

# FARO® Vantage<sup>S</sup> & Vantage<sup>E</sup> Laser Trackers



## Features, Benefits & Technical Specifications

### A Breakthrough in Workflow Productivity and Portability



The FARO Vantage<sup>S</sup> and Vantage<sup>E</sup> Laser Trackers offer the next level in Laser Tracker productivity. With innovative RemoteControls™ workflow, superior accuracy, exceptional portability and ruggedness, these Laser Trackers make large-scale 3D measurement easy. The Vantage<sup>S</sup> and Vantage<sup>E</sup> enable you to build and inspect products by measuring quickly, simply and precisely. They streamline your processes and give you confidence in your measurement results.

The Vantage<sup>S</sup> is intended for short-to-long range measurement applications of up to 80 meters, while the Vantage<sup>E</sup> supports short-to-medium range applications of up to 25 meters.

The Vantage<sup>S</sup> and Vantage<sup>E</sup> allow you to accurately set up, align, inspect, and digitize parts, assemblies, and machinery. Increase efficiencies and reduce costs by completing jobs faster, reducing downtime, minimizing costly scrap, and capturing accurate, consistent, and actionable measurement data. With the Vantage<sup>S</sup> or Vantage<sup>E</sup>, you will produce more competitive products by ensuring that machines and production tools are operating within specifications, while accelerating product and quality improvement initiatives.

The Vantage<sup>S</sup> and Vantage<sup>E</sup> introduce FARO's RemoteControls workflow which streamlines Laser Tracker operations, allowing a single user to control functions such as live video feed and tracker movements with a mobile phone or tablet. Additionally, with robust Wi-Fi®, battery pack, and no external controller, the Vantage<sup>S</sup> and Vantage<sup>E</sup> offer ease of use and portability.



## Features



### RemoteControls Workflow

FARO's patent-pending RemoteControls feature enhances workflow by allowing a user to control the movements and other functions of the Vantage<sup>S</sup> or Vantage<sup>E</sup> with a mobile phone or tablet, or even gesturing with a target. Live video feed from the targeting cameras is displayed on the mobile device so that a single operator can control the tracker from anywhere in the measurement area. Remote on/off and scheduled warm-up improve workflow by making the Vantage<sup>S</sup> or Vantage<sup>E</sup> ready for immediate operation when the user begins measuring.

### Integrated Absolute Distance Measurement System (iADM)

The patent-pending, 6th generation iADM ensures exceptional accuracy. The Vantage<sup>S</sup> and Vantage<sup>E</sup> are the only laser trackers that measure angle and distance with one laser. Reliability is improved because errors and drift associated with two-beam tracker technology are eliminated. The laser is Class 1 (eye safe).

### Super 6DoF (Degrees of Freedom)

FARO's patented Super 6DoF solution allows the Vantage<sup>S</sup> or Vantage<sup>E</sup> and one or more FARO ScanArms<sup>®</sup> to work together to create an integrated 3D measurement solution across a single coordinate system. Super 6DoF completely eliminates line-of-sight challenges and significantly expands measurement range while maintaining superior accuracy.

### Stereo Color Targeting Cameras

The high-resolution, two-camera systems assist in locating a specific target quickly and efficiently. They operate in all lighting conditions from complete darkness to bright sunlight.

### Target Acquisition

Quickly and efficiently locate and lock onto a target:

- **SmartFind**

Easily find and lock onto the closest target in the cameras' field of view. This capability is ideal for setting up measurements on complex tooling or structures.

- **Gestures**

If the beam is interrupted, you can use simple gestures to command the tracker to point the laser beam to your target.

### Exceptional Portability

With no external master control unit (MCU), the Vantage<sup>S</sup> and Vantage<sup>E</sup> are the most portable FARO Laser Trackers ever built. Their compact size makes them incredibly easy to move between locations in the factory or job sites in a single, easily transportable case.



### Hot-Swappable Battery

Continuous operation is available with a hot-swappable battery pack for even more portability, completely eliminating the need for AC power.

### Integrated Wi-Fi

For enhanced portability and convenience, measurements can be taken with the improved Wi-Fi, which supports faster connection time, greater range, and allows the Vantage<sup>S</sup> or Vantage<sup>E</sup> to act as a Wi-Fi access point. Wi-Fi and wired Ethernet are both active, enabling connection with a PC and a wireless device simultaneously.

### Rugged Design

The Vantage<sup>S</sup> and Vantage<sup>E</sup> can be used in demanding industrial conditions and have been rigorously tested for resistance to shock, vibration, temperature cycle, and humidity. They are rated IP52 for dust and water resistance.

