

# LEICA ABSOLUTE TRACKER AT901

Top performance 6DoF laser tracker



# Leica Absolute Tracker AT901 with PowerLock. Simply the Best.

The Leica Absolute Tracker AT901 is a portable measurement system that relies on a laser beam to accurately measure and inspect in a spherical volume of up to 160 m [525 ft].

From prototyping and reverse engineering to tooling inspection and part mating, from automotive to aerospace and everything in-between, our customer list reads like a “who’s who” of the world’s most successful enterprises – yet our equipment is just at home in small and medium-size companies. With the introduction of the world’s first laser tracker in 1990, we revolutionized high-accuracy inspection as the world knew it. With the Leica Absolute Tracker AT901, we have done it again.

The best tribute to our quality is the undisputed fact that most contract inspection companies rely on Leica Geosystems for their most crucial jobs. Many of our laser trackers, regardless of their age, are still up and running, including most of the venerable SMART series laser trackers.

“Breaking the beam” is something you’ll quickly forget – because good things are easy to get used to.

## Leica Absolute Interferometer and PowerLock – changing laser trackers forever

With the combination of the Absolute Interferometer (AIFM) and PowerLock, you can forget about the laser beam forever. In the past, operators had to worry about losing or “breaking” the beam because they had to lock back onto it somehow. This process has been constantly evolving ever since our first laser tracker was introduced in 1990. First was the Absolute Distance Meter (ADM) that allowed absolute distances to be reset to the laser interferometer (IFM) automatically, then the “fast” ADM’s that sped this process up, then the Absolute Interferometer, that removed any accuracy loss due to the dynamic lock-on process, and now PowerLock with the ability to lock the laser back onto the reflector or probe automatically.

# We lead. Others follow.

We have delivered thousands of laser trackers to customers the world over, turning large-scale metrology into an integral part of industrial processes in the automotive and aerospace segments but also in nearly every other industry in which assuring a perfect fit is part of the equation.

No other brand of laser tracker has been doing this longer, you can find Leica laser trackers that are over 20 years old still in the work place today. We are the industry leader in laser tracker technology, inventor of the 6DoF laser tracker, creator of the most accurate dynamic distancing technology in the AIFM and the minds behind PowerLock, the vision technology that permanently removed the arduous task of losing and re-locking onto the laser beam. Since 1990, this much has become apparent:

**We lead. Others follow.**



### PowerLock

PowerLock vision technology completely changes the way that laser trackers have been used. No longer do operators have to worry about the laser beam, they can simply measure what is needed and let the tracker lock on to them!



### Leica Absolute Interferometer (AIFM)

The AIFM is a single distancing unit with the dynamic performance of an interferometer, and it has the ability to re-acquire a moving target with the typical uncertainty of lock-on process being less than 5 µm.



### Six Degrees of Freedom

By adding photogrammetric capabilities to the laser tracker, Leica Geosystems created the world's only technologically mature PCMM system that can probe like a fixed CMM, scan like a laser scanner and track automated applications – all in one system.



### High speed dynamic measurement

Thanks to the AIFM, PowerLock and its capability to deliver real-time measurement data, the Leica Absolute Tracker AT901 is a captivating piece of technology enabling high intensity measurement applications, e.g. automated systems.



Learn more about the Leica Absolute Interferometer at <http://hex.ag/fLA10>



See PowerLock in action at <http://hex.ag/fLzKv>

# LEICA ABSOLUTE TRACKER PRODUCT FAMILY

Leica Absolute Trackers allow you to assemble aircraft faster and inspect automotive parts more efficiently while minimizing digitization times and costs. If you want the whole picture, go for Leica Absolute Trackers.



## Leica Absolute Tracker AT401

The Leica Absolute Tracker AT401 is a portable CMM for 3D applications that allows extreme precision over ultra large distances. It is able to be powered by its own internal battery and is able to work in the most demanding environment, yet maintains the highest level of precision and the largest ever work envelope. The Leica Absolute Tracker AT401 has a unique "All in One" system design that incorporates such needed accessories as built in live video, level to gravity, environmental monitoring and even an integrated IR remote control. By utilizing the integrated Wireless LAN communication the sensor can be used completely wirelessly.



### Reflector

Following a handheld reflector is the highly accurate basic measurement principle for any Leica Absolute Tracker. Users can perform probe measurements with a reflector the easy way over large distances. PowerLock connects the tracker automatically to the reflector.



