

LEICA ABSOLUTE TRACKER ATS600

THE FIRST EVER DIRECT SCANNING LASER TRACKER



LEICA ABSOLUTE TRACKER

Swiss Technology
by Leica Geosystems

HEXAGON



ATS600

THE DIRECT SCANNING LASER TRACKER

The Leica Absolute Tracker ATS600 is the ultimate in high-speed inspection for large parts and surfaces. Representing the next level of 3D inspection, it combines traditional laser tracker reflector measurement functionality with the pioneering technology of metrology-grade contactless measurement direct from the laser tracker.

No accessories such as reflectors, targets or handheld scanners are required to mediate the measurement – this is the **world's first ever direct scanning laser tracker**.

Intelligently combining this ground-breaking technology with traditional reflector measurement delivers significant reductions in inspection process times and opens entirely new applications to the world of metrological quality control, in areas that have never before been practical. This is high-accuracy measurement, alignment and analysis on a whole new scale.

LARGE-SCALE MEASUREMENT MADE SIMPLE



The first ever direct scanning laser tracker will bridge the gap between point-by-point reflector and probe measurements and the advanced scanning functionality of a handheld 3D laser scanner. With its unique direct scanning functionality, the Leica Absolute Tracker ATS600 delivers several unmatched benefits across a range of large-scale applications.

LARGE-SCALE POWER

The range of the ATS600 is fundamentally different to any comparable metrology system, with direct scanning guaranteed at up to 60 metres distance with metrology-grade accuracy of to within 300 microns. Parts that are challenging, impractical or uneconomical to digitise with traditional scanning tools are now fair game for accurate measurement.

SIMPLE OPERATION

Measurement is an easy one-user process with the ATS600. Targets are easily identified, either on the tracker or in the software, and results are delivered and processed efficiently through established workflows. Minimal training, minimal mistakes, minimal effort.

AUTOMATIC CONTROL

The ATS600 is ideal for automated installations – it was designed with automation in mind. With minimal user intervention required, it can be set up to independently perform many repetitive measurements independently and without station relocations.

METROLOGY WORKFLOWS

A key benefit of the ATS600 is its ability to integrate direct scanning within a completely metrology-oriented workflow. All measurement data collected, whether non-contact or reflector, is directly delivered to metrology software with a data rate of up to 1000 Hertz, making it possible to bring quality inspection to entirely new parts of the manufacturing world.

COMBINED EFFECTS

With the ATS600, reflector-based and reflectorless measurement can be intelligently combined, with simple reflector alignment and direct scanning working together to quickly deliver a complete picture of a target part.

FAST MEASUREMENT

The ATS600 is uniquely fast throughout the measurement process. And data point-density is fully configurable, allowing users to tailor measurement process rate and accuracy level to their application – from a quick check at 10 seconds per square metre or a high-accuracy scan at 135 seconds per square metre.

BUILT ON A PLATFORM OF LEADING ABSOLUTE TECHNOLOGY

Delivering a pioneering form of direct scanning measurement, the Leica Absolute Tracker ATS600 is a game changer for the inspection of large parts and surfaces. This change is based on a form of technology previously unexploited by dedicated metrological systems – Wave Form Digitisation.





THE SCANNING ABSOLUTE DISTANCE METER

The Wave Form Digitiser (WFD) is an established technology used by high-definition surveying tools. It combines time-of-flight and phase-shift measurement technology, to deliver fast measurement over long distances with no need for a target at the point of measurement.

While WFD technology has been in use in geospatial measurement equipment for some time, it is only now that, for the first time, the accuracy of this technology has been refined to metrological levels. The ground-breaking Scanning Absolute Distance Meter in the Leica Absolute Tracker ATS600 can take non-contact measurements with a range noise of within 80 micron (1σ) – an order of magnitude more accurate than previous WFD-based measurement systems.

THE SELECTIVE MEASUREMENT GRID

To digitise a part or surface, the ATS600 sequentially measures a grid of points within a user-defined area. This 'selective scanning' allows for far more efficient measurement and data analysis processes than the full hemisphere measurement typical of high-definition surveying systems. The scan region of interest is simply defined either through the onboard Overview Camera or by selecting nominal or CAD data from within the application software.