### Versatile Mounting

Robust tracking enables the Vantage<sup>S</sup> and Vantage<sup>E</sup> to be mounted on a variety of stands in many configurations including vertically, horizontally, upside down, or even at an angle to fit in tight, congested areas.

### Fast Data Acquisition

With a data output rate of 1,000 points per second, the Vantage<sup>S</sup> and Vantage<sup>E</sup> provide feedback for high-speed motion control and high-density scanning, making them ideal for automated applications.

## Benefits

- **Maximize productivity and reduce inspection cycle times by 50% to 75%:**
  - Faster, easier setup – no cabling or external control unit.
  - RemoteControls improves workflow and allows a single operator to control the tracker.
  - Faster Wi-Fi, warmup, and field compensation.
  - Multiview color cameras, SmartFind, and Gestures allow quicker target acquisition and faster workflows.
  - With a measurement output of 1,000 points per second, the Vantage<sup>S</sup> and Vantage<sup>E</sup> are more than three times faster than FARO's previous generation of Laser Trackers.
- **Exceptional portability:**
  - Easy transport and setup – one case contains everything you need.
  - No external control unit.
  - Battery operation capability enhances portability.
- **Robust performance delivers consistent, dependable, and repeatable measurement results across a wide array of applications:**
  - High accuracy with lower drift than typical two-beam ADM systems.
  - Operates in darkness or bright sunlight.
- **Rugged design and construction:**
  - Single beam laser and fewer components.
  - Rigorous shock, vibration, temperature cycle, and humidity testing.
  - IP52 water and dust resistant.
- **Realize a quick return on investment:**
  - Reduce rework, scrap, and downtime.
  - Increase efficiencies in measurement and production times.



## Industries and Applications



The FARO Vantage<sup>S</sup> and Vantage<sup>E</sup> are ideal solutions for industries such as automotive, aerospace, defense, shipbuilding, metalworking, machining, and assembly. They improve efficiency and quality in any application in which precise, large-scale measurements are performed.

**Alignment:** Real-time measurement during assembly confirms tolerances and improves quality control.

**Machine Installation, Alignment, and Maintenance:**

Ensure that machines are calibrated and monitor wear and tear on mechanical parts so that they consistently operate within specifications.

**Part and Assembly Inspection:** Produce a digital record of actual versus nominal data to validate conformance to quality requirements.

**Tool, Die, and Mold Building:** Perform full volumetric accuracy measurements to monitor wear and ensure consistency.

**Reverse Engineering:** Acquire precise digital measurement data on parts or assemblies for which blueprints or CAD drawings do not exist.

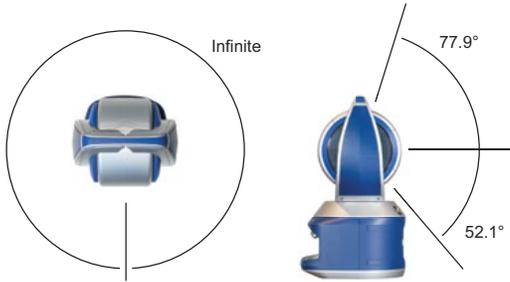
**Robot Calibration:** Perform on-site, routine maintenance calibrations on robots to ensure conformance to specifications and uniform output.

# Specifications

Working Range	Vantage <sup>s</sup>	Vantage <sup>e</sup>
Maximum with select targets	80m (262.5ft) <sup>a</sup>	25m (82.0ft)
Maximum with 1.5in & 7/8in SMRs	60m (196.9ft)	25m (82.0ft)
Maximum with 1/2in SMRs	30m (98.4ft)	25m (82.0ft)
Minimum	0m (0ft)	0m (0ft)

## Rotational Envelope

- **Horizontal:** 360° – Infinite rotation
- **Vertical:** 130° (+77.9° to -52.1°) – Infinite rotation



## Data Output Rate

- 1,000 measurement points per second

## Distance Measurement Performance<sup>b</sup>

- **Resolution:** 0.5µm (0.00002in)
- **Accuracy (MPE):** 16µm + 0.8µm/m (0.00063in + 0.0000096in/ft)
- **Max Radial Acceleration:** 30m/sec<sup>2</sup> (82.0ft/sec<sup>2</sup>)
- **Max Radial Velocity:** > 25m/sec (98.4ft/sec)

## Angle Measurement Performance<sup>b</sup>

- **Angular Accuracy (MPE):** 20µm + 5µm/m (0.00079in + 0.00006in/ft)
- **Precision Level Accuracy:** ± 2 arcseconds

## Tracking Performance

- **Max Angular Acceleration:** 860°/sec<sup>2</sup> (15 rads/sec<sup>2</sup>)
- **Max Angular Velocity:** 180°/sec (π rads/sec)

