FARO® 8-AXIS QUANTUM^{E} FAROARM®

The New Standard for Cost-Effective Factory Inspection

Seamlessly integrating a Quantum^{E} FaroArm with an eighth-axis, the FARO 8-Axis Quantum^{E} FaroArm is the world's first eight-axis portable coordinate measuring machine (PCMM). The Quantum^{E} offers an entry-level portable solution for organizations looking for a cost-effective, user-friendly and efficient factory inspection system. Reliable and robust, Quantum^{E} has been tested to withstand the harshest shop-floor environments, enabling manufacturers to have full confidence in their quality assurance processes and ensuring high quality production. Additionally, the Quantum^{E} delivers market-leading portability and ergonomics along with 3D laser scanning when combined with the optically-superior FAROBlu™ Laser Line Probe or 3D color scanning when used with the FARO Prizm™ Laser Line Probe. The measurement speed and ergonomics of the 8-Axis Quantum^{E} are taken to an even greater level. The eighth-axis enables rotation of what is being measured in real-time – meaning no difficult reaching around the object, and no need to move the Arm into different locations within the process. This eliminates wasted time and offers an easy-to-use measurement solution that allows users to focus on the actual measurement and not on the measurement processes.

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

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 for articulated arms, setting a new industry performance bar, and ensuring maximum measurement consistency and reliability.

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

Cutting-edge design ensures superior performance and confidence in measurement results in the most challenging working environments, delivering high consistency and reliability. The Quantum^{E} in combination with the FAROBlu Laser Line Probe offers best-in-class scanning capability while combined with the Prizm Laser Line Probe, it delivers high resolution, 3D color scanning. The 8-Axis Quantum^{E} allows for capture with only small movements, reducing repositioning needs and time to capture measurements. Every Quantum is tested for ruggedness and is factory-ready to ensure accuracy and performance.

Excellent Ergonomics and Usability

The advanced 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. With the ability to rotate the component being measured in real-time, the 8-Axis Quantum^{E} dramatically improves ergonomic functionality and ease-of-use.

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 battery capability supports prolonged cable-free use, making it easy to go to the part without the need for external power.

Blue and Green Laser

The FAROBlu Laser Line Probe leverages an optically-superior blue laser technology. The blue laser has a shorter wavelength compared to red laser and delivers improved scanning results with higher resolution thanks to its greater ability to discover smaller details in an object. The blue laser also provides a 50% reduction in speckle noise compared to a red laser. In contrast, the Prizm Laser Line Probe takes advantage of green laser technology's ability to provide high color visual definition to deliver color scanning capabilities for high resolution color point cloud data capture and analysis.

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)

8-Axis System**	
Measurement range	System Accuracy[6]
Quantum^E 2.5m (8.2ft)	0.065mm (0.0026in)
Quantum^E 3.5m (11.5ft)	0.120mm (0.0047in)
Quantum^E 4.0m (13.1ft)	0.150mm (0.0059in)

Non-Contact Measurement (ScanArm)***			
	FAROBlu HD	FAROBlu SD	Prizm
Measurement range	System Accuracy[6]	System Accuracy[6]	System Accuracy[6]
Quantum^E 2.5m (8.2ft)	0.075mm (0.0030in)	0.075mm (0.0030in)	0.082mm (0.0032in)
Quantum^E 3.5m (11.5ft)	0.110mm (0.0043in)	0.110mm (0.0043in)	0.130mm (0.0051in)
Quantum^E 4.0m (13.1ft)	0.130mm (0.0051in)	0.130mm (0.0051in)	0.155mm (0.0061in)

All values represent MPE (Maximum Permissible Error)

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

** 8-Axis System (Arm + 8-Axis): Full system performance based on ISO10360-12 Sphere Location Diameter Error (L_{DIA})

*** Non-Contact Measurement (ScanArm and ScanArm + 8-Axis): Full System performance based on ISO 10360-8 Annex D

[1] SPAT – Single Point Articulation Test

[2] E_{UNI} – Distance Error between two points comparing measured versus nominal values

[3] P_{SIZE} – Sphere Probing Size Error comparing measured versus 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)

[6] System Accuracy – Based on Sphere Location Diameter Error

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 & Color Laser Line Probe Specifications

	FAROBlu HD	FAROBlu SD	Prizm		
Accuracy	±25µm (±0.001in)	±25µm (±0.001in)	±30µm (±0.0012in)		
Repeatability	25µm, 2σ (0.001in)	25µm, 2σ (0.001in)	30µm, 2σ (0.0012in)		
Stand-off	115mm (4.5in)	115mm (4.5in)	115mm (4.5in)		
Depth of field	115mm (4.5in)	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)	Near field 80mm (3.1in) Far field 150mm (5.9in)		
Points per line	2,000 points/line	1,000 points/line	2,000 points/line		
Minimum point spacing	40µm (0.0016in)	80µm (0.0031in)	40µm (0.0016in)		
			Color	Grayscale	Monochromatic
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	120 frames/ second, 120 fps x 2,000 points/line = 240,000 points/sec	120 frames/ second, 120 fps x 2,000 points/line = 240,000 points/sec	300 frames/ second, 300 fps x 2,000 points/line = 600,000 points/sec
Laser	Class 2	Class 2	Class 2		
Weight	485g (1.1lb)	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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ISO 9001 BUREAU VERITAS Certification | ANAB ACCREDITED | GSA Contract Holder

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