

# FARO® Vantage<sup>S6</sup> and Vantage<sup>E6</sup> Laser Trackers

Large-Scale, High-Accuracy, Portable Dynamic 6DoF Probing

FARO Vantage Laser Trackers enable you to build and inspect products by measuring quickly, simply and precisely with exceptional portability. The Vantage platform offers comprehensive, large-volume 3D measurement up to 80 meters, streamlining your processes and giving you confidence in your measurement results.

The Vantage<sup>S6</sup> and Vantage<sup>E6</sup> deliver 6 Degrees of Freedom (6DoF) measurement capabilities via the optional 6Probe, enabling access to hidden areas and small features. The 6Probe is the industry's most cost-effective 6DoF solution that meets the dynamic measurement and accuracy requirements of the most challenging applications. 6DoF and standard probing are enhanced by FARO ActiveSeek™, a feature to automatically locate and follow the active target.



## Reduce inspection cycle times by up to 75%

- ActiveSeek target location
- RemoteControls™ for easy single operator workflow

## Increase versatility with 6Probe

- Faster, more efficient measurement
- Reduce the need for multiple tracker stations
- Measure hidden areas that are outside of the direct line of sight of the tracker
- Enable CMM-style probing in small, tight and hard-to-reach spaces

## Expanded capability with patented Super 6DoF

- Non-contact, high-definition scanning via FAROBlu™ Laser Line Probe HD
- Unparalleled accuracy up to 60 meters
- Hidden point reach – up to 4 meters beyond the line of sight



## Key Features and Benefits

### 6 Degrees of Freedom (6DoF):

The FARO 6Probe is a wireless handheld probe for the Vantage<sup>S6</sup> or Vantage<sup>E6</sup> that dramatically increases versatility and efficiency.

The 6Probe delivers the ability to measure in areas that are not in the direct line of sight as well as in small, tight, hard-to-reach spaces. Interchangeable styli ensure the right length and diameter for the job.

### ActiveSeek:

FARO's patent-pending feature to quickly and efficiently locate and lock onto a target – allowing the Vantage to follow a moving target, even behind obstacles, and lock onto the target again when it is stable.

ActiveSeek reduces the learning curve for new users with enhanced target acquisition.

The widest field of view in the industry gives the user complete freedom to move throughout a large measurement envelope.

### Fast Data Acquisition:

Data output rate of 1,000 points per second.

Vantage provides feedback for high-speed motion control and high-density scanning, making it ideal for automated applications.

### 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> series laser trackers are the only laser trackers that measure angle and distance with a single, class 1 (eye-safe) laser.

Measurement reliability is improved because errors and drift associated with two-beam tracker technology are eliminated.

### Super 6DoF TrackArm:

In addition to 6DoF probing with the 6Probe, FARO trackers support the patented Super 6DoF TrackArm solution, which allows the Vantage and one or more FARO ScanArms to work together to create an integrated contact and non-contact 3D measurement system.

With a reach of up to 4 meters (over a 60-meter range), Super 6DoF completely eliminates line-of-sight challenges and significantly expands measurement range while maintaining superior accuracy. With Super 6DoF and conventional 6DoF probing, FARO offers the industry's most comprehensive suite of 6DoF solutions.

### SmartFind and Gestures:

SmartFind and Gestures allow an alternate method of selecting the desired target in a complex, multi-target environment.

### RemoteControls Workflow:

FARO's patented feature enables a user to see the live video feed of the on board tracker camera system and fully control tracker movements with a mobile phone or tablet.

Frees the user from the computer and enables easy, single-operator workflow.

