3Dsurvey

GUIDE

SLAM Scanners for Indoor Mapping

A Practical Guide to Performance,
Use Cases, and Device Selection

2026 / 03

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1 Introduction

The rapid development of SLAM (Simultaneous Localization and Mapping) technology has significantly influenced the geospatial industry, particularly for professionals with a photogrammetry background. As adoption increases, it becomes essential to evaluate how these systems perform in practical scenarios. We evaluated **seven different devices** to understand what they truly deliver in real-world conditions.

Following the original technical evaluation of the 7 devices we tested, one conclusion stood out more than anything else: **indoor mapping** is where SLAM technology really proves its value. That's why we are revisiting the topic with a specific focus on indoor applications and practical implementation.

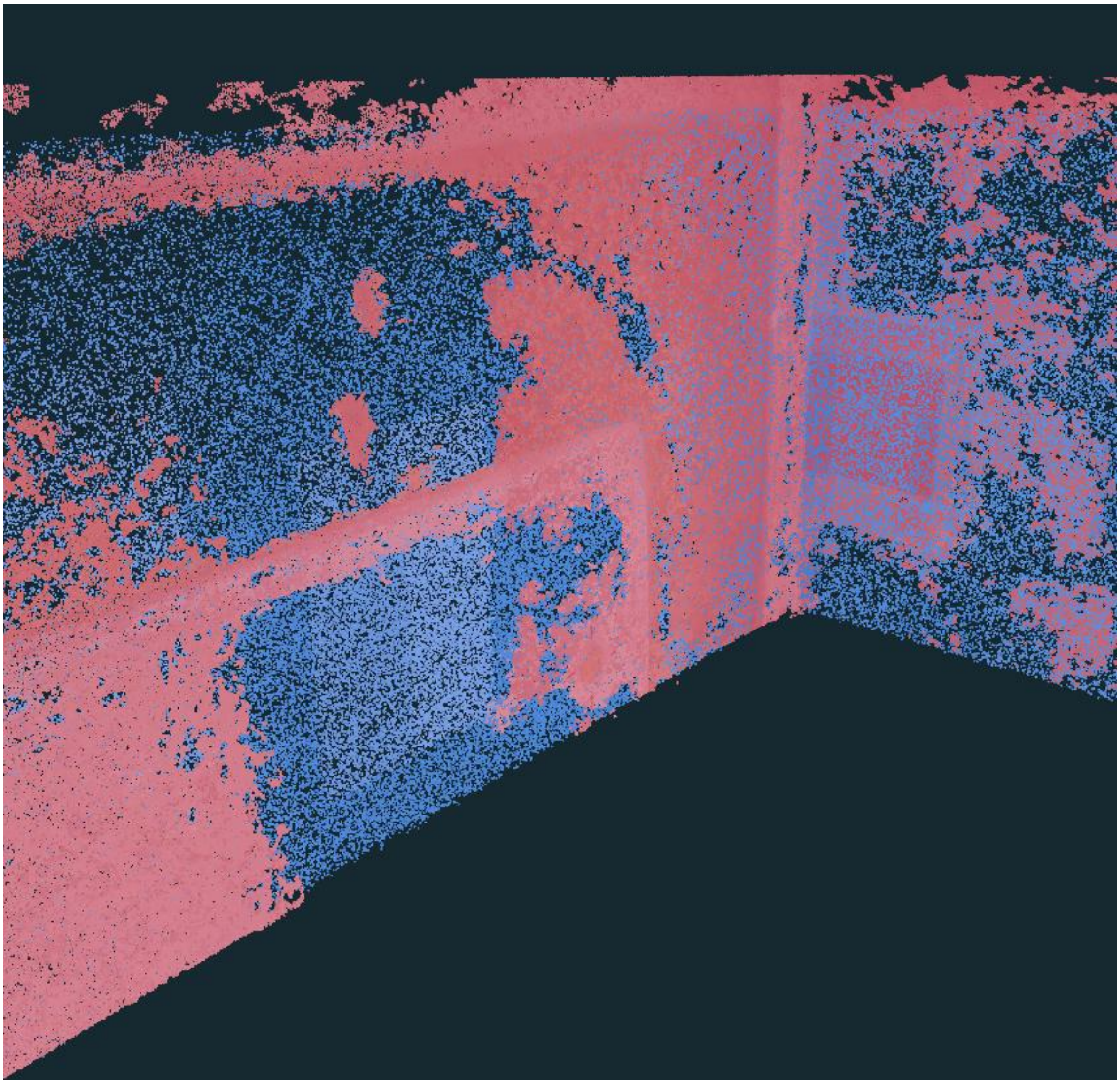
Indoor environments present fundamental **challenges** to traditional photogrammetric workflows:

- No GNSS signal
- Limited or inconsistent lighting
- Repetitive geometry and featureless surfaces

While you could handle the lack of GNSS by working in a local coordinate system with a handheld camera, the other two constraints affect data quality and operational efficiency. Maintaining sufficient **image overlap** in confined spaces requires careful planning and constant attention. Low-light conditions increase the risk of **motion blur**, while repetitive or blank surfaces reduce the number of distinguishable features necessary for reliable image alignment.

The result is often a time-consuming acquisition process, extended processing times, and point clouds that lack uniform surface coverage.

Laser scanning and photogrammetry can be **complementary technologies**, each offering distinct advantages. However, for indoor environments in particular, SLAM-based systems introduce a fundamentally different and highly effective approach.



Difference between two methods: photogrammetry produces point cloud detail around visible features (red), while SLAM populates the walls homogeneously with points (blue).

With SLAM scanners, you don't have to worry about any of the aforementioned indoor constraints. These systems are designed specifically for fast, accurate data capture in GNSS-denied environments with most models offering **RTK positioning** as an optional feature. Additionally, SLAM scanners **eliminate motion blur** even when light is weak and deliver reliable results without the slow, cumbersome workflows of handheld cameras.

