



FARO[®] QUANTUM^E FAROARM[®]

The New Standard for Cost-Effective Factory Inspection

The FARO[®] Quantum^E FaroArm[®] is a portable coordinate measuring machine (PCMM) that meets the most rigorous ISO 10360-12:2016 measurement standard in existence for articulated arms – an industry first. Available in a 7-axis configuration, Quantum^E offers an entry-level portable solution for organizations looking for a cost-effective factory inspection system.

Reliable and robust, Quantum^E has been tested to withstand the harshest shop-floor environments and enables manufacturers to have full confidence in their quality assurance processes and ensure high quality production. Additionally, the Quantum^E delivers market-leading portability, and ergonomics along with plug-and-play 3D laser scanning integration with optically-superior FAROBlu[™] technology.



Features & Benefits

Certified to Meet the Most Rigorous ISO 10360-12:2016 Measurement Standard

Quantum Arms are the first Arms in the market that are certified against ISO 10360 -12:2016, setting a new industry performance bar, and ensuring maximum measurement consistency and reliability.

Innovative Design for Highest Performance and Factory Stress-Tested for Reliability

An all-new design ensures superior performance and confidence in measurement results in every working environment, while the FAROBlu[™], featuring blue laser technology, ensures best-in-class scanning capability. Every Quantum is tested for ruggedness and is factory-ready to ensure accuracy and performance.

Excellent Ergonomics and Usability

New ergonomic design, overall weight optimization, combined with new features such as tool-less quick-change, kinematic intelligent probes, provide unequaled freedom of movement and an unparalleled measurement experience.

High Speed Wireless Operation

New sophisticated and robust electronic design delivers superior reliability and guarantees optimal wireless operation for scanning and probing, allowing unmatched reach across the manufacturing floor.

Extended Battery Use

Dual hot-swappable batteries support prolonged cable-free operation of the device, making it easy to go to the part without the need for external power.

FAROBlu[™] Laser Line Probe

The FAROBlu[™] Laser Line Probe HD and FAROBlu[™] Laser Line Probe SD leverage optically-superior blue laser technology. The blue laser has a shorter wavelength than a red laser, and delivers improved scanning results with higher resolution, enabling it to discover smaller details in an object. The blue laser also provides a 50% reduction in speckle noise compared to a red laser. Speckle noise is proportional to wavelength and degrades measurement accuracy.

Most Common Applications

Alignment | Dimensional Analysis | CAD-Based Inspection | First Article Inspection | Incoming Inspection | In-Process Inspection | On-Machine Inspection | Part Inspection | Final Inspection | Reverse Engineering | Tool Building & Setup

Typical Industries

Aerospace: Part Inspection and Certification, Alignment, Tool & Mold Certification, Reverse Engineering

Automotive: Tool Building and Certification, Alignment, Part Inspection, Reverse Engineering

Metal Fabrication: First Article Inspection, Periodic Part Inspection

Molding/Tool & Die: Mold and Die Inspection, Prototype Part Scanning

Performance Specifications

| Contact Measurement (Arm)* | | | | | |
|------------------------------------|--------------------|-------------------------------|--------------------------------|--------------------------------|-------------------------------|
| Measurement range | SPAT ₁ | E _{UNI} ² | P _{SIZE} ³ | P _{FORM} ⁴ | L _{DIA} ⁵ |
| | 7 axis | 7 axis | 7 axis | 7 axis | 7 axis |
| Quantum ^E 2.5m (8.2ft) | 0.035mm (0.0014in) | 0.050mm (0.0020in) | 0.025mm (0.0010in) | 0.050mm (0.0020in) | 0.065mm (0.0026in) |
| Quantum ^E 3.5m (11.5ft) | 0.075mm (0.0030in) | 0.095mm (0.0037in) | 0.050mm (0.0020in) | 0.075mm (0.0030in) | 0.120mm (0.0047in) |
| Quantum ^E 4.0m (13.1ft) | 0.095mm (0.0037in) | 0.120mm (0.0047in) | 0.060mm (0.0024in) | 0.100mm (0.0039in) | 0.150mm (0.0059in) |

All values represent MPE (Maximum Permissible Error)

