

# FARO Laser Tracker Productivity by Design

**FARO**



# Introducing the FARO Laser Tracker

The FARO Laser Tracker is an extremely accurate, portable coordinate measuring machine that enables you to build products, optimize processes, and deliver solutions by measuring quickly, simply and precisely.

## Solve Measurement Challenges

Customers around the world trust the FARO Laser Tracker to solve their everyday measurement challenges as well as their most complex problems that simply weren't previously possible.

## Re-Define Efficiency

The FARO Laser Tracker creates ground-breaking efficiencies in applications such as alignment, machine installation, component inspection, tool building and setup, manufacturing and assembly integration, and reverse engineering.

## Increase Production

Companies are saving millions of dollars by completing jobs faster, reducing downtime, eliminating costly scrap, and getting accurate, consistent, and reportable measurement data.

## Deliver Quality Products

With the FARO Laser Tracker you can produce more competitive products, accelerate product improvement initiatives, and deliver high-performing products for today's technical marketplace.

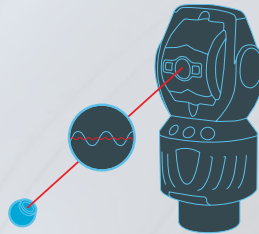


# How a Laser Tracker works

Replacing conventional tools such as piano wire, plumb bobs, layout machines, large-volume fixed CMMs, theodolites, optical transits, and total stations, the FARO Laser Tracker is a more accurate and reliable portable 3D measurement tool that allows you to streamline your processes and be confident in your measurement results.

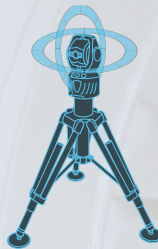
## Distance Measurement

The tracker sends a laser beam to a retroreflective target held against the object to be measured. The reflected beam returns to the tracker and its precise distance is recorded.



## 3D Measurement

Two angle encoders measure the elevation and rotational angles while a highly accurate absolute distance meter is used to determine the 3D position of the target. This position is shown in the software as an X, Y, Z value.



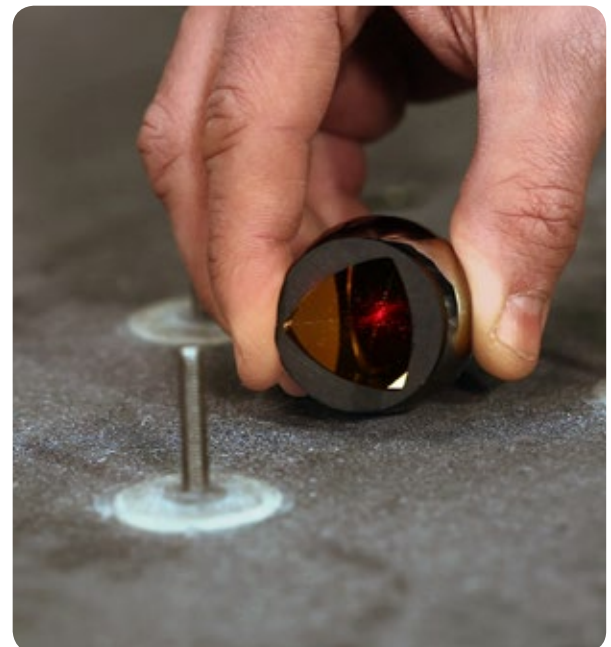
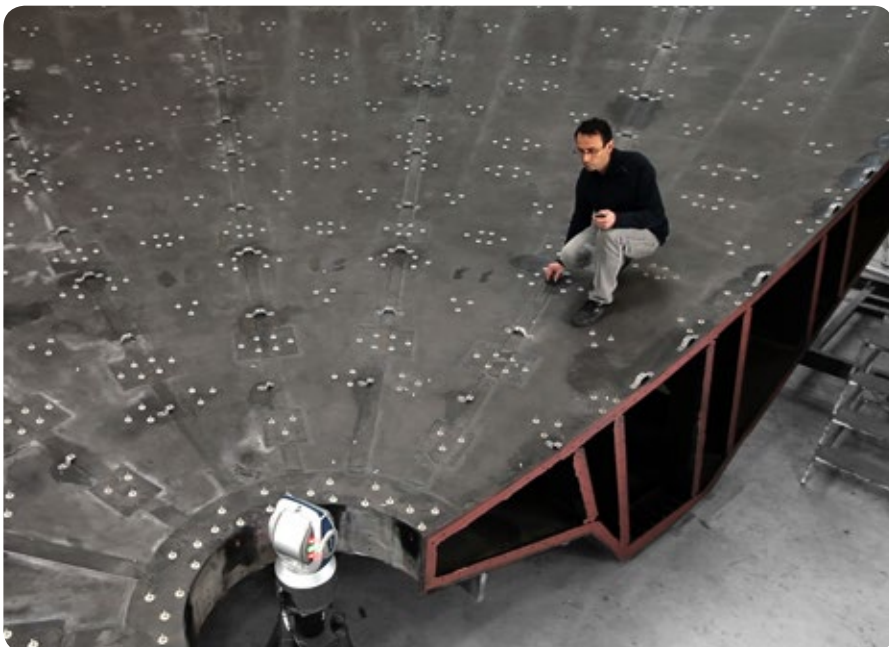
## Tracking