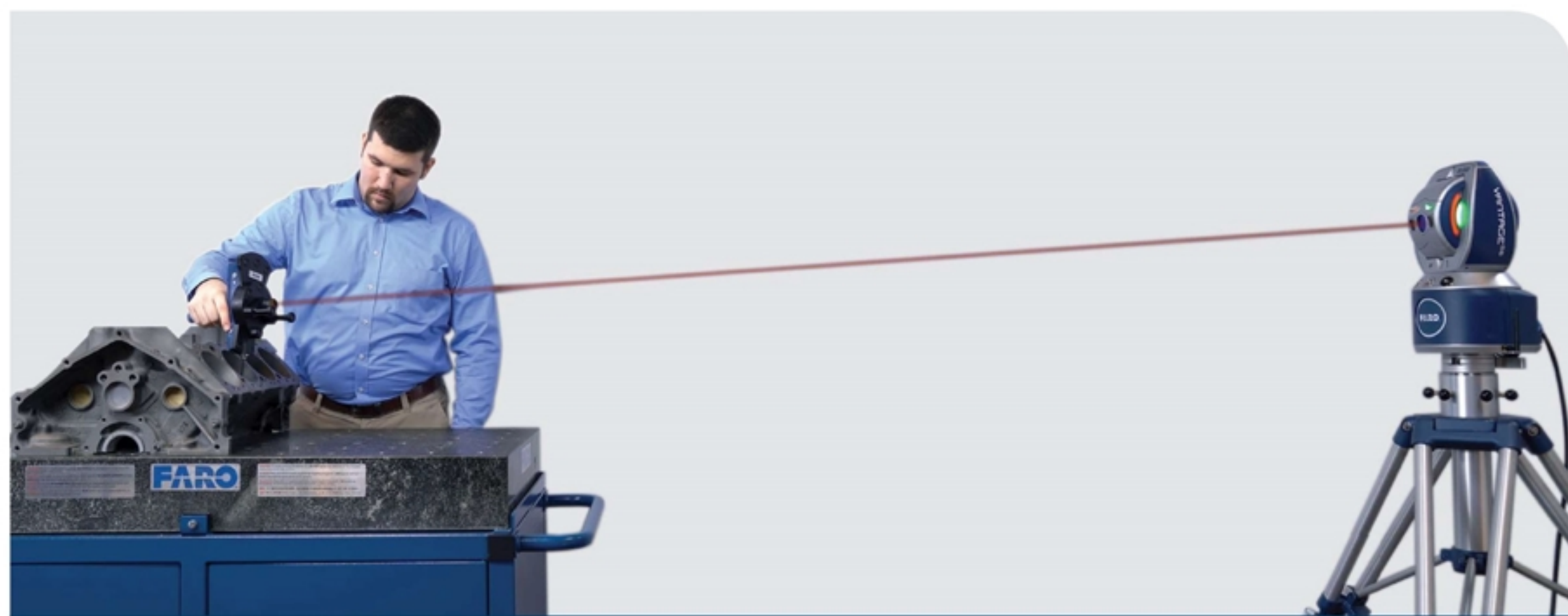
### Exceptional Portability and Ruggedness:

With an ultra-compact size and no external control unit, these IP52-rated systems have been rigorously tested for resistance to shock, vibration, temperature cycle and humidity.

Provides great portability within the plant or when traveling with the system and confidence that it is durable and ready for the most challenging environments.

### Additional Features:

- Hot-Swappable Batteries: Eliminate the need for AC power and cabling
- Integrated WiFi
- Versatile Mounting: vertical, horizontal, upside down, angle





## 6Probe Specifications

The 6Probe is a light, wireless, battery-operated 6DoF probe with an ergonomic handle and four programmable buttons. Lights provide feedback to the user on the status of the tracker and the 6Probe.

### Performance

- Accuracy (MPE):  $95\mu\text{m} + 5\mu\text{m}/\text{m}$  with 50mm stylus length (0.0037in + 0.00006in/ft with 1.97in stylus length)  
Maximum Permissible Error (MPE) is per ISO 10360-10:2016, reported as the radius of the minimum circumscribing sphere.
- Range: 2.5m to 15m (8.20ft to 49.21ft)
- Data Output Rate: 1,000 measurement points per second
- Battery Life: Up to 4 hours for continuous use, typical 8+ hours
- Roll:  $360^\circ$
- Pitch & Yaw:  $\sqrt{\text{pitch}^2 + \text{yaw}^2} \leq 18^\circ$
- ActiveSeek: Yes

### Hardware Specifications and Environmental

- Power Source: Lithium-Ion battery, 7.2V DC, 14Wh
- Operational Temperature Range:  $0^\circ\text{C}$  to  $40^\circ\text{C}$  ( $32^\circ\text{F}$  to  $104^\circ\text{F}$ )
- Humidity: 0 to 95% non-condensing
- Altitude: -700 to 9,000m (-2,297 to 29,527ft) with integrated weather station

### Connectivity

- Wireless: FHSS RF Module (ISM band)

### Compliance and Certifications

- Electrical Safety:
  - UL 61010-1:2012
  - CAN/CSA C22.2 No. 61010-1:2012
  - EN 61010-1:2010
  - IEC 61010-1:2010
- EMI/EMC Specification:
  - FCC 47 CFR, Part 15 Class A
  - ICES-003 Class A, Issue 6
  - EN 61326-1:2013, Directive 2014/30/EU
  - ETSI EN 301-489, Directive 2014/30/EU
- LED Safety: IEC 62471:2006
- Environmental:
  - 2011/65/EU - RoHS2
  - 1907/2006/EC - REACH
  - 2002/96/EC - WEEE
- Marking Label:
  - NRTL Listed, TUV
  - CE
- ISO Certified: Yes
- Dust & Water Protection: IEC 60529 (IP52)