Multiple scan regions with individual grid parameters within the field of view of the ATS600 can be combined in a single run to minimise user interactions. And the nature of the scan grid produced is also user-customisable, with measurement point density selectable between 0.5 and 1000 millimetres at measurement object distance. This puts the user firmly in control of achieving the appropriate balance between scan detail and measurement process speed.

DEFINING FEATURES

The unique direct scanning capabilities of the Leica Absolute Tracker ATS600 comes in addition to the advanced functionality users expect from our leading range of Absolute Tracker systems.



All-in-One Design

From integrated wireless connectivity, environmental monitoring and all-day battery power, to overview camera, and ergonomic carry handle, every need is built in.



MeteoStation

Integrated environmental unit monitors conditions including temperature, pressure and humidity to compensate for changes and ensure accurate measurements regardless of external factors.



1 kHz Data Output

Real-time architecture with dynamic performance gives a measurement rate of up to 1000 points per second.



PowerLock

Our famous ability to automatically re-establish connection to a reflector after a line-of-sight interruption with no user interaction required.



Overview Camera

High-resolution colour OVC offers remote view of the tracker's entire field of vision for fast and accurate targeting.



Portability

As with every Absolute Tracker, portability is a key, with the ATS600 weighing in at under 15 kilograms and fitting within a single easy-to-move flight case.



Battery Power

Independent hot-swappable battery power supply allows for quick and easy cable-free setup and all-day wireless operation.



Orient-to-Gravity

Enables measurement with the Z-axis aligned to gravity, ideal for levelling and alignment tasks.



Measurement Volume

Large 360° measurement volume of up to 160 metres (ø) with reflector, or up to 120 metres (ø) direct scanning.



Smart Connectivity

Built-in WiFi functionality delivers single-user operation through simple PC setup and remote control options via laptops, tablets or smartphones.



IP54

An IEC-certified sealed unit guarantees ingress protection, enabling effective measurement in even the harshest environments.



Hexagon Guarantee

Full 24-month factory warranty and guaranteed ten years of serviceability.



LARGE-SCALE APPLICATIONS

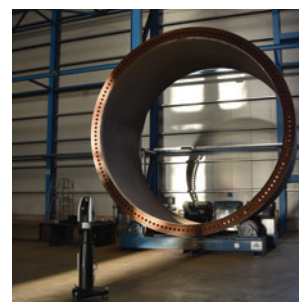
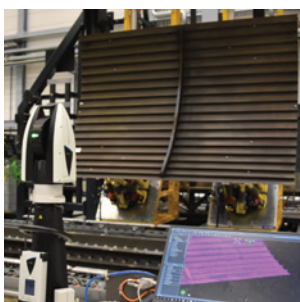
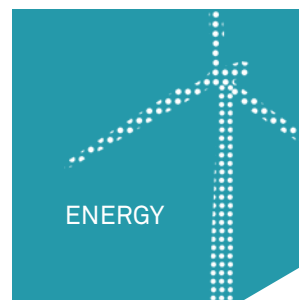
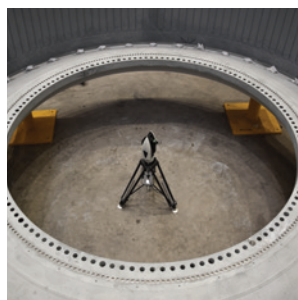
The combination of established technology and unique new features found in the Leica Absolute Tracker ATS600 allow it to offer solutions to key applications that span a range of industries.

QUALITY INSPECTION

Direct scanning for large surfaces, reflector for alignment and feature measurement, and all from up to 80 metres away – the ATS600 is perfect for large-scale quality assurance of parts and processes that were before impractical or too time-consuming.

BUILD AND ADJUST

Direct scanning makes alignment and adjustment processes simpler than ever – simple reflector alignment and direct measurement of the part with no need to install a large constellation of individual reflectors, no matter how big the part.