KEY INSIGHT

By simplifying field operations and improving consistency of results, SLAM technology provides a **practical and reliable solution** for indoor mapping projects.

2 Typical Indoor SLAM Use Cases

- Floorplan generation
- Building Information Modeling (BIM)
- Facility Management and Documentation
- Public Safety and Forensics
- Mining and Underground Environments
- Infrastructure and Utility Mapping
- Architectural and Engineering Applications

2.1 What Actually Matters for Indoor Mapping?

SLAM scanners are advertised as versatile tools, suitable for a wide range of tasks. Now the question is: what makes a good indoor SLAM scanner? When mapping interiors, extreme range is rarely critical. What truly matters is:

- Stability in long corridors and repetitive geometry
- Low drift in GNSS-denied environments (with or without RTK)
- Reliable loop-closure performance
- Clean geometry - Minimal noise on walls, edges, and ceilings
- Strong performance in low-light or dark areas
- Panorama usability for facility documentation
- Lightweight and ergonomic design for large projects

3 Specs Comparison of Tested SLAM Scanners

Below is the table of the devices we compared. The values are taken from the device's **official specifications**. We selected SLAM scanners across a variety of market tiers to address diverse user needs, demands, and budgets.

Device	Scan Rate	Accuracy	Imaging	Range	Weight / Battery
Stonex X200GO	640k / 1,28M pts/s	~5 mm	Dual 12 MP cameras, 360° panoramas	300 m	~1.4 kg, ~1.2 h battery
Stonex X120GO	320k pts/s	~5 mm	Dual 12 MP cameras, 360° panoramas	120 m	~1.6 kg, ~1.2 h battery
CHCNAV RS10	320k pts/s	< 5 cm abs., < 1 cm rel.	3 × 5 MP cameras	120 m	~1.9 kg, ~1 h battery
Leica BLK2GO	420k pts/s	6–15 mm rel., ~20 mm abs. indoor	1 × 12 MP + 3 panoramic cams	≤ 25 m	775 g, ~45–50 min
FARO Orbis	640k pts/s	5 mm (SLAM), 2 mm (Flash)	72 MP (Premium)	120 m	~ 2.1 kg / 3.6 kg w/ datalogger
FJD Trion P1	~200k pts/s	~2 cm rel.	5760×2880 video; real-time SLAM	≤ 70 m	~1.05 kg, ~2 h battery
3DMakerPro Eagle	~200k pts/s	2 cm @ 10m	HDR + 8K panoramic cameras	80 - 140 m	~1.5 kg, ~1 h battery
XGRIDS LixelKity K1	~200k pts/s	~2 cm rel.	2 × 48 MP (panoramic), 360° imaging	40 -70 m	~1.0 kg, ~1.5 h battery

3.1.1 Stonex X120GO (v2)

The X120GO v2 is like the little brother of the Stonex X200GO. In terms of design, handling, and operational workflow, the two systems are **nearly identical**. The primary differences lie in **performance specifications** and **data acquisition capacity**.

Most notably, the X120GO produces half the number of points its bigger brother does within the same time frame. This can be quite a shortcoming on larger sites or when operating under time constraints. With the X200GO, point cloud density is rarely a concern, whereas with the X120GO you occasionally need to **slow down** to allow the sensor to capture sufficient point density.

KEY INSIGHT

Another key distinction is the **range**, reduced from 300 m to **120 m**. Needless to say, this has little to no effect in the indoor scenarios.

Stonex X120GO (v2)

- **Scan rate:** 320k pts/s
- **Accuracy:** ~5 mm
- **Imaging:** Dual 12 MP cameras, 360° panoramas
- **Range:** 120 m
- **Weight:** ~1.6 kg
- **Battery:** ~1.2 h battery

Price: ~19,000€

3.1.2 Indoor Performance

- Strong geometry in low-light environments, like dark basements
- Very low wall noise
- Clean, well-defined edges for floor plan extraction
- Stable trajectory even without RTK
- X-Whizz static mode (boosts density in large or complex areas)
- Good loop closure stability

Overall, indoor scanning results were consistent and reliable.

3.1.3 The Use Case

Like most professional SLAM scanners, the X120GO is able to measure the **intensity** of the rebound. This can be helpful when detecting weak spots like surface anomalies that are harder to spot in visible light. We tested this feature on a local **indoor flood site.**

Comparison between visual light and intensity visualization in 3Dsurvey.

Intensity visualization was used to assess moisture-affected wall areas. While the damp zone was visible to the naked eye, determining its precise extent proved challenging under normal lighting conditions. Intensity data provided clearer **boundary definition** and allowed for quantitative assessment within the processing software.

PRO TIP

This approach is particularly valuable in environments with limited visible light, where RGB imagery becomes less reliable.

However, the integrated spherical camera system delivers **moderate image quality**. Alignment between imagery and point cloud was not always perfect, and low-light performance of the cameras is limited. For applications where high-quality visual documentation is essential, this may be a consideration.

3.1.4 Limitations

Panorama image quality is usable, but not outstanding. For facility documentation requiring high-resolution visual records, image clarity could be improved.

3.1.5 Indoor Verdict

The X120GO v2 stands out as one of the most **cost-effective and dependable** professional SLAM scanners for indoor mapping. With a robust LiDAR and IMU combination, it delivers stable geometry, low noise levels, and **consistent results**. This makes the device well-suited for floor plan generation, BIM preparation, and general facility documentation, particularly when extreme range and maximum point density are not critical requirements.

3.2 Stonex X200GO

The X200GO performed in line with expectations for a **high-end** indoor SLAM system. Tracking remained stable during long runs, including sections with low lighting. Noise levels stayed low without aggressive filtering. The X200GO produced the **highest point density** of all the devices we tested in a given time. For most projects, this level of detail may exceed practical requirements, making point cloud reduction advisable by using the reduce feature.

