

FARO® Quantum^M FaroArm®

The Standard for Cost-Effective Factory Inspection

FARO®



The FARO Quantum^M FaroArm is a portable coordinate measuring machine (PCMM) that meets the most rigorous ISO 10360-12:2016 measurement standard in the world – an industry first. It is ideal for companies that want to maximize their manufacturing productivity, reduce scrap and waste and improve their production and quality control efficiencies.

The Quantum^M is extremely durable and has been tested to withstand the harshest shop-floor environments. Additionally, it delivers market-leading reliability, portability, and ergonomics along with plug-and-play 3D laser scanning integration with optically-superior FAROBluTM technology.

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

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 unequalled freedom of movement and an unparalleled measurement experience.

HIGH SPEED WIRELESS OPERATION (ROBUST WI-FI®)

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.

FAROBLUTM LASER LINE PROBE HD

The FAROBlu Laser Line Probe HD leverages optically-superior blue laser technology. The blue laser has a shorter wavelength than a red laser, and delivers improved scanning results with higher resolution, thanks to its ability 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.

PERFORMANCE SPECIFICATIONS

| Contact Measurement (Arm)* | | | | | | | | | | |
|------------------------------------|-----------------------|-----------------------|-------------------------------|-----------------------|--------------------------------|-----------------------|--------------------------------|-----------------------|-------------------------------|-----------------------|
| Measurement range | SPAT ¹ | | E _{UNI} ² | | P _{SIZE} ³ | | P _{FORM} ⁴ | | L _{DIA} ⁵ | |
| | 6 axis | 7 axis | 6 axis | 7 axis | 6 axis | 7 axis | 6 axis | 7 axis | 6 axis | 7 axis |
| Quantum ^M 1.5m (4.9ft) | 0.018mm (0.0007in) | | 0.028mm (0.0011in) | | 0.012mm (0.0005in) | | 0.020mm (0.0008in) | | 0.034mm (0.0013in) | |
| Quantum ^M 2.5m (8.2ft) | 0.026mm (0.0010in) | 0.028mm (0.0011in) | 0.038mm (0.0015in) | 0.042mm (0.0017in) | 0.018mm (0.0007in) | 0.020mm (0.0008in) | 0.030mm (0.0012in) | 0.035mm (0.0014in) | 0.045mm (0.0018in) | 0.060mm (0.0024in) |
| Quantum ^M 3.5m (11.5ft) | 0.044mm (0.0017in) | 0.055mm (0.0022in) | 0.066mm (0.0026in) | 0.085mm (0.0033in) | 0.030mm (0.0012in) | 0.040mm (0.0016in) | 0.050mm (0.0020in) | 0.060mm (0.0024in) | 0.080mm (0.0031in) | 0.110mm (0.0043in) |
| Quantum ^M 4.0m (13.1ft) | 0.053mm (0.0021in) | 0.065mm (0.0026in) | 0.078mm (0.0031in) | 0.100mm (0.0039in) | 0.034mm (0.0013in) | 0.040mm (0.0016in) | 0.060mm (0.0024in) | 0.080mm (0.0031in) | 0.096mm (0.0038in) | 0.132mm (0.0052in) |

| Non-Contact Measurement (ScanArm)** | |
|-------------------------------------|-------------------------------|
| Measurement range | L _{DIA} ⁵ |
| Quantum ^M 2.5m (8.2ft) | 0.063mm (0.0025in) |
| Quantum ^M 3.5m (11.5ft) | 0.100mm (0.0039in) |
| Quantum ^M 4.0m (13.1ft) | 0.115mm (0.0045in) |

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} – Distance Error between two points comparing measured vs 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)

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

FARO LASER LINE PROBE SPECIFICATIONS

Accuracy: ±25µm (±0.001in)

Repeatability: 25µm, 2σ (0.001in)

Stand-off: 115mm (4.5in)

Depth of field: 115mm (4.5in)

Effective scan width: Near field 80mm (3.1in)
Far field 150mm (5.9in)

Points per line: 2,000 points/line

Minimum point spacing: 40µm (0.0015in)

Scan rate: 300 frames/second, 300 fps x 2,000 points/line = 600,000 points/sec

Laser: Class 2M

Weight: 485g (1.1lb)

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

Certifications: 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 2136.1-2007; 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-81 OG; ISTA



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