

Absolute Scanner AS1

Key features

The combination of Absolute Scanner AS1 and Leica Absolute Tracker offers the perfect match to ensure hundreds of millions of accurate points on virtually any surface, from matte black to highly reflective, even carbon fiber all without any special preparation.



High accuracy

Measurement accuracy to within just 50 microns.

High-density data

Collect up to 1.2 million points per second (300 lines per second).

Large scale measurement

High-performance measurement at up to 30 metres from the tracker.

Automation ready

Fewer scan passes and higher speed data collection make AS1 our fastest automated laser scanning solution yet.

User-friendly design

Programmable Quick Access Buttons allow easy switching between measurement modes and execution of macros and other software functions.

Direct digital I/O allows robot movement and scanning tasks to be managed by the scanner controller.

Modular scanner concept allows for easier and faster serviceability.

Completely portable

Lightweight design of the scanner carries through to the controller, which can be mounted directly on the tracker stand.

SHINE performance

Maximum frame rate, maximum scan width and full scanning performance whatever the surface with Systematic High-Intelligence Noise Elimination. Go from glossy black to matte white to shiny chrome and all the way back in a single scan pass with no need to change the default scanning setting and no reduction in performance.

Cross-platform scanning

Compatible with both Absolute Tracker and Absolute Arm measurement, with no realignment required when switching.

Real-time monitoring

Fully compatible with HxGN SFx | Asset Management, which allows users to securely monitor and manage tracker and scanner performance and location data in real time.

Leica Absolute Tracker AT960 with AS1

Key characteristics



Portable versatility

Designed for easy portability, the AT960 is lightweight and ergonomic, while hot-swappable battery operation allows manual scanning to move quickly and easily between quality room and shop floor as needed.

Unbeatable accuracy

The tracker's AIFM and the AS1 scanner allow for non-contact measurement accuracy to within just 50 microns at a distance of up to 30 metres.

Multi-range measurement

Choose the right model for your application, whether you need no more than 5 metres between your tracker and automation setup or full-range high-accuracy reflector measurement at up to 80 metres from the tracker.

Intelligent zoom

The multiple zooming lenses of the built-in mini variozoom camera account for distance to the 6DoF sensor. This delivers a constant clear image of the LED target configuration that allows for improved system orientation accuracy over larger distances.

Accelerated data

With the AS1 laser scanner, the AT960 can collect up to 1.2 million points every second at a market-leading 300 lines per second.

Automation ready

The AT960 is fully ready for automated inspection, assembly and production within a robotic setup when paired with the AS1 and the scanner controller's direct digital input/output functionality.

24-month warranty

As standard on all Absolute Tracker systems.

Worldwide service

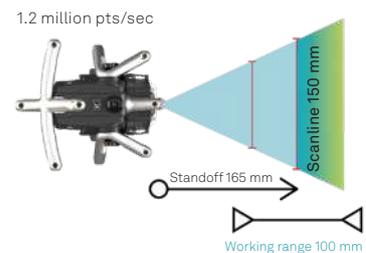
Our network of Hexagon service centres around the world can provide local support and servicing for trackers and all compatible sensors.

Length measurement (length test)

Measurement distance	AT960		AS1	
	Typical	MPE	Typical	MPE
5 m	±32 µm	±64 µm	±25 µm	±50 µm
10 m	±53 µm	±106 µm	±25 µm	±50 µm
20 m	±96 µm	±191 µm	±25 µm	±50 µm

Other accuracies

Absolute angular performance $e_t^{(1)}$	±15 µm + 6 µm/m
Length measurement AS1 $E_{\text{Uni:ODR:LT,MPE}}$	±50 µm
AIFM absolute distance performance	±0.5 µm/m
Dynamic lock-on	±10 µm
Inclination sensor	±1.0 arcsec
Orient to gravity U_z	±15 µm + 8 µm/m
Timestamp accuracy	< 5 µsec



All accuracies stated as Maximum Permissible Error (MPE). Typical values half of MPE.

¹Angular Performance Transverse e_t according to ISO 10360-10:2016 Annex E, with respect to an MPE for the Location Error ($L_{\text{Data:2x5:PBR:LT,MPE}}$) in accordance with chapter 6.3 of ISO 10360-10:2016 of 30 µm + 12 µm/m.

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Our technologies are shaping urban and production ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that utilise data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagonmi.com.

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With the Absolute Scanner AS1, there are no compromises. There's no need to reduce scanning speed to achieve best-quality data, even when using a WiFi connection; no sacrificing usability and productivity in the search for better quality. Just premium engineering that guarantees reliable, high-accuracy results.