A minor observation related to low-light performance: while geometric accuracy remained fully reliable, point cloud coloration occasionally shifted toward a slight **purple hue**. This did not affect measurement integrity but is worth noting for visually sensitive deliverables.

Stonex X200GO

- **Scan rate:** 640k / 1,28M pts/s
- **Accuracy:** ~5 mm
- **Imaging:** Dual 12 MP cameras, 360° panoramas
- **Range:** 300 m
- **Weight:** ~1.4 kg
- **Battery:** ~1.2 h battery

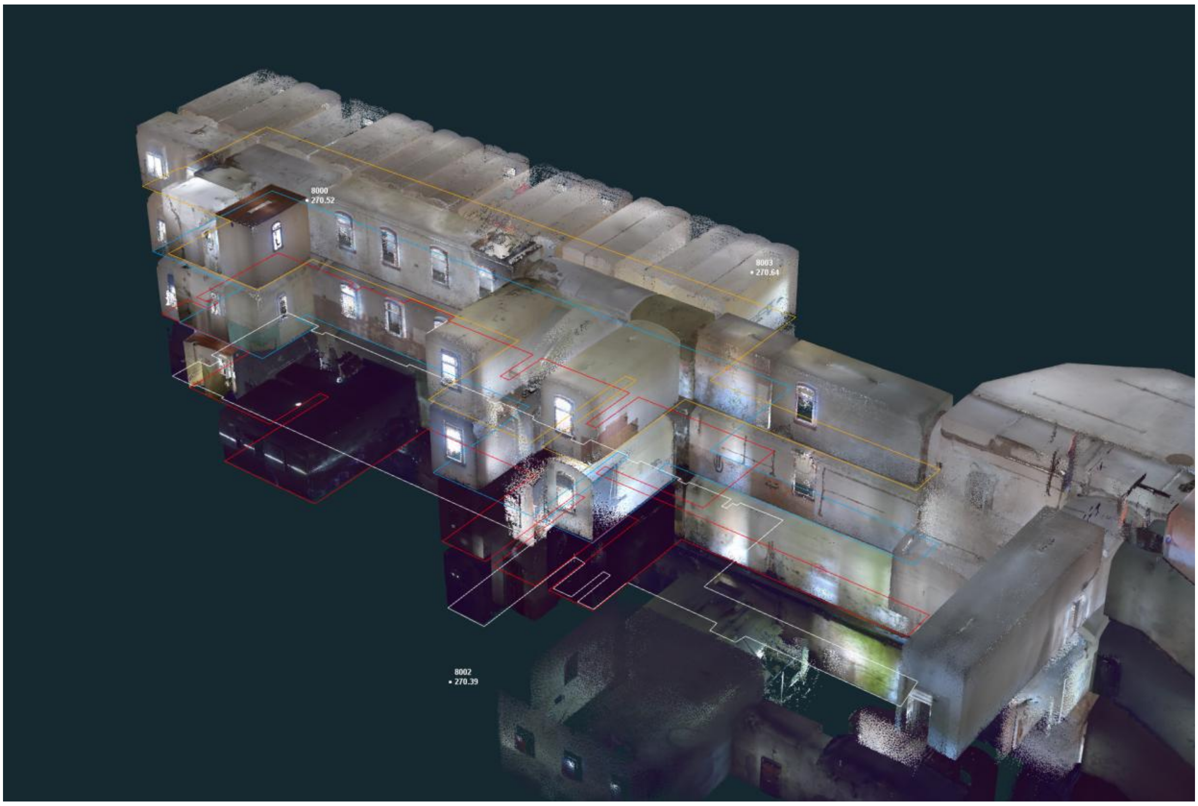
Price: ~34,000€

3.2.1 Indoor Performance

- Corridors maintained strong linear integrity
- Minimal drift accumulation
- Dense surfaces without artifacts
- High-density point clouds
- Dark areas remained fully usable
- Static X-Whizz mode improved local detail

3.2.2 The Use Case

Following consistent indoor results, the X200GO was deployed to contribute to a more demanding project: the full interior and exterior documentation of a **large four-storey building**, including a basement level with almost no ambient light. The objective was to combine SLAM-based indoor data with drone-based photogrammetry for **BIM** delivery. The complete dataset (interior and exterior) was captured efficiently and integrated into a **unified model**.
The resulting geometry met project requirements for accuracy, density, and consistency. For a detailed breakdown of the workflow and integration process, refer to our dedicated webinar.



A challenging four-storey building with the basement in near-total darkness — captured in a single continuous walkthrough.

3.2.3 Data Quality and Performance

The resulting point clouds were dense, visually coherent, and geometrically accurate. For larger datasets, point thinning was applied to streamline processing and reduce storage requirements without compromising deliverable quality.

Edges were smooth, and noise levels remained minimal, including in low-light areas. When scanning extended corridors without RTK correction, a very slight cumulative deviation was observed, introducing approximately **0.5% distortion**. For most indoor documentation and BIM applications, this level of deviation remains within **acceptable tolerance**.

3.2.4 Limitations

Camera system limitations mirror those observed with the Stonex X120GO. Panorama quality is serviceable but not exceptional, and low-light image performance could be improved for workflows heavily dependent on high-resolution visual documentation.

Working with point clouds and spherical images side-by-side in 3Dsurvey.

3.2.5 Indoor Verdict

Reliable geometry. Predictable performance. **Exceptionally clean and dense point clouds**. The X200GO is one of the **most balanced** SLAM scanners tested.

It delivers **survey-grade data** with strong stability and minimal noise, making it highly suitable for demanding indoor mapping and BIM projects. While camera performance leaves room for improvement, the overall system stands out as a capable and **well-rounded** professional solution within its class.