## Leica Absolute Tracker AT901

The Leica Absolute Tracker AT901 is the supreme 6DoF laser tracker. Its unequalled reactivity, the Absolute Interferometer and PowerLock build the foundation for a high-end portable measurement system. The Leica Absolute Tracker AT901 serves as basis for the walk-around CMM Leica T-Probe, the high performance laser scanner Leica T-Scan and fully automated measurement solutions. It allows its users unprecedented insights into the parts they measure by delivering meaningful results even under difficult conditions.



### Leica T-Probe

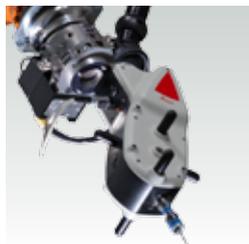
Leica T-Probe, the "Walk-Around" armless, wireless solution for probing of hidden, hard-to-reach points in one go with minimal setup times, sets new standards by increasing accuracy, with a high point-acquisition rate and user-assignable multi-function buttons. Together with the Leica Absolute Tracker AT 901, it creates a flexible top-performance probing solution.

Small, light, user-friendly and more accurate than any other hand-held probe in the world, the Leica T-Probe gives you more than 6 Degrees of Freedom: It gives you the right way to measure. Featuring styli of up to 2 m length, Leica T-Probe reaches up to 50 m [164 ft] measurement volume in any dimension. It is battery-powered for completely wireless operation.



### Leica T-Scan

The Leica T-Scan is a high-speed handheld 3D laser scanner for large-volume contactless applications paired with the Leica Absolute Tracker AT901 in a measurement volume of up to 50 m [164 ft]. The Leica T-Scan adapts the laser intensity to shiny metallic or dark surfaces. They can even be captured in one scan pass. Powdering is not required and the technology is impervious to changing environmental light – which reduces preparation time to the absolute minimum. And if the measurement object is extremely large, no photogrammetric targets are required after the tracker relocation. Save time and do not compromise on accuracy. Leica T-Scan scans large objects more accurately and 50 % faster than comparable products.

