

Radius Metrology

Horizontal Configuration

Horizontal, optical table mounted radius of curvature metrology solutions for use with ZYGO laser interferometers.

ENCODED MANUAL ⁽¹⁾

Description	Manual encoder based radius kit with data acquisition and analysis in MetroPro software ⁽²⁾ .
Z-axis Resolution	1 μm (39.4 $\mu\text{in.}$)
Repeatability	$\leq 25 \mu\text{m}^{(3)}$ (0.001 in.)
Error ⁽⁴⁾	$\leq 50 \mu\text{m}$ (0.002 in.) (with 1.5 m rail) $\leq 70 \mu\text{m}$ (0.003 in.) (with 2.0 m rail)
Components	P/N 6500-0478-11 – Includes standalone 5-axis mount with easily removable rail clamp and digital display. Requires encoded rail.

INTERFEROMETRIC MANUAL ⁽⁵⁾

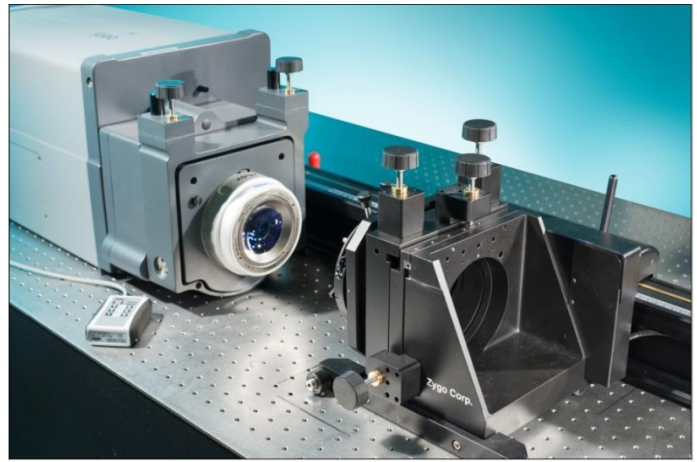
Description	Manual interferometric radius kit with data acquisition and analysis in MetroPro software ⁽²⁾ .
Z-axis Resolution	20 nm (0.79 $\mu\text{in.}$)
Repeatability	The greater of 3 μm (118 $\mu\text{in.}$) or 0.001% (% of radius)
Error ⁽⁶⁾	Environment and alignment dependent
Components	P/N 6500-0478-21 - Includes standalone 5-axis mount with easily removable rail clamp. Requires guide rail.

MOTORIZED RADIUS KITS ⁽⁷⁾

Description	Both the encoded and interferometric radius kits can be upgraded to add motorization of X, Y and Z axis at the test part. Includes autonull capability in MetroPro X software.
Speed	100 mm/sec (4 in./sec)
Components	P/N 6500-0478-13 – Encoded version includes 5-axis roller mount with motorized X, Y, and Z with easily removable rail clamp. Requires motorized encoded rail. P/N 6500-0478-23 – Interferometric version includes 5-axis roller mount with motorized X, Y, and Z with easily removable rail clamp. Requires motorized guide rail.

5-AXIS MOUNT

X & Y Travel Range	$\pm 6.35 \text{ mm}$ ($\pm 0.25 \text{ in.}$)
Tip & Tilt Range	$\pm 2^\circ$
Max. Load	6.80 kg (15 lb)
Components	P/N 6500-0475-01 - Includes standalone 5-axis mount.



RAIL

Range of Travel ⁽⁸⁾	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.)
Overall Rail Length ⁽⁹⁾	1.5 m: 1880 mm (74 in.) 2 m: 2390 mm (94 in.)
Table Interface	Inch: $\frac{1}{4}$ -20 UNC threads on 1 in. spacing Metric: M6 threaded holes on 25 mm spacing
Interferometer Interface ⁽¹⁰⁾	Ball mount interface on interferometer and/or table mount
Alignment to Optical Axis ⁽¹¹⁾	0.1°

OPTICAL TABLE LENGTH RECOMMENDATIONS ⁽¹²⁾

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

- Manual encoded radius kit can interface via RS-232 to a ZYGO interferometer with analog or digital CAN based electronics.
- Requires MetroPro version 8.3.3 or later.
- 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.
- Error defined as the difference between encoded radius measurement and an interferometric based measurement in a stable environment.
- Interferometric radius kits require an interferometer with CAN digital electronics and MetroPro 8.3.3 or later.
- An interferometric measurement provides lowest measurement uncertainty but each cavity will have a unique set of error sources. Major contributors will be thermal stability and the alignment of the test part.
- Motorized radius kits require use with an interferometer with CAN digital electronics and MetroPro X software.
- This is the distance (minimum to maximum) from the front of the accessory receptacle to the mounting surface of the 5-axis mount.
- The overall length is the total length of the rail.
- The rails connect directly to the ball mount interface on a ZYGO interferometer or can be directly mounted to an optical table.
- This value defines the typical horizontal alignment accuracy of the rail to the optical axis of the interferometer using the ball mount interface.
- Contact ZYGO for detailed dimensional information and customer reference drawing 6500-0068-02.

Specifications subject to change without notice



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