SPECIFICATIONS

Accuracy

• Reflector Measurement

Absolute Angular Performance¹ $\pm 15 \mu\text{m} + 6 \mu\text{m/m}$

Length Measurement ($E_{\text{Unl:0:LT,MPE}}$)² $\pm 100 \mu\text{m}$

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

• Non-Contact Measurement

Range Noise³ $< 80 \mu\text{m}$

Absolute Accuracy⁴ $< \pm 300 \mu\text{m}$

Range

Reflector Measurement 0.8 to 80 m

Non-Contact Measurement 1.5 to 60 m

Speed

Scanning Rate 1 kHz

Scanning Speed⁵ $< 10 \text{ sec/m}^2$ in Fast Mode

$< 135 \text{ sec/m}^2$ in Standard Mode

¹ Angular Performance Transverse e, according to ISO 10360-10:2016, with respect to an MPE for the Location Error ($L_{\text{Dia.2x1.P\&R.LT,MPE}}$) in accordance with chapter 6.3 of ISO 10360-10:2016 of $\pm 30 \mu\text{m} + 12 \mu\text{m/m}$.

² In accordance with ISO 10360-10:2016 Chapter 6.4, Table 4, positions 1 to 35.

³ Standard deviation (1σ) of a best-fit plane (78% albedo), distance 1.5 to 30 metres, standard measurement mode, target aligned.

⁴ Maximum Deviation (MPE) of the absolute position of a plane (78% Albedo), 1.5 to 30 metres, 0 to $\pm 45^\circ$ incidence angle.

⁵ At default point-to-point and line-to-line distance (10 metres).

Environmental

Dust/Water IP54 (IEC 60529)

Operating Temperature 0°C to 40°C

Relative Humidity Max. 95% (non-condensing)

Environmental Monitor Temperature, pressure and humidity

Interface

Cable TCP/IP (Cat5)

Wireless WLAN (IEEE 802.11n)

General Information

Overview Camera 4:3 IR enhanced image

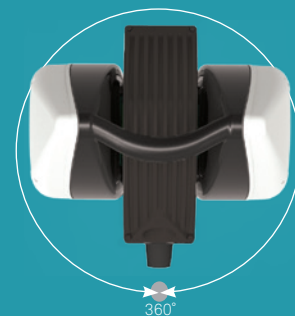
$\approx 10^\circ$ FOV

Power AC power supply

Lithium-ion battery with 8-hour typical runtime

Laser

Class 2 Laser Product in accordance with IEC 60825-1 Second Edition (2014-05)