The target returns the reflected laser beam parallel but offset back to the tracker where it hits the position detector, which calculates the offset between the outgoing and incoming beam. Servo motors continuously (thousands of times per second) steer the tracker's head to minimize the offset between the two beams, resulting in high-speed, dynamic measurements.

# Real-World Applications

The FARO Laser Tracker accurately performs measurements within many applications throughout a wide range of industries. It offers improved methods of measurement and makes entirely new manufacturing methods possible.



## Alignment

- More accurate and less time-consuming than traditional methods
- Frequent measurements and proper trending of distortions
- Real-time measurement confirms tolerances and validates design

## Reverse Engineering

- Acquire high accuracy digital scan data
- Eliminate the need for hard masters

## Tool Building

- Full volumetric accuracy tests (ensures parts are being assembled to the highest standard)
- Verify dimensional integrity and repeatability of the tool (identify or preempt tool defects)

## Part Inspection

- Compare complex geometry, surfaces, and feature positions to nominal data
- No need to move the part to a fixed inspection tool
- Reduce production waste and non-conformance costs

## Installation

- Lay out / level machine foundation
- Prevent damage during the machine's initial run
- Reduce wear and tear on mechanical parts

## Manufacturing & Assembly Integration

- Obtain critical positioning feedback real-time
- Set moving parts to nominal coordinates
- Continuous survey to provide data at specific points while moving dynamically



# FARO Vantage No Compromise



As the world's most trusted source for 3D measurement technology, FARO has reinvented high accuracy, large volume measurement with the FARO Vantage. Offering a breakthrough in laser tracker technology, the FARO Vantage provides the world's most complete laser tracking solution.



### Small, Lightweight Design

The Vantage is the smallest and lightest FARO Laser Tracker ever built, making it incredibly easy to use and transport between job sites. Its accuracy is second to none, making it the tool of choice for even the toughest measurement challenges.

### Water & Dust Resistant IP52 Rating

With the Vantage you can now use your Laser Tracker in conditions you never thought possible. The Vantage is designed for reliability; and durability is no concern with its water and dust resistant IP52 rating, making it FARO's highest IP-rated device.

### No Compromise Solution

When choosing a laser tracker, users have had to make compromises to get what they need. A solution that offers extreme portability, supreme accuracy, and shop-floor durability was simply not an option – until now.

### Technology You Can Trust

FARO has been a trusted source of laser tracker technology for over 25 years. Specifications of FARO Laser Trackers are verified by performance tests carried out according to the ASME B89.4.19 standard, and all FARO calibration laboratories are accredited by a third party to perform Laser Tracker calibrations to the ISO 17025 standard.

# Innovative Enhancements

Spending our time, resources, and passion into perfecting laser tracker technology allows us to proudly offer the world's best, easiest to use, and most complete laser tracker – the FARO Vantage.

## MultiView Cameras

The Vantage is the only laser tracker available with MultiView technology – a patent pending fully-integrated two-camera system. This technology allows you to automatically point to a specific target that may be difficult to reach. It is also beneficial for automated assembly applications where the variation from part to part can cause the target to not be in its normal position. In these cases MultiView quickly and efficiently locates that target.

## SmartFind

Thanks to FARO's exclusive SmartFind technology, you now have a faster and easier way of measuring around complex tooling and structures where tracking the SMR between locations is difficult or impossible. When you break or lose the Vantage's beam while in MultiView's field of view, you can simply gesture to the Laser Tracker and it will aim the beam back to your target.