3.3 CHCNAV RS10

The RS10 is positioned as a **cost-effective** professional SLAM solution within CHCNAV's portfolio. CHCNAV targets users who require **reliable geometric performance** without moving into the highest price tier of mobile mapping systems.

CHCNAV promotes loop-free workflows as a productivity advantage. However, for indoor environments, we strongly recommend **closing the loop**. During testing, datasets acquired without closing loops showed a gradual accumulation of drift. When loops are properly integrated into the acquisition path, stability and geometric consistency improve.

KEY INSIGHT

For indoor projects, deliberate loop planning is strongly recommended.

CHCNAV RS10

- **Scan rate:** 320k pts/s
- **Accuracy:** < 5 cm abs., < 1 cm rel.
- **Imaging:** 3 × 5 MP cameras
- **Range:** 120 m
- **Weight:** ~1.9 kg
- **Battery:** ~1 h battery

Price: 24,000€

3.3.1 Indoor Performance

- Low-noise wall surfaces
- Good relative accuracy
- Stable SLAM performance indoors (especially with loops closure)
- Consistent surface reconstruction in repetitive environments
- Accurate point cloud colorization

The system delivered **dependable results** for floor plan extraction and construction documentation. Relative geometry remained coherent, and wall flatness was well preserved across standard indoor layouts.

Bounding box inspection of an office building in 3Dsurvey.

3.3.2 Limitations

- No panorama export in .e57 format
- Slightly heavy device (1.9 kg) for multi-level scans
- Loop-free workflows tend to be less reliable in long, repetitive indoor corridors

The RS10 **integrates three cameras** that produce **sharp imagery**, contributing to accurate colorization of the point cloud. However, the system does not support panorama export in .e57 format. This limits its suitability for immersive documentation workflows where 360° review and virtual walkthrough capabilities are required.

For projects focused primarily on geometric deliverables (such as CAD drawings, floor plans, or BIM preparation) this limitation is minor. For facility management, real estate documentation, or client presentations requiring interactive panoramic review, it may represent a constraint.

At 1.9 kg, the unit is **slightly heavier** than some competing indoor SLAM systems. While manageable for standard scans, multi-floor acquisitions may lead to increased operator fatigue over longer sessions.

3.3.3 Indoor Verdict

The RS10 delivers very **solid geometric performance** for floor plans, renovation planning, and construction documentation. Its relative accuracy and low noise levels make it a **dependable** indoor mapping tool when loops are properly managed.

However, it is less suited for immersive visual deliverables due to **no panorama export** options. As a result, it is best positioned as a geometry-focused indoor SLAM solution rather than a visualization-oriented platform.

3.4 Leica BLK2GO

The BLK2GO is clearly engineered with indoor mobility in mind. Its form factor, weight, and handling characteristics make it particularly suitable for **confined spaces** and **quick documentation** tasks. Although certain technical limitations affected its overall evaluation score, the system performs reliably within controlled indoor environments.

Leica BLK2GO

- **Scan rate:** 420k pts/s
- **Accuracy:** 6–15 mm rel., ~20 mm abs. indoor
- **Imaging:** 1 × 12 MP + 3 panoramic cams
- **Range:** ≤ 25 m
- **Weight:** 775 g
- **Battery:** ~45–50 min

Price: 45,000 - 50,000€

3.4.1 Indoor Performance

- Extremely lightweight (775 g)
- Compact and highly maneuverable
- Comfortable for extended handheld operation
- Well suited for tight or complex interior layouts

KEY INSIGHT

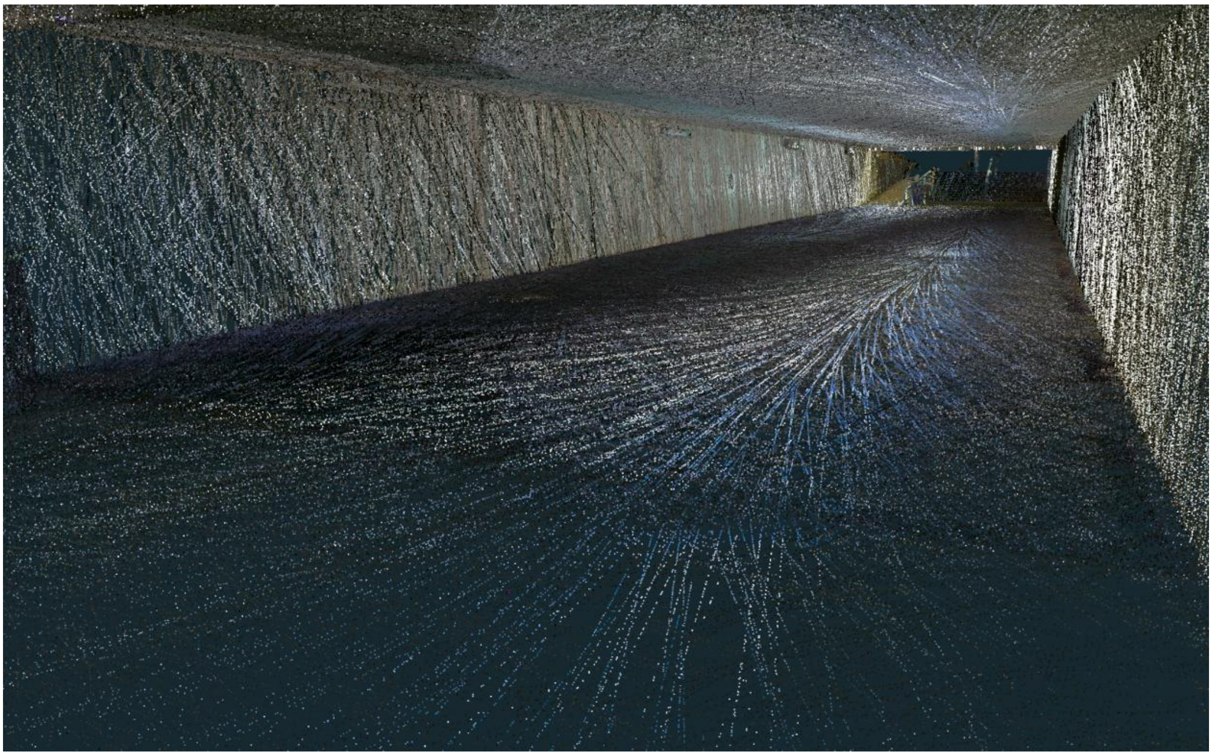
Its **ergonomic design** is one of its strongest advantages, especially for short-duration scans or projects requiring frequent repositioning.