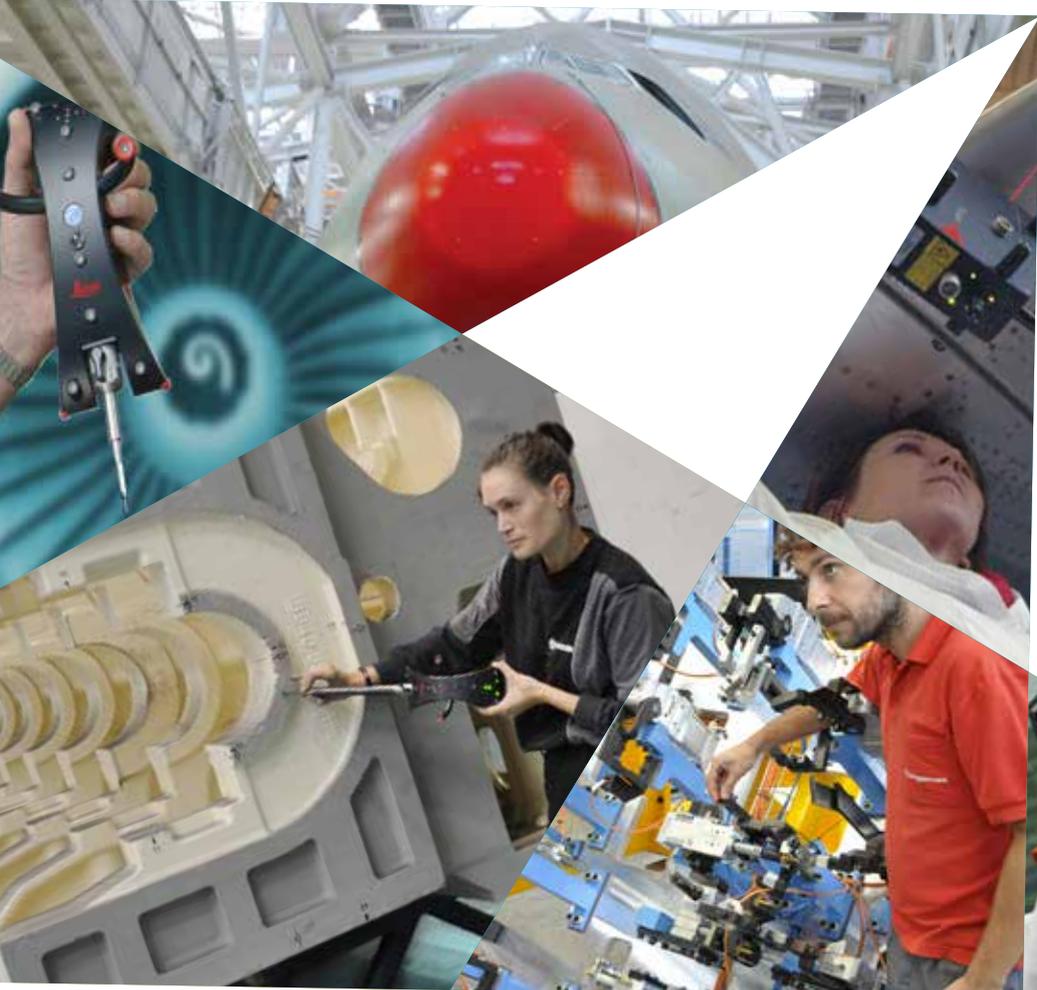


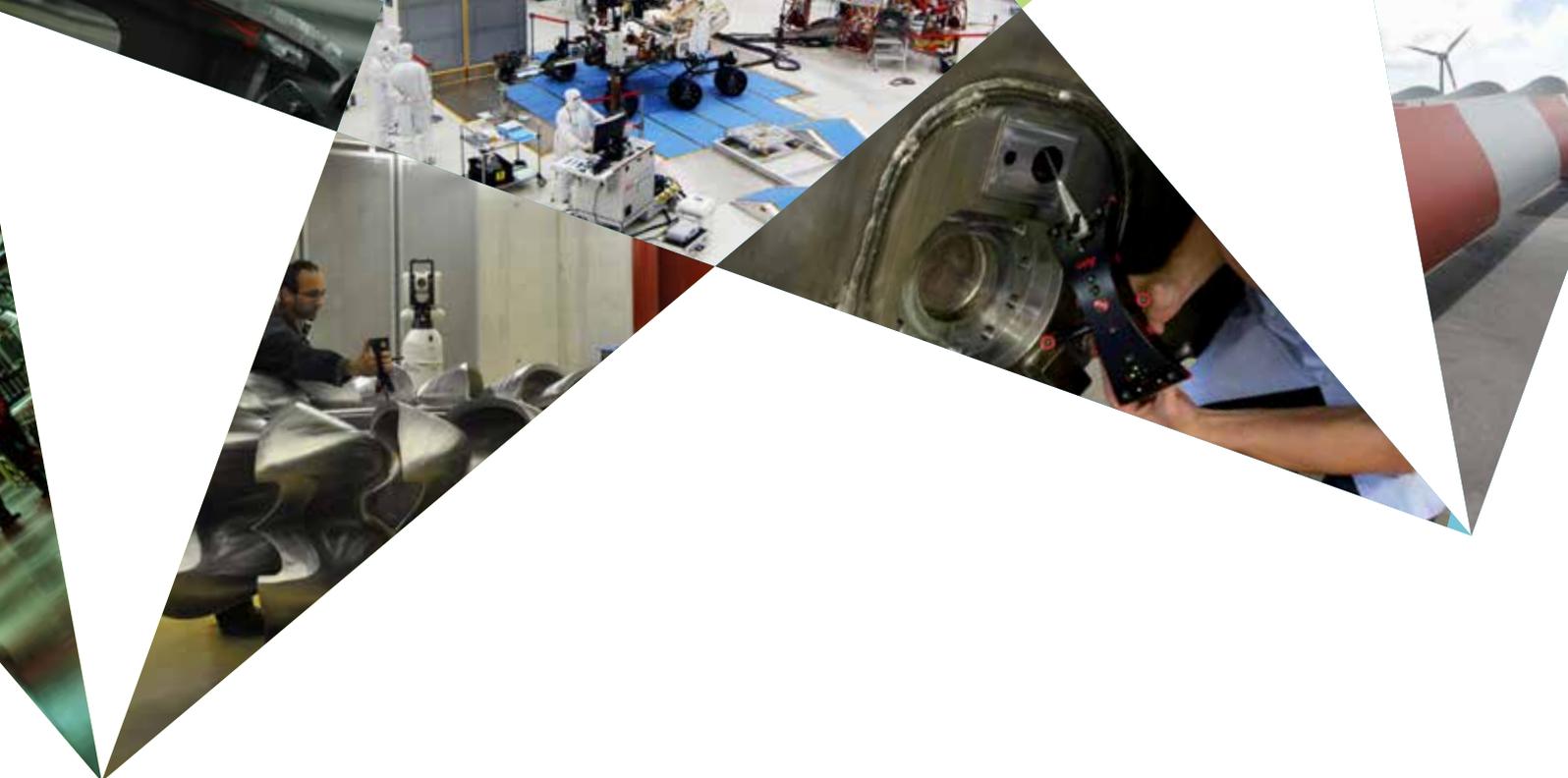
### Leica Automated Solutions

The Leica Absolute Tracker AT901 can also be used in fully automated measuring systems. This makes measurement processes more time and cost efficient than ever before. The process accuracy is no longer limited by the positioning device. The unparalleled accuracies of the 6DoF Leica Absolute Tracker AT901 can be applied to any robotic positioning system turning it from an ordinary robot into an incredibly accurate metrology device. With a Leica T-Scan mounted on a robot or a Leica T-Mac (Machine Control Sensor) equipped with a tactile probe, the Leica Absolute Tracker AT901 is the core of a completely automatic coordinate measuring installation.