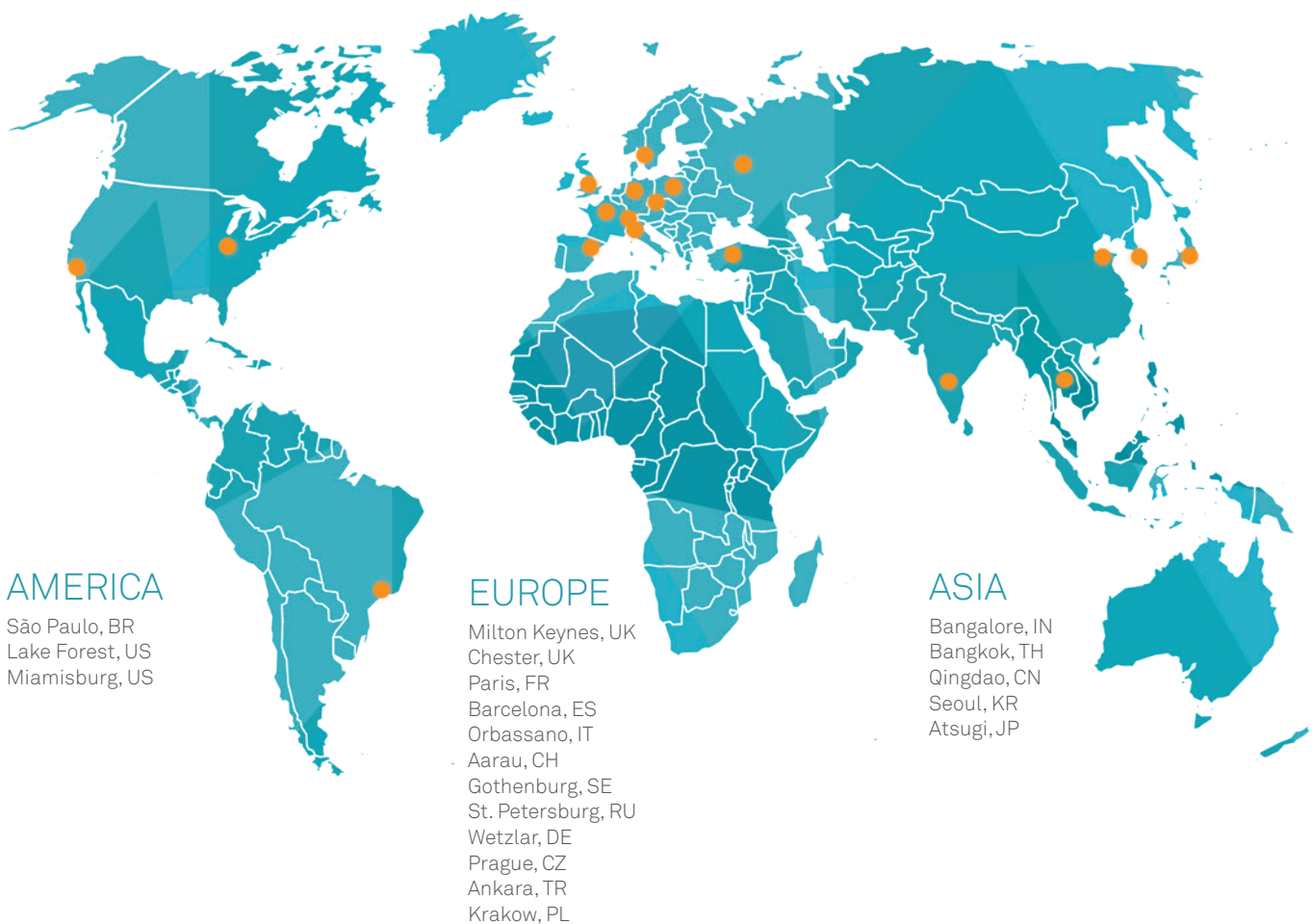
QUALITY ACROSS THE GLOBE

LEADING TOOLS WITH LEADING SUPPORT

Drawing on over 25 years of research and development, the Leica Absolute Tracker ATS600 is the latest in a long line of outperforming technological innovations from Hexagon Manufacturing Intelligence. Deriving quality from experience to drive productivity is what keeps Hexagon in front and able to deliver for industries around the world.

The international presence of Hexagon guarantees comprehensive aftersales support and services across the globe. With the largest dedicated service team of any metrology equipment manufacturer and an emphasis on locally delivered solutions, Hexagon is unmatched from service, repair, certification and calibration through operator training and software maintenance and upgrades.

And with the Leica Absolute Tracker ATS600, along with the assurance of ten years of serviceability, customers will benefit from a new 24-month warranty – our guarantee that our technology will always meet the needs of our users.





HEXAGON
MANUFACTURING INTELLIGENCE

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, our expertise in sensing, thinking and acting – the collection, analysis and active use of measurement data – gives our customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

Through a network of local service centres, production facilities and commercial operations across five continents, we are shaping smart change in manufacturing to build a world where quality drives productivity. For more information, visit HexagonMI.com.

Hexagon Manufacturing Intelligence is part of Hexagon (Nasdaq Stockholm: HEXA B; hexagon.com), a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.



COORDINATE MEASURING MACHINES



3D LASER SCANNING



SENSORS



PORTABLE MEASURING ARMS



SERVICES



LASER TRACKERS & STATIONS



MULTISENSOR & OPTICAL SYSTEMS



WHITE LIGHT SCANNERS



METROLOGY SOFTWARE SOLUTIONS



CAD / CAM



STATISTICAL PROCESS CONTROL



AUTOMATED APPLICATIONS



MICROMETERS, CALIPERS AND GAUGES



DESIGN AND COSTING SOFTWARE