3.4.2 The Use Case

The BLK2GO was tested in a **pedestrian underpass** exceeding 40 meters in total length, nearly double the system's nominal 25 m range. Despite this, the processed and filtered point cloud remained relatively clean and largely noise-free.

While point density was sufficient for CAD-based workflows, a higher number of points would have improved surface definition and reduced the need for additional filtering. The resulting dataset was usable for **standard documentation** purposes and floor plan preparation.

However, **panorama output** proved to be a weak point. Stitching quality was inconsistent, and tonal imbalances between camera lenses resulted in harsh transitions that reduced visual usability. As a result, panoramic imagery is of limited practical value beyond basic reference.



Testing the BLK2GO in a pedestrian underpass. Clean point cloud, ready for CAD work.

3.4.3 Limitations

- Panorama stitching quality disappointing
- Requires substantial filtering to optimize datasets
- Limited 25 m effective range

Although the BLK2GO can operate well in low-light, it is not among the strongest performers. For basic documentation, it works. For survey-grade indoor mapping, performance does not justify the price.

3.4.4 Indoor Verdict

The BLK2GO excels in ergonomics and **ease of use**. Its lightweight and compact design make it particularly appealing for rapid indoor documentation and short-range scanning tasks.

However, limitations in range, panorama quality, and overall data robustness make it **less suitable** for survey-grade indoor mapping projects. Given its premium positioning, expectations are high, and while the system performs adequately for basic documentation, it may not fully justify its price point for users seeking high-density, visualization-ready deliverables.

3.5 FARO Orbis™

The Orbis positions itself as a **high-performance** mobile SLAM scanner capable of delivering dense, structurally precise point clouds. In indoor environments, its strength clearly lies in **geometric fidelity** and detail preservation rather than image-based visual documentation.

FARO Orbis™

- **Scan rate:** 420k pts/s
- **Accuracy:** 6–15 mm rel., ~20 mm abs. indoor
- **Imaging:** 1 × 12 MP + 3 panoramic cams
- **Range:** ≤ 25 m
- **Weight:** 775 g
- **Battery:** ~45–50 min

Price: ~50,000€

3.5.1 Indoor Performance

- High-density point clouds
- Flash mode for enhanced detail in critical areas
- Excellent structural clarity and edge definition

KEY INSIGHT

The scanner consistently produced dense datasets with sharp edges and **minimal noise**. Surface continuity remained strong, even in geometrically complex interiors.

3.5.2 The Use Case

For evaluation, the Orbis was deployed in a **large, deteriorated building** with irregular geometry and demanding interior conditions. The objective was full coverage for inspection and vectorization.

The resulting point cloud demonstrated **clear structural superiority**: complete coverage, strong edge sharpness, and minimal noise. For workflows centered on geometry (such as CAD drafting, scan-to-BIM preparation, and structural inspection) the dataset provided all necessary detail, particularly when processed using sectional or X-ray visualization tools. See the workflow in [this video tutorial.]

The X-ray views. Your canvas for floor plan and feature extraction.

Flash mode proved genuinely valuable in complex or detail-rich rooms. It allowed for targeted high-density capture where precision was critical, effectively combining fast walkthrough scanning with localized static enhancement.

Performance in low-light environments was generally strong. In dimly lit rooms, the scanner preserved **realistic color** representation. However, when operating in near-dark conditions, **minor banding** and patching artifacts appeared in the point cloud.

Similar to observations made with the Stonex X200GO and Stonex X120GO, **camera performance** was less impressive than geometric output. While sufficient for general reference, image quality was not ideal for detailed visual inspection.

An additional recurring issue was **occasional misalignment** between imagery and point cloud data. The mismatch was not severe enough to compromise geometric workflows, but it reduced confidence in image-overlay-based inspection tasks.

Another minor inconvenience involved the presence of **completely black (uncolored) points**. Although these increase overall density, they reduce visual consistency and color fidelity. In practice, this is manageable. For example, 3Dsurvey users can remove such points efficiently using the [Select by Color Tool.]

3.5.3 Limitations

- Relatively heavy system (3.6 kg total)
- Some uncolored (black) points
- Camera quality underwhelming
- Occasional image-to-point-cloud alignment mismatch

A great performance in low (no) light, however the image-to-point-cloud mismatch is a disappointment.

3.5.4 Indoor Verdict

Powerful but bulky device. The Orbis excels when **geometric precision and density** are the primary priorities. It is particularly effective in workflows that combine rapid walkthrough acquisition with **higher-detail static capture** using Flash mode.

While camera performance and system weight limit its appeal for visualization-heavy deliverables, it remains a strong choice for inspection, vectorization, and scan-to-BIM applications where structural clarity outweighs immersive visual output.

3.6 FJD Trion P1

The Trion P1 delivered respectable indoor performance at **short ranges** and within confined spaces. In closed rooms and over limited distances, it performed surprisingly well when compared to larger, higher-tier systems. For **small-scale** indoor documentation tasks, initial results were encouraging. However, performance stability decreases as project scale increases.