## TruADM

The Vantage's TruADM technology provides the accuracy you need for everyday, real-world applications where the differences between absolute distance measurement (ADM) and interferometer (IFM)-based measurement are, for the most part, insignificant. TruADM is FARO's 5th generation patented ADM system. Unlike technologies that require an IFM system to assist their ADM system, FARO's TruADM simplifies the process.

TruADM uses patented predictive algorithms to compensate for the acceleration and velocity of a moving target. This results in a technologically-advanced system, where the ADM is so fast that dynamic measurements can be taken by scanning with the SMR. With FARO Laser Trackers you have the ability to scan complex surfaces, flatness of planes and diameters of circles. You can quickly and easily characterize the form of features to better understand the geometry of your parts and make informed decisions.

## TriMap Encoders

TriMap is a patent pending encoder system exclusive to the FARO Vantage. It features a three read head system that is self-mapping, enabling faster service time in more convenient locations to ensure you are maximizing the use of your Laser Tracker and getting the most from your investment.

## Optics

The Vantage's new in-line optic system is designed for longer range (up to 80 meters\*). This allows for measurement of even larger objects from one location. Fewer device moves mean measurement jobs are completed in even less time.

\*Refer to Vantage Tech Sheet for detailed specifications

## Integrated Wi-Fi®

Embracing the latest standards in wireless technology (Wireless-N), the Vantage's integrated Wi-Fi means there is no need to plug the Laser Tracker into the laptop computer. You can simply measure anywhere within the wireless network's range, enhancing the unit's portability and convenience.



# Exceptional Portability

Being able to conveniently store your Laser Tracker and easily transport it to the job site or around your shop is crucial. With the Vantage, you have an innovative travel case system, allowing you to easily move your Laser Tracker regardless of the application or location around the world. With the Vantage, FARO has taken the concept of "portability" to a whole new level.



## Roller Board

The innovative roller board design revolutionizes the way you transport your Laser Tracker. This case not only protects the head unit, but it also pulls as easily as a standard travel suitcase! The case conveniently fits into an airplane's overhead compartment, simplifying air travel and allowing you to take the Vantage anywhere.



## Backpack

The Vantage's backpack holds the master control unit (MCU) along with other required accessories, providing you with a comprehensive transportation system. Its ergonomic design is comfortable enough to wear on your back, or it can easily be set on top of the roller board, allowing you to transport the entire system as a single unit. As with the roller board, air travel is a breeze since the backpack also fits into an airplane's overhead compartment!



## Heavy-Duty Shipping Cases

When you prefer to ship your Vantage, the heavy-duty cases hold both the roller board and backpack and provide the necessary protection for transport. They can also be stacked to create a mobile work surface. The cases also include extra space for storing items such as extension cords, power supplies, or other accessories needed to complete your job.

# FARO ION

## High Precision IFM-Based Laser Tracker



When performing applications where the highest precision is crucial, such as in-line measurements, high-speed dynamic measurements, or high-accuracy machine calibration, the ION is a state-of-the-art interferometer (IFM)-based measurement system that provides the high accuracy and range you need to complete your measurement tasks.



Vantage



### Product Comparison

✓	TruADM	
	Agile ADM	✓
	Interferometer	✓
✓	IP52 Rating	
✓	TriMap Encoders	
✓	MultiView Cameras	
✓	SmartFind	
✓	In-Line Optics	
✓	Integrated Wi-Fi®	
✓	QuickComp	
	SelfComp	✓
✓	Instant-On Laser	
✓	Versatile Mounting Options	✓
✓	Smart Warm-Up	✓
✓	Integrated Weather Station	✓
✓	Integrated Precision Level	✓

ION





# Industry Leading Features

## Field Compensations

Compensation is an important process since the accuracy of any measurement system is subject to errors due to environmental changes. The FARO Laser Tracker offers three different compensation methods depending on your needs and Laser Tracker model.

### QuickComp

- Available exclusively with the Vantage
- Fastest option (2-3 minutes)
- Optimizes the Laser Tracker's measurements based on specific ranges
- Maintains high system accuracy

### SelfComp

- Available exclusively with the ION
- Fast (5 minutes)
- Maintains system accuracy

### Pointing Compensation

- Available with all FARO Laser Tracker models
- 20-30 minutes
- Maintains highest system accuracy

## Instant-On Laser

Begin taking measurements faster since no warm-up of the laser tube is required. Available exclusively with the Vantage, this feature can result in a setup time savings of 20 to 30 minutes!

## Versatile Mounting Options

The FARO Laser Tracker can be mounted vertically, horizontally or upside down\*, providing versatility in tight or congested areas.

