimetre accuracy over 45 m. Price

follows what each replaces: the L2 Pro substitutes for days of alternative capture on large sites.

5. Can one rental produce both a measurable cloud and a photoreal scene?

Yes. The K2 exports point cloud, mesh *and* 3DGS (via LCC CyberColor) from the same walk. If photorealism is the headline deliverable rather than a bonus, add the PortalCam (S\$1,200/week) alongside; the pairing from one site visit covers both the modelling team and the marketing team.

Check availability for your dates

Weekly and per-project rental · Singapore pickup or delivery · You keep every dataset.

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