See Leica Automated Solutions  
in action at <http://hex.ag/fLzUx>





# USING THE LEICA ABSOLUTE TRACKER AT901

## Aerospace

The Leica Absolute Tracker AT901 is an industry standard across countless aerospace production facilities. Its versatile functionality makes the AT901 the first choice for aerospace applications such as tool building and inspection, geometry check, part alignment, metrology assisted assembly or fully automated positioning and integration tasks.

## Automotive

Inspecting prototypes, checking car bodies in fully automated systems, measuring fixtures or collecting data for ideal racing car aerodynamics – Leica Absolute Trackers are used by a large number of leading automotive OEMS and suppliers.

## Power Generation

Turbines and generators for use in wind or water power must withstand extreme conditions. For checking strict tolerances, ultra high accuracy is essential. The Leica Absolute Tracker AT901's 6DoF technology and ease of use facilitates the inspection of large structures significantly. AT901 based automation options, e.g. for tactile or contactless blade inspection, are singular to the world of metrology.

## Railway and Transportation

Highly accurate measurement of entire train segments or trams on the shop floor – no problem for the Leica Absolute Tracker AT901. The Leica T-Probe enables even measuring points along the work piece without direct line of sight to the laser tracker.

## Research and science

When developing future production techniques, the Leica Absolute Tracker AT901 is of great benefit for exploring the true performance of robotic installations. It helps to achieve cutting-edge solutions for metrology and process analysis.

## Construction

Big challenges, heavy equipment: The success of building houses and public infrastructure lies in the reliability of the machinery used. For long distance measurements of cranes or excavators, Leica Absolute Trackers deliver trustworthy measurement results.



# HOW LASER TRACKERS WORK

Leica Absolute Trackers are portable measurement systems that rely on a laser beam to accurately measure over ultra-long distances.



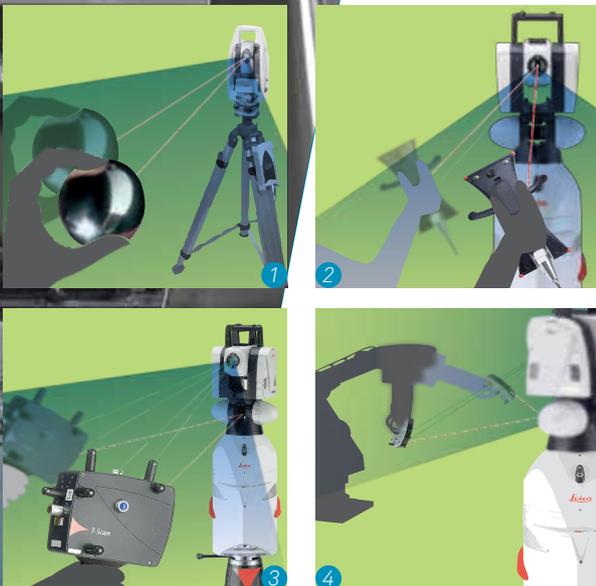


All Leica Absolute Trackers connect their laser beam automatically to the reflector, handheld device or machine control sensor. Some might call it astounding; others call operating Leica Absolute Trackers a mere child's play. We call it PowerLock.

Two basic measurement principles exist: 3D laser trackers such as the Leica Absolute Tracker AT401 follow a reflector moved by the user and determine this reflector's exact position in a 3D coordinate system. This principle is very fast and suitable for a multitude of applications.

Some high intensity applications however, e.g. automated systems with fast moving robots, are the natural habitat for 6DoF laser trackers such as the Leica Absolute Tracker AT901.

The AT901 can track a handheld device like the Leica T-Probe to measure hidden points, a Leica T-Scan high-speed 3D laser scanner or a Leica T-Mac for automation environments.