FJD Trion P1

- **Scan rate:** ~200k pts/s
- **Accuracy:** ~2 cm rel.
- **Imaging:** 5760×2880 video; real-time SLAM
- **Range:** ≤ 70 m
- **Weight:** ~1.05 kg
- **Battery:** ~2 h battery

Price: 8-10k €

3.6.1 Limitations Indoors

- Noise increases in larger rooms
- Drift sensitivity rises over extended trajectories
- Accuracy inconsistent over long loops
- Occasional connection issues

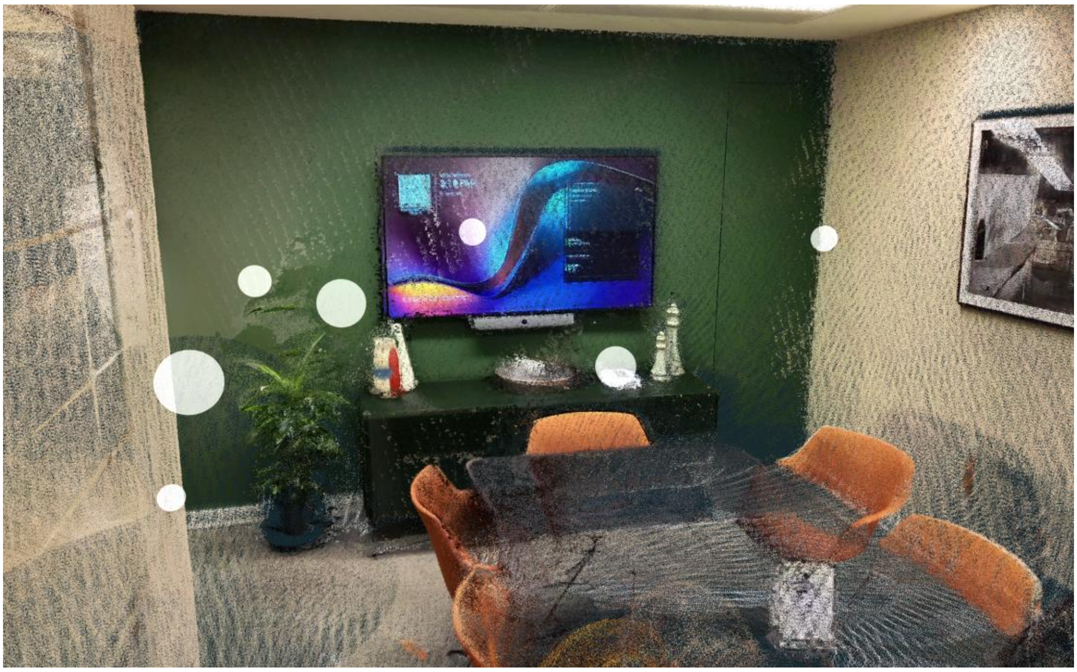
CAUTION

! While suitable for compact environments, the system shows reduced robustness when pushed beyond optimal operating conditions.

3.6.2 The Use Case

A **small office** environment was selected for testing. At first glance, the dataset appeared strong: walls were relatively smooth, edges well defined, and overall geometry coherent.

Closer inspection, however, revealed **limitations**. Over longer stretches and in more detailed review, imperfections became visible, particularly **noisy edges** and occasional **color inconsistencies**. These artifacts do not immediately compromise usability for simple floor plan extraction but may limit confidence in higher-precision deliverables.



A quick office scan highlighting both the strengths and limitations of the FJD Trion P1 point cloud.

3.6.3 Workflow and Camera Integration

The SLAM system can be used for **floor plan generation**, but low-light performance is limited. Well-lit environments are strongly recommended for indoor projects.

Camera integration proved to be one of the more fragile aspects of the workflow. **Pairing issues** occurred intermittently, calibration required careful handling, and in some cases the external Insta360 **camera failed** to record. These interruptions introduce inefficiencies, particularly in professional environments where predictable workflows are essential.

However, when the system operates smoothly, the results provide **good value relative** to its price point.

To streamline post-processing for 3Dsurvey users, a dedicated preset for **spherical image import** was introduced in version 4.0.1, simplifying integration of the P1's imagery into the workflow.

3.6.4 Indoor Verdict

Capable within defined limits. The Trion P1 performs adequately in **small, controlled indoor environments** and offers competitive value for **short-range** documentation tasks. However, it becomes less reliable as project scale and environmental complexity increase. For larger buildings or precision-sensitive workflows, higher-tier systems provide significantly greater stability and consistency.

3.7 3DMakerPro Eagle

The 3DMakerPro Eagle represents the most **budget-friendly** option among the indoor SLAM scanners we tested, with pricing starting at just a few thousand euros depending on selected configurations.
The key question is whether its performance justifies this low cost.

3DMakerPro Eagle

- **Scan rate:** ~200k pts/s
- **Accuracy:** 2 cm @ 10m
- **Imaging:** HDR + 8K panoramic cameras
- **Range:** 80 - 140 m
- **Weight:** ~1.5 kg
- **Battery:** ~1 h battery