* Contact Measurement (Arm):
In accordance with ISO 10360-12

**Non-Contact Measurement (ScanArm):
Full System performance in accordance with ISO 10360-8 Annex D

¹ SPAT – Single Point Articulation Test

² E_{UNI} – Sphere Probing Size Error comparing measured versus nominal values

³ P_{SIZE} – Sphere Probing Size Error comparing measured vs nominal values

⁴ P_{FORM} – Sphere Probing Form Error

⁵ L_{DIA} – Sphere Location Diameter Error (Diameter of the spherical zone containing the centers of a sphere measured from multiple orientations)

| FAROBlu™ HD Non-Contact Measurement (ScanArm)** | | FAROBlu™ SD Non-Contact Measurement (ScanArm)** | |
|--|-------------------------------|--|-------------------------------|
| Measurement range | L _{DIA} ⁵ | Measurement range | L _{DIA} ⁵ |
| Quantum ^E 2.5m (8.2ft) | 0.075mm (0.0030in) | Quantum ^E 2.5m (8.2ft) | 0.075mm (0.0030in) |
| Quantum ^E 3.5m (11.5ft) | 0.110mm (0.0043in) | Quantum ^E 3.5m (11.5ft) | 0.110mm (0.0043in) |
| Quantum ^E 4.0m (13.1ft) | 0.130mm (0.0051in) | Quantum ^E 4.0m (13.1ft) | 0.130mm (0.0051in) |

Hardware Specifications

Operating temp range: 10°C - 40°C (50°F - 104°F)
Temperature rate: 3°C/5min (5.4°F/5min)

Operating humidity range: 95%, non-condensing
Power supply: Universal worldwide voltage; 100-240VAC; 47/63Hz

Laser Line Probe Specifications

| | FAROBlu™ HD | FAROBlu™ SD |
|-----------------------|---|---|
| Accuracy | ±25µm (±0.001in) | ±25µm (±0.001in) |
| Repeatability | 25µm, 2σ (0.001in) | 25µm, 2σ (0.001in) |
| Stand-off | 115mm (4.5in) | 115mm (4.5in) |
| Depth of field | 115mm (4.5in) | 115mm (4.5in) |
| Effective scan width | Near field 80mm (3.1in) Far field 150mm (5.9in) | Near field 80mm (3.1in) Far field 150mm (5.9in) |
| Points per line | 2,000 points/line | 1,000 points/line |
| Minimum point spacing | 40µm (0.0015in) | 80µm (0.0031in) |
| Scan rate | 300 frames/second, 300 fps x 2,000 points/line = 600,000 points/sec | 120 frames/second, 120 fps x 1,000 points/line = 120,000 points/sec |
| Laser | Class 2M | Class 2M |
| Weight | 485g (1.1lb) | 485g (1.1lb) |

Accuracy and repeatability specified at Full Field of View (FOV)

Meets OSHA requirements, NRTL TÜV SÜD C-US Listed, Complies with Electronic Code of Federal Regulations 47 CFR PART 15, 17 CFR Parts 240 and 249b – Conflict Material, 21 CFR 1040 Performance standards For Light-Emitting Products, and 10 CFR Part 430 – Department of Energy; Energy Conservation for External Power Supplies. Complies with the following EC Directives: 93/68/EEC CE Marking; 2014/30/EU Electrical Equipment; 2014/53/EU Radio Equipment Directive; 2011/65/EU RoHS2; 2002/96/EC WEEE; 2006/66/EC WEEE; 2006/66/EC Batteries and Accumulators; 2014/35/EU Low Voltage Directive; 2009/125/EC Ecodesign requirement. Conforms to the following standards: EN 61010-1:2010 / CSA-C22.2 No. 61010-1; EN 61326-1:2013 EMC; ETSI EN 300 328 V2.1.1; ETSI 301 489-1 V1.9.2; ETSI 301 489-17 V2.2.1; ETSI EN 62311:2008; IEEE 802.11 b/g; FCC Part 15.247 (WLAN and Bluetooth); Japanese Radio Law MPT No. 37 Ordinance (MIC classification WW); UN T1-T8; IEC 62133 2nd ed.; IEC 60825-1:2014 ed3.0; FDA (CDRH) 21 CFR 1040.10 / ANSI Z136.1-2007; EN 50581:2012; 21 CFR 1002 (Records & Reports); 21 CFR 1010 (Performance Standards).

Shock and Vibrations Testing per International Electrotechnical Commission (IEC) Standards: IEC 60068-2-6; IEC 60068-2-64; IEC 60068-2-27
Extreme Temperature Cycling (-20°C to 60°C). Based on: IEC 60068-2-1; MIL-STD-810G; ISTA

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