- 1) Reflector measurement
- 2) Measuring with the Leica T-Probe, the „Walk-Around“ probing solution
- 3) Handheld high-performance laser scanner Leica T-Scan
- 4) Leica Automated Solutions

# TWO CENTURIES OF QUALITY SWISS MANUFACTURING AND INNOVATION.

From its origins in a small Swiss town almost two centuries ago, Leica Geosystems has established a tradition of quality, innovation and dedication to customer satisfaction. In 1819 we started manufacturing geodetic instruments. In 1921 we gave you the world's first portable opto-mechanical theodolite, in 1925 the first-ever aerial photography camera, in 1969 the world's first infrared-based distancer, in 1990 the world's first laser tracker designed for shop floor use, in 1995 the world's first Absolute Distance Meter, in 2004 the world's first 6DoF laser tracker, in 2008 the world's first Absolute Interferometer. And in 2009 we completely changed the laser tracker market yet again with the PowerLock active vision technology. And so we did in 2010 by releasing the Leica Absolute Tracker AT401, the leading 3D laser tracker, battery powered and protected against water or dust. We've helped thousands of customers optimally measure their world. We can do the same for you.



# WHAT USERS SAY

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„An automated Leica Geosystems 6DoF measurement system makes our assembly line much more efficient. Thanks to the Leica Absolute Tracker AT901 and the Leica T-Mac, our cost savings compared to previous methods are enormous.“

*Renato Acquati, AleniaAermacchi, Venegono Superiore, Italy*

“The Leica Absolute Tracker is a brilliant all-purpose tool and without doubt one of our best investments. The speed of measurements justifies the investment by the time saved on component measurement. We are always discovering more uses for it. Accuracy, portability and reliability inspire the team. The Leica Absolute Tracker has played an important role in our many successes.”

*Chris Charnley, Red Bull Racing, Milton Keynes, UK*

“The Tracker system is ideal for our purpose. Changing between scanning and probing on the same part works superbly. The Leica T-Probe has no equal. We have been using Leica Geosystems instruments for many years and have learned to appreciate their reliability.”

*Ralf Laufer, Vorarlberger Illwerke, Schruns, Austria*

“The Tracker system is exactly the right tool for us because we can save a lot by detecting deviations before machining starts compensating for errors by fitting the component into the shape of the casting.”

*Holger Radanke, DMR, Rostock, Germany*

“The volume of the components we produce requires a laser tracker – there is just no alternative that works so elegantly. The Leica T-Probe was the decisive factor after all. This device is unique.”

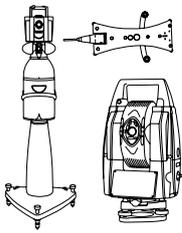
*Alejandro Martinez, Lakber, Lakuntza, Spain*

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## The purchase is just the beginning.



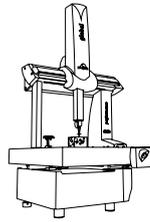
Our “worry-free” concept of Service & Support has established a benchmark standard in the industry. At Leica Geosystems, we not only manufacture the world’s most advanced Portable CMM products, we also provide world-class Service & Support that are second to none, keeping top quality products in top quality shape.



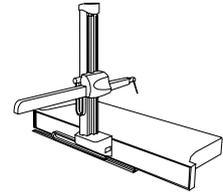
LASER TRACKERS & STATIONS



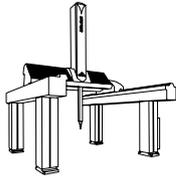
PORTABLE MEASURING ARMS



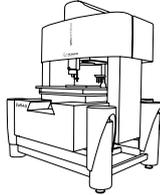
BRIDGE CMMs



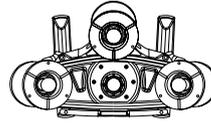
HORIZONTAL ARM CMMs



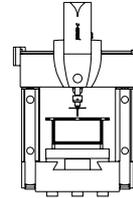
GANTRY CMMs



MULTISENSOR & OPTICAL SYSTEMS



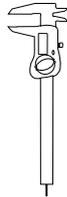
WHITE LIGHT SCANNERS



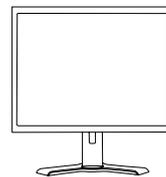
ULTRA HIGH ACCURACY CMMs



SENSORS



PRECISION MEASURING INSTRUMENTS



SOFTWARE SOLUTIONS



**HEXAGON**  
METROLOGY

Hexagon Metrology offers a comprehensive range of products and services for all industrial metrology applications in sectors such as automotive, aerospace, energy and medical. We support our customers with actionable measurement information along the complete life cycle of a product – from development and design to production, assembly and final inspection.

With more than 20 production facilities and 70 Precision Centers for service and demonstrations, and a network of over 100 distribution partners on five continents, we empower our customers to fully control their manufacturing processes, enhancing the quality of products and increasing efficiency in manufacturing plants around the world.

For more information, visit [www.hexagonmetrology.com](http://www.hexagonmetrology.com)

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