## Smart Warm-Up

This feature accelerates the thermal stabilization time of the unit itself in order to minimize the initial temperature changes' impact on measurements.

## Integrated Weather Station

Temperature, air pressure, and humidity can affect the speed at which light travels through air. The integrated weather station monitors these and compensates for these variables to ensure the accuracy of the measurement results.

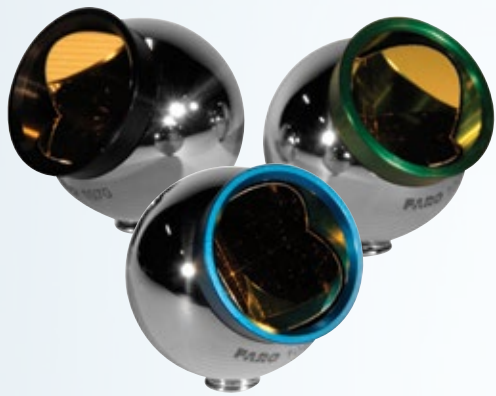
## Integrated Precision Level

The Laser Tracker makes use of a built-in level sensing device which establishes the Tracker's orientation with respect to the gravity vector. This is especially beneficial in complex alignments and equipment setup where the Tracker is not guaranteed to be on a level surface.

\*Inverted mounting requires the use of the integrated threaded ring.

# Advanced Targets

A laser tracker and its targets go hand in hand. Regardless of how accurate the laser tracker is, the quality of the measurements is directly affected by the precision of the target. FARO's spherically mounted retroreflectors (SMRs) showcase our dedication to providing a total measurement solution – by not only offering high performance laser trackers, but by also providing an accurate, robust, and affordable line of targets.



## Accurate, Durable, Affordable Break Resistant SMRs

- Three models:
  1. Standard Accuracy (Black Ring)
  2. Long Range (Green Ring)
  3. High Performance (Blue Ring)
- High performance model is 80% more accurate than Heavy Duty break resistant SMRs
- Combination of the sphere properties and the centering of the optics make the high performance model the world's most accurate break resistant SMR
- Lower cost than previous break resistant models
- Single element retroreflector with a gold coating (no separate glass panels that can shift or break over time)

## Break Resistant Window SMRs

- Ultimate performance in harsh environments
- Window covering is designed to keep the reflective optics clean
- Replaceable window collar
- Single element retroreflector with a gold coating



## Heavy Duty Break Resistant SMRs

- Solid stainless steel ball
- Integrated retroreflector with a gold coating
- Ability to operate at optimum performance at extreme temperatures



### Glass Panel SMRs

- Protected silver coating
- Standard and high accuracy models



### Repeatability Targets

- Open air corner cubes
- Ensures repeatability regardless of the pointing angle from the laser tracker
- Perfect target for repeatability surveys

### RetroProbes

- Measure in recessed areas or small features such as holes, slots and machine faces
- Proves the functionality of an articulated arm or fixed CMM-style probing
- Easily reach into pockets, behind obstructions, and around corners
- Minimize laser tracker repositioning
- One-inch and four-inch extension models



# The FARO Experience

Owning a FARO Laser Tracker is just the beginning of your partnership with us. Our employees are known for building relationships – visiting your facility, getting to know your business, your processes, and providing measurement plans and training to help you get the most out of your FARO system.

FARO operates service and calibration facilities around the world and all are ISO-9001 certified and ISO-17025 laboratory registered to service FARO's products. Each center provides warranty and post-warranty services. At FARO, our goal is to service, inspect, calibrate, and return your equipment within a timely manner.

FARO's training provides you with the knowledge necessary to execute measurements with confidence. From product setup, basic measurements, working with alignments and nominals, to advanced procedures and programming, we offer basic and advanced level classes at a FARO training center, or at your own facility. FARO also has experienced customer service representatives who offer telephone support for equipment or application-related questions.





## About FARO

FARO is a global technology company that develops portable 3D measurement and documentation instruments for inspection, imaging, reverse engineering, and surveying. Our focus is on simplifying our customers' work with tools that empower them to dramatically reduce their on-site measuring time and lower their overall costs.

As the pioneer in portable computer-aided measurement, we apply our unique knowledge and understanding to our clients' business goals to help them succeed. We empower our customers to exceed the demands placed upon them by applying the latest advances in technology to make FARO's industry leading product offerings more accurate, reliable, and easy to use.

# FARO®





## GLOBAL HEADQUARTERS

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