Absolute Scanner AS1 specifications	
Accuracy (sensor)*	0.016 mm (P _{Form.Sph.1x25:005})
Point acquisition rate	up to 1.2 million points/s
Points per line	max. 4000
Line rate	max. 300 Hz
Line width (mid)	150 mm
Standoff	165 ± 50 mm
Minimum point spacing	0.027 mm
System scanning certification	yes
Laser class	2
Operating temperature	5–40°C
Weight	0.4 kg

* see the AS1 SSA column in the specifications table for the complete Scanning System Accuracy (arm + scanner)



Fully modular wrist (standard accessories)

Absolute Arm 7-Axis

Key features



Absolute Encoders

Exclusive to Absolute Arm, no referencing needed: power on and measure.

Advanced construction

High-end carbon-fibre ensures thermal stability and uneven tube lengths typical in industrial robot design make the arm lighter to use.

Sensor recognition

Change touch probes or mount sensors on the fly without realignment.

Handling grips

Ergonomic infinite-rotation grips minimise operator fatigue, ensure thermal stability and maximise accuracy.

Zero-G counterbalance

Effectively balances the arm while minimising torque in the arm's base, making movement effortless.

Built-in Bluetooth®

Connect to productivity-boosting accessories such as headphones or temperature sensors.

Control packs (WiFi and battery)

Boost functionality with full scanning performance over WiFi or single-cable connection (USB or Ethernet) and battery power (hot-swappable dual battery pack).

RDS SMART

Proprietary software featuring Self-Monitoring Analysis and Reporting Technology that manages the arm in the field by monitoring diagnostics including shocks and temperature changes.

RDS Quick Measure

Built-in utility program allows basic measurements without additional software.

24-month warranty

As standard on all Absolute Arm systems.

Worldwide service

Our network of Hexagon service centres around the world can provide local support and servicing for arms and all compatible sensors.

Absolute Arm 7-Axis accuracy and size specification

	Model	E _{UNI} ⁽¹⁾	P _{SIZE} ⁽²⁾	L _{DIA} ⁽³⁾	P _{FORM} ⁽⁴⁾	AS1 SSA ⁽⁵⁾	Weight ⁽⁶⁾	Max. reach
83 series	8320-7	0.043 mm	0.016 mm	0.054 mm	0.033 mm	0.059 mm	8.8 kg	2.48 m
	8325-7	0.048 mm	0.023 mm	0.060 mm	0.043 mm	0.065 mm	9.1 kg	2.98 m
	8330-7	0.078 mm	0.034 mm	0.090 mm	0.058 mm	0.082 mm	9.4 kg	3.48 m
	8335-7	0.092 mm	0.042 mm	0.115 mm	0.067 mm	0.099 mm	9.7 kg	3.98 m
	8340-7	0.114 mm	0.051 mm	0.140 mm	0.084 mm	0.118 mm	10.0 kg	4.48 m
	8345-7	0.158 mm	0.078 mm	0.168 mm	0.106 mm	0.163 mm	10.3 kg	4.98 m
85 series	8520-7	0.029 mm	0.010 mm	0.038 mm	0.021 mm	0.041 mm	9.0 kg	2.48 m
	8525-7	0.031 mm	0.012 mm	0.048 mm	0.025 mm	0.047 mm	9.3 kg	2.98 m
	8530-7	0.057 mm	0.020 mm	0.083 mm	0.038 mm	0.064 mm	9.6 kg	3.48 m
	8535-7	0.069 mm	0.024 mm	0.099 mm	0.045 mm	0.078 mm	9.9 kg	3.98 m
	8540-7	0.084 mm	0.030 mm	0.120 mm	0.050 mm	0.089 mm	10.2 kg	4.48 m
	8545-7	0.113 mm	0.048 mm	0.140 mm	0.065 mm	0.141 mm	10.5 kg	4.98 m
87 series	8725-7	0.029 mm	0.011 mm	0.044 mm	0.023 mm	0.043 mm	9.3 kg	2.98 m
	8730-7	0.053 mm	0.018 mm	0.076 mm	0.035 mm	0.056 mm	9.6 kg	3.48 m
	8735-7	0.064 mm	0.022 mm	0.092 mm	0.041 mm	0.068 mm	9.9 kg	3.98 m
	8740-7	0.078 mm	0.028 mm	0.110 mm	0.046 mm	0.080 mm	10.2 kg	4.48 m
		8745-7	0.104 mm	0.044 mm	0.125 mm	0.060 mm	0.121 mm	10.5 kg

⁽¹⁾E_{UNI} Maximum permissible longitudinal error of measurement – according to ISO 10360-12:2016

⁽²⁾P_{SIZE} Maximum permissible probe deviation, size – according to ISO 10360-12:2016

⁽³⁾P_{FORM} Maximum permissible probe deviation, shape – according to ISO 10360-12:2016

⁽⁴⁾L_{DIA} Maximum permissible probe deviation, position – according to ISO 10360-12:2016

⁽⁵⁾SSA Scanning System Accuracy: L_{DIA} according to ISO 10360-8 annex D

⁽⁶⁾Weight Weight without scanner

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