### Dimensions (6Probe only, not including the shipping case)

- Size: 228.6(L) x 96.5(W) x 139.7(D) mm [9.0(L) x 3.8(W) x 5.5(D) in]
- Weight: 0.744 kg (1.64 lb)

### Additional 6Probe Features

- User Feedback: Visual & Acoustic
- Flexible Operation: User-changeable button functionality, single hand usage with ergonomic handle





# Vantage<sup>S6</sup> and Vantage<sup>E6</sup> Specifications

Working Range	Vantage <sup>S6</sup>	Vantage <sup>E6</sup>
Maximum with FARO 1.5in green-ring or 1.5in blue-ring SMRs	80m (262.5ft)	35m (114.8ft)
Maximum with 1.5in & 7/8in SMRs	60m (196.9ft)	35m (114.8ft)
Maximum with 1/2in SMRs	30m (98.4ft)	30m (98.4ft)
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>a</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>a</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)

## Stereo Color Cameras

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

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

In-Line Distance Measurement <sup>c</sup>				
Length	2-5m (6.6-16.4ft)	2-10m (6.6-32.8ft)	2-35m (6.6-114.8ft)	2-80m <sup>d</sup> (6.6-262.5ft)
Distance	3m (9.8ft)	8m (26.2ft)	33m (108ft)	78m (255.9ft)
ADM	MPE <sup>a</sup>	0.018mm (0.0007in)	0.022mm (0.0009in)	0.042mm (0.0017in)
	Typical	0.009mm (0.0004in)	0.011mm (0.0004in)	0.021mm (0.0008in)

Horizontal Scale Bar Measurement 2.3m (7.55ft) <sup>c</sup>						
Range	2m (6.6ft)	5m (16.4ft)	10m (32.8ft)	35m (144.8ft)	80m <sup>d</sup> (262.5ft)	
ADM	MPE <sup>a</sup>	0.044mm (0.0017in)	0.064mm (0.0025in)	0.099mm (0.0039in)	0.276mm (0.0109in)	0.594mm (0.0234in)
	Typical	0.022mm (0.0009in)	0.032mm (0.0013in)	0.049mm (0.0019in)	0.138mm (0.0054in)	0.297mm (0.0117in)

## Laser Emission<sup>b</sup>

- Class 1 Laser Product: 630-640 nm laser, 0.39 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 & Environmental

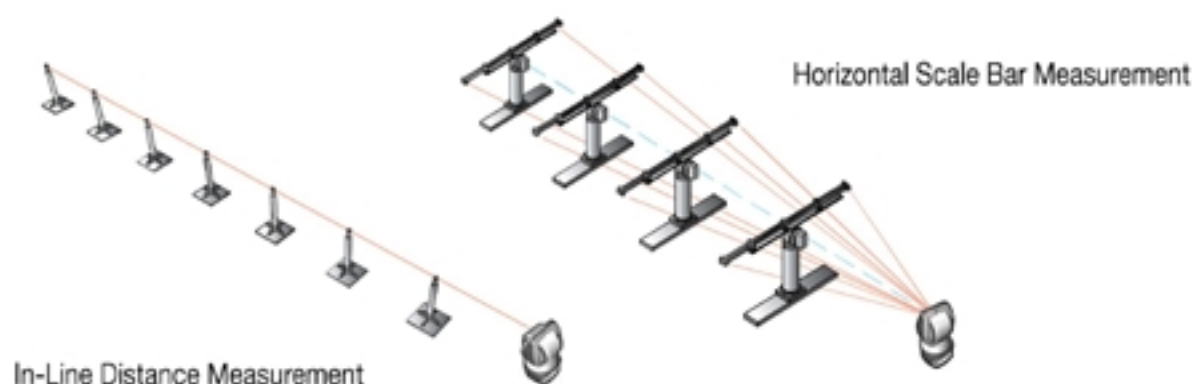
- Power Supply Voltage: 24V
- Power Consumption: 75W
- Battery Life: 8 hours continuous operation (2 batteries), hot swappable
- Altitude: -700 to 9,000m (-2,297 to 29,527ft)<sup>c</sup>
- Humidity: 0 to 95% non-condensing
- Operating Temperature: 0°C to 40°C (32°F to 104°F)
- IP52 – Dust and water resistant (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
- WiFi: 802.11n (and earlier)

## Software Compatibility

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



<sup>a</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>b</sup> Product complies with radiation performance standards under the Food, Drug, and Cosmetics Act and international standard IEC 60825-1 2001-08.  
<sup>c</sup> With integrated weather station.  
<sup>d</sup> Lengths and distances of over 35m are not applicable to Vantage<sup>E6</sup>.

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

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