Price: 3-6k €

3.7.1 Indoor Performance

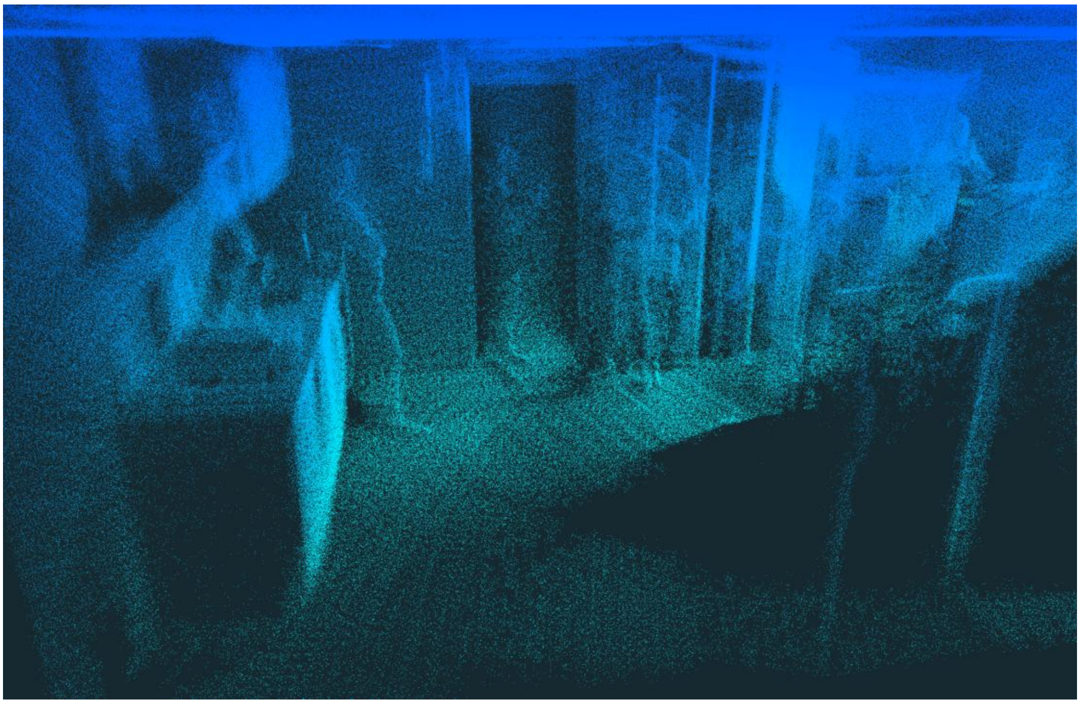
While the Eagle showed acceptable general performance in initial tests, indoor datasets quickly revealed its core limitations:

- Significant surface noise
- Strong drift
- Geometry lacked reliability

At best, the Eagle serves as a proof-of-concept that indoor scanning can be achieved at a very low price point.

KEY INSIGHT

The results are **sufficient for quick visualization** or basic spatial orientation but fall short for precision mapping tasks.

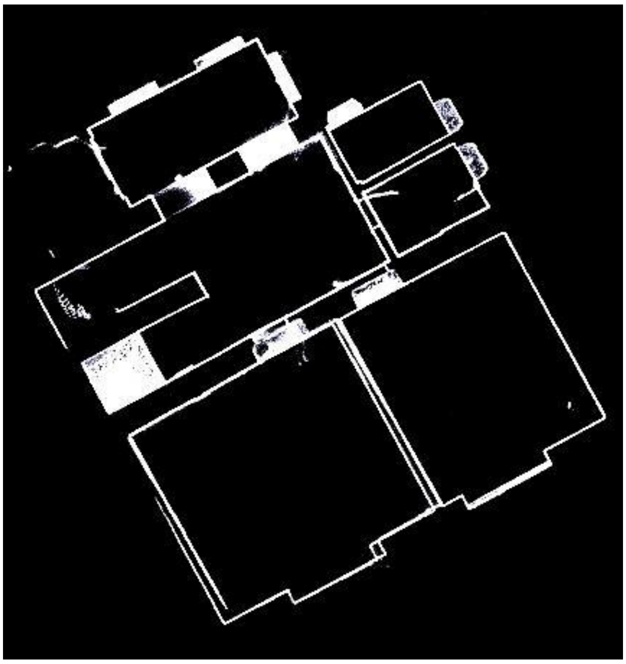


Filtered results — edges are difficult to discern, and people moving create additional noise in the point cloud.

With careful post-processing of **fuzzy point clouds**, some usability can be salvaged. For example, creating slightly lower-resolution X-ray views allowed walls to appear relatively well-defined. However, SLAM drift may introduce the effect of **duplicated wall surfaces** ("double walls"), where the same wall is reconstructed twice with a slight offset. Since such point clouds do not represent real geometry, they significantly **reduce confidence** in the dataset and make precise modeling or reliable floor plan extraction difficult.

With careful post-processing of **fuzzy point clouds**, some usability can be salvaged. For example, creating slightly lower-resolution X-ray views allowed walls to appear relatively well-defined.

However, SLAM drift may introduce the effect of **duplicated wall surfaces** ("double walls"), where the same wall is reconstructed twice with a slight offset. Since such point clouds do not represent real geometry, they significantly **reduce confidence** in the dataset and make precise modeling or reliable floor plan extraction difficult.



Scanning artifact causing a "double wall" effect, which distorts an otherwise clear floor plan.

3.7.2 Indoor Verdict

The 3DMakerPro Eagle is suitable as a **quick visualization tool** or for educational purposes. It provides a cost-effective way to experiment with indoor scanning but should not be relied upon for precision mapping, BIM integration, or professional documentation workflows.

3.8 XGRIDS LixelKity K1

The LixelKity K1 delivers stronger indoor performance than its class might suggest. Weighing just **under 1 kg** and combining dual panoramic cameras with a 40-line LiDAR sensor, it strikes a practical balance between **sensor performance** and **everyday usability**.

XGRIDS LixelKity K1

- **Scan rate:** ~200k pts/s
- **Accuracy:** ~2 cm rel.
- **Imaging:** 2 x 48 MP (panoramic), 360° imaging
- **Range:** 40 -70 m
- **Weight:** ~1.0 kg
- **Battery:** ~1.5 h battery

Price: ~12,000€

3.8.1 Indoor Performance

- Low visible noise
- Stable short-range tracking
- Good visual richness and point cloud clarity
- Lightweight and highly maneuverable

The device's light weight and ergonomic design make it **easy to handle** during typical indoor scans.

