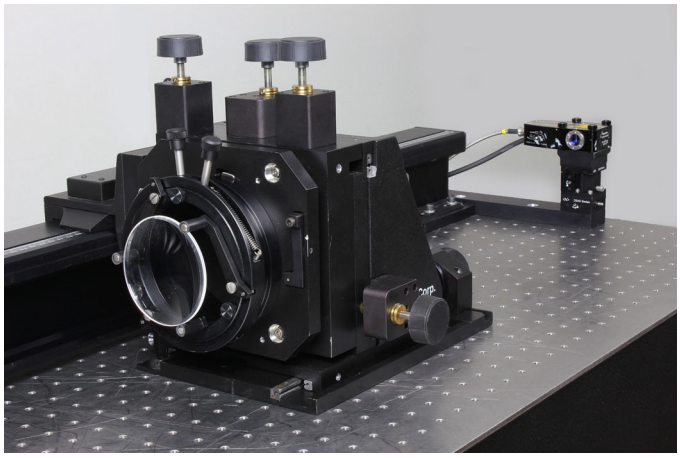
Radius Metrology

Horizontal Configuration

Specifications

Horizontal, optical table mounted radius of curvature metrology solutions for use with ZYGO laser interferometers. Available with encoded or interferometric z positioning, manual or motorized part mounts, and 1.5 or 2 meter rails. For part numbers see the Laser Interferometer Accessory Guide, OMP-0463.



ENCODED VERSIONS	
Description	Encoder based radius kit
Components	Includes standalone 5-axis mount with easily removable rail clamp and digital display. Requires encoded rail.
Options	Manual- includes 5-axis mount (X, Y, Z, Tip, Tilt) with micrometer adjustment; this version is compatible with most ZYGO interferometers (with or without CAN electronics) Motorized- includes 5-axis roller mount with motorized X, Y, and Z (manual tip/tilt) capable of 42 mm/sec (1.6 in./sec) z-travel
Z-axis Resolution	1 µm (39.4 µin.)
Repeatability(1)	≤ 25 µm (0.001 in.)
Error(2)	≤ 50 µm (0.002 in.) (with 1.5 m rail) ≤ 70 µm (0.003 in.) (with 2.0 m rail)

INTERFEROMETRIC VERSIONS	
Description	Displacement measuring interferometer used for precise z-axis feedback
Components	Includes standalone 5-axis mount with easily removable rail clamp. Requires guide rail.
Options	Manual- includes 5-axis mount (X, Y, Z, Tip, Tilt) with micrometer adjustment Motorized- includes 5-axis roller mount with motorized X, Y, and Z (manual tip/tilt) capable of 42 mm/sec (1.6 in./sec) z-travel
Z-axis Resolution	80 nm (3.15 µin.)
Repeatability(1)	The greater of 3 µm (118 µin.) or 0.001% (% of radius)
Error(3)	Environment and alignment dependent

5-AXIS MOUNT DETAILS	
X & Y Travel Range	±6.35 mm (±0.25 in.)
Tip & Tilt Range	±2°
Max. Load	6.80 kg (15 lb)

RAIL DETAILS	
Overall Rail Length	1.5 m: 1880 mm (74 in.) 2 m: 2390 mm (94 in.)
Range of Travel (4)	1.5 m: 25.4 to 1470 mm (1.0 to 57.9 in.) 2 m: 25.4 to 1970 mm (1.0 to 77.5 in.)
Table Interface	Inch: ¼-20 UNC threads on 1 in. spacing Metric: M6 threaded holes on 25 mm spacing
Interferometer Interface	Ball mount interface on interferometer and/or table mount
Alignment to Optical Axis (5)	0.1°

OPTICAL TABLE LENGTH RECOMMENDATIONS (6)	
1.5 m Rail	10 ft (or 3 m) table for use with either 4 or 6 inch interferometer 8 ft table possible with 4 inch interferometer with encoded radius hardware and optional rail foot (p/n 6500-0340-01)
2 m Rail	10 ft (or 3 m) table for use with 4 inch interferometer 12 ft (or 3.6 m) table for use with 6 inch interferometer

Notations

1. Repeatability based on an acquisition using 8 phase averages and making 10 consecutive measurements from the confocal to the catseye position. Test part, reference optic and measurement cavity thermally stabilized.
2. Error defined as the difference between encoded radius measurement and an interferometric based measurement in a stable environment.
3. An interferometric measurement provides lowest measurement uncertainty but each cavity will have a unique set of error sources. Major contributors are thermal stability and the alignment of the test part.
4. This is the distance (minimum to maximum) from the front of the accessory receptacle to the mounting surface of the 5-axis mount.
5. This value defines the typical horizontal alignment accuracy of the rail to the optical axis of the interferometer using the ball mount interface.
6. Contact ZYGO for detailed dimensional information and customer reference drawing 6500-0068-02.

Specifications subject to change without prior notice.

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