## Point to Point Accuracy<sup>b</sup>

In-Line Distance Measurement <sup>d</sup>					
Length	2-5m (6.6-16.4ft)	2-10m (6.6-32.8ft)	2-25m (6.6-65.6ft)	2-80m <sup>e</sup> (6.6-262.5ft)	
Distance	3m (9.8ft)	8m (26.2ft)	23m (75.5ft)	78m (255.9ft)	
ADM	<b>MPE<sup>b</sup></b>	0.018mm (0.0007")	0.022mm (0.0009")	0.034mm (0.0013")	0.078mm (0.0031")
	<b>Typical</b>	0.009mm (0.0004")	0.011mm (0.0004")	0.017mm (0.0007")	0.039mm (0.0015")

Horizontal Scale Bar Measurement 2.3m (7.55ft) <sup>d</sup>						
Range	2m (6.6ft)	5m (16.4ft)	10m (32.8ft)	25m (82.0ft)	80m <sup>e</sup> (262.5ft)	
ADM	<b>MPE<sup>b</sup></b>	0.044mm (0.0017")	0.064mm (0.0025")	0.099mm (0.0039")	0.205mm (0.0081")	0.594mm (0.0234")
	<b>Typical</b>	0.022mm (0.0009")	0.032mm (0.0013")	0.049mm (0.0019")	0.103mm (0.0040")	0.297mm (0.0117")

## Stereo Color Cameras

- **Field of View:** 50°
- **Resolution:** 1920 x 1080p @ 15 fps

## Laser Emission<sup>c</sup>

- Class 1 Laser Product: 630-640 nm laser, 0.35 milliwatt max/cw

## Dimensions

- **Size:** 240(W) x 416(H) mm [9.4(W) x 16.4(H) in]
- **Weight:** 13.4kg (29.5lb)

## Hardware Specifications and Environmental

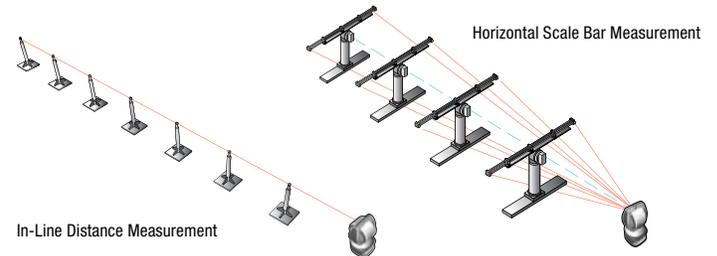
- **Power Supply Voltage:** 24V
- **Power Consumption:** 75W
- **Battery Life:** 8 hours continuous operation (2 batteries), hot swappable
- **Altitude:** -700 to 9,000m (-2,297 to 29,527ft)<sup>d</sup>
- **Humidity:** 0 to 95% non-condensing
- **Operating Temperature:** -15°C to 50°C (5°F to 122°F)
- IP52 – Dust and water resistant (IEC 60529)
- **Certifications:**
  - NRTL listed, MET-C listed
  - EU – RoHS2
- **Complies With:**
  - Ingress Protection IP52 per IEC 60529
  - 47 CFR, Ch. 1, Part 15, Subpart B
  - ICES-003, Issue 6, 2016
  - UL 61010-1, CSA C22.2 No. 61010-1, EN 61010-1, IEC 61010-1
  - Laser and LED Safety IEC 60825 and IEC 62471
  - IEC 60068-2-6, IEC 60068-2-64, and IEC-60068-2-27 (shock and vibration)
  - EU/EMC Directive 2014/30/EU, EN 61326:2013, IEC 61326:2012

## Connectivity

- Ethernet: RJ45 port supporting GigE
- Wi-Fi: 802.11n (and earlier)

## Software Compatibility

- FARO CAM2<sup>®</sup> Measure 10
- BuildIT
- FARO RemoteControls Workflow App
- Third-Party Software Plug-ins
- Software Development Kit (SDK)



<sup>a</sup> 80m range requires 10°C to 35°C (50°F to 95°F) temperature range.

<sup>b</sup> MPE (Maximum Permissible Error) and all accuracy specifications are calculated per ASME B89.4.19 - 2006. Variation in air temperature is not included. Specifications, descriptions, and technical data may be subject to change.

<sup>c</sup> Product complies with radiation performance standards under the Food, Drug, and Cosmetics Act and international standard IEC 60825-1 2001-08.

<sup>d</sup> With integrated weather station.

<sup>e</sup> With selected targets. Lengths and distances of over 25m are not applicable to Vantage<sup>e</sup>.

Protected by U.S. patents: 7,327,446; 7,352,446; 7,466,401; 7,701,559; 8,040,525; 8,120,780.

For more information, call 800.736.0234 or visit [www.faro.com](http://www.faro.com)

