

SURVEYOR[®] WS-Series

Machine Specifications



The WS-Series system is designed around an intrinsically accurate CMM built by Wenzel's expert craftsmen to precise tolerances using metrological materials. Unlike lower-cost aluminum-based CMMs, these systems use the highest quality granite components with low susceptibility to varying temperature. The system's granite cross-beam and granite Z-axis column design ensures an identical thermal reaction in all axes. WS-Series systems also feature high-tensile air bearing guides in the Y-axis with very precisely lapped locating surfaces in the granite base plate.



The base system package includes:

- CNC 3-axis
- CMM machine base
- Motion controller with high performance PC and large flat screen monitor
- Surveyor Scan Control (SSC) software
- Geomagic or other data processing software for inspection or reverse engineering applications
- Choice of SLP laser probe
- Manual head indexer with kinematic function
- Joystick
- Laser alignment target
- Assorted PVC tooling balls
- Training
- Installation and one-year parts and labor warranty with software upgrades
- Multiple options for automated scanning are also available including a precision grade 4th axis part rotation stage with part fixturing and/or Renishaw PH10 motorized indexing heads

GENERAL INFORMATION

Laser Probe	A complete line up of SLP laser-line probes is available. Refer to separate spec sheet for additional information.
Laser / Part Indexing	Manual 4/5 axis head indexing at compound angles is included. Renishaw PH10 motorized indexing head is optional. Part indexing using 4 th axis CNC rotation stage with built-in fixture is optional.
Software - Laser Scanning	Surveyor Scan Control software. Supports point-to-point and continuous dynamic scanning. Refer to separate software specification sheet for details.
Software - CMM	Optional OpenDMIS metrology software for CMM touch probe measurements, programming, and reports.
Touch Probe - CMM	Optional Renishaw CMM probing products.
Computer	High-end PC with Open GL video.
Controller	Wenzel on all models.
Drive System	D.C. servo motors.
Max. Speed 3D	700 mm/s
Max. Acceleration 3D	2,000 mm/s ²
Power Requirements	Voltage 230V; Frequency 50 Hz (optionally 110V; 60 Hz). Maximum current and installed power depends on model. Uninterruptible Power Supply (UPS) suggested.
Environmental Requirements	Temperature: 20 +/- 2°C – Thermal Gradients: 0.5°C/h 2°C/24h 0.5°C/m
Axes	X,Y,Z, optional rotary stage
Bearing System	Air bearings
Measuring Table	Black granite
Measuring System	Optical linear transducers
Warranty	One-year parts. Technician's travel expenses not included.

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INCLUDED WITH SYSTEM

Choice of Laser Probe	SLP250, SLP400, SLP500, or SLP2000
Laser Scanning Software	Surveyor Scan Control Software
Computer	High-end Windows-based PC and monitor
Manual Laser Mount	Adjustable mounts allow for 2 axes of rotation
Test Artifact	Specially designed artifact for validating system accuracy. Includes CMM inspection report and Qualify inspection template

MEASURING RANGE (MM)

	WS-2030	WS-2040	WS-3040	WS-3060	WS-4060	WS-4080
X	500	500	800	800	1000	1000
Y	700	1000	1000	1500	1500	2000
Z	500	500	700	700	700	700

VOLUMETRIC ACCURACY CMM BASE-ISO 10360-2

Model	Renishaw TP20 Probe		Renishaw TP200 Probe	
	Standard Accuracy		Standard Accuracy	
	MPE _E	MPE _P	MPE _E	MPE _P
WS-2030 WS-2040	2.6 + L/300	2.6	2.5 + L/300	2.5
WS-3040 WS-3060	3.0 + L/300	3.0	2.7 + L/300	2.7
WS-4060 WS-4080	3.1 + L/300	3.1	2.8 + L/300	2.8

ELECTRICAL NETWORK SPECIFICATIONS

- Machines supplied with I663 SM panel plug (I6A/6h 2P+T CEE rules).
- Customer will provide the free socket or the panel socket according to its requirements.
- Mains voltage: 220 V 50 Hz ± 10%.
- Max absorption: 15 A., cable section 4 mm².
- A CEE-compliant plug is recommended: I663 SV free plug (I6A/6h 2P+T CEE rules).
- Wall-type switch dedicated to the machine is recommended.

Other recommendations:

- Avoid connections near or in common with large-usage equipment (engines, compressors, etc.) that cause strong voltage drops when started.
- Avoid multiple connection points (for example between several machine tools or with several computers).
- Do not use multiple sockets, shoddy sockets, or sockets not in conformity with CEE rules.
- Always provide grounded sockets.

COMPRESSED AIR NETWORK SPECIFICATIONS

Dew point drying set to at least 3°C and oil separation set: 0.01 parts per million of oil. Required pressure: 6 bar ± 0.5 bar. Rate of flow: 300 NI./min.

LASER DESIGN ACCEPTS NO RESPONSIBILITY FOR DAMAGES OR ACCIDENTS TO PEOPLE, THINGS, ETC. CAUSED BY NON-OBSERVANCE OF ABOVE REQUIREMENTS.

SYSTEM OPTIONS

Rotary Stage	ADRS 150 high accuracy rotary stage
Renishaw PH10	2-axis Renishaw PH10T or PH10M
7th Axis	LDI automated flip fixture
Manual Fixtures	Manual flip fixture and extra frames
Touch Probe Software	OpenDMIS touch probe software
Reverse Engineering Software	Geomagic Studio, Polyworks/Modeler, or Rapidform XOR
Inspection Software	Geomagic Qualify, Polyworks/Inspector, or Rapidform XOY

Choose from the various system options shown below:



Renishaw PH10

Add 2 axes of programmable head motion

Laser Probes

Select from our entire line of SLP laser probes



Automated Flip Fixture

Choose an integrated ADRS rotary for fully automated scanning. Add an automated flip fixture to hold parts, allowing for easy part flipping and data matching.