KEY INSIGHT

Built-in **IMU support** enhances real-world stability and tracking reliability, ensuring **consistent results** for short to medium indoor trajectories.

3.8.2 Practical Considerations

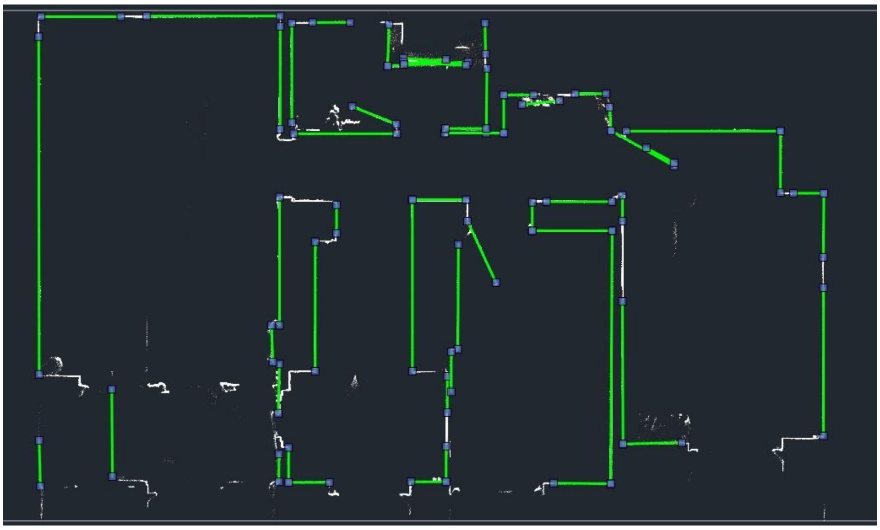
While appearing ergonomically friendly, the K1's dome-mounted LiDAR sensor presents limitations for **ground-level coverage**. When held at standard waist height, the sensor cannot capture the floor directly in front of the operator. **Tilting the device** downward mitigates this, but extended walks with the sensor angled in this way can become uncomfortable.

Low-light performance is moderate; point clouds in dim conditions appear dull with weak color fidelity. Additionally, the device's modest scanning rate requires **slower walking speeds** to achieve dense point clouds, which may affect efficiency on larger projects.

3.8.3 The Use Case

The K1 is primarily designed for indoor work, with **limited range** making it less suitable for large outdoor environments despite solid RTK support.

In testing, we used the scanner to generate a **floor plan** from its point cloud. Minor artifacts, such as false reflections and traces of moving people were present, but overall output was **clean and usable**. The absence of complete floor data did not impede results; automated line detection simplified workflow, leaving minimal manual post-processing to achieve a finalized floor plan.



A simple floorplan of an apartment with automatic line detection.

3.8.4 Indoor Verdict

The XGRIDS LixelKity K1 offers **strong value for money**, particularly for **small-to-medium interior spaces**. Its lightweight design, stable tracking, and practical point cloud quality make it a reliable solution for floor plan generation and general indoor mapping workflows, provided scanning distances and low-light conditions are considered.

4 Conclusion

Indoor mapping exposes another important aspect of SLAM scanners. Range becomes secondary, while **stability, drift resistance, and noise control** dominate.

Across the tested devices, clear patterns emerged. **Rotating multi-channel LiDAR** units paired with an **IMU** consistently delivered the most reliable indoor geometry, especially in corridor-heavy environments.

Stonex X200GO proved the most **balanced performer**, combining high point density, low noise, and predictable tracking. The **X120GO** offered a highly **cost-effective choice** for indoor work where extreme density is not critical. **FARO Orbis** produced **excellent structural clarity** but at the cost of bulk and workflow agility. **CHCNAV RS10** delivered **clean, accurate geometry**, though its lack of panoramas export in .e57 limit documentation workflows.

Mid-range and budget devices showed usable results within constrained interiors, but drift sensitivity, noise, and visual inconsistencies increased as scene complexity grew. The **LixelKity K1** stood out as a **strong lightweight option** for smaller indoor spaces, while lower-cost SLAM scanners demonstrated clear limitations for precision-critical tasks.

The **key takeaway** for indoor SLAM projects is clear: prioritize **stability, low noise, and reliable tracking** over headline specifications such as maximum range. Consider the **scan rate** relative to your project needs. For example, high-speed scanners are beneficial for large or complex spaces, while slower, more affordable devices may suffice for smaller interiors.

KEY INSIGHT

Ultimately, a scanner that consistently delivers **clean geometry** and **dependable tracking** will always outperform one with impressive specifications but inconsistent results in indoor conditions.

5 Summary Table

Device	Strengths	Limitations
Stonex X200GO	Reliable geometry, high-density clouds, stable indoors, low noise, clean walls	Camera quality, poor low-light image performance
Stonex X120GO	Reliable geometry, clean walls, stable trajectory, cost-effective	Camera quality, poor low-light image performance
CHCNAV RS10	Clean, accurate geometry, low noise, sharp imagery	No panorama export, heavy device
FARO Orbis	Excellent structural clarity, Flash mode, high-density clouds	Bulky & heavy, camera performance & point color issues, expensive
Leica BLK2GO	Extremely lightweight, easy to handle, ergonomic design	Noisy data, weak panoramas, short range, price-performance
FJD Trion P1	Good results in small interiors, affordable, panoramas	Drift sensitivity, inconsistent precision, lower scan rate, occasional connection issues
XGRIDS LixelKity K1	Lightweight, clean indoor scans, low visible noise, built-in IMU support, good value	Limited range, lower scan rate, sensor position
3DMakerPro Eagle	Very affordable	High noise, drift, lower scan rate, not survey-grade