Qualifire® 2.4

Specifications

Fizeau high definition interferometer with patented QPSI™ acquisition for true on-axis common path metrology of optical surfaces or wavefront in the presence of vibration.

System Overview

Zygo P/Ns	6580-0424-01 Qualifire 2.4, 4 in. 6580-0624-01 Qualifire 2.4, 6 in.
Measurement Capability	Measures surface form of reflective materials and optics, and transmitted wavefront of transparent optics
Measurement Techniques	PSI – temporal phase-shifting interferometry QPSI – vibration robust temporal phase-shifting interferometry DynaPhase™ – vibration insensitive instantaneous interferometry
Alignment System	Quick Fringe Acquisition System (QFAS) with twin spot reticle for PSI
Test Beam Diameter	4 inch: 102 mm 6 inch: 152 mm
Alignment FOV	4 inch: ±3 degrees 6 inch: ±2 degrees
Optical Centerline	4.25 in. (108 mm)
Camera Details	Resolution: 2480 x 2480 pixels Frame Rate: 175 Hz Digitization: 8 bit
Acquisition Time	130 – 300 ms
Magnification	1X Fixed
Polarization	Nominally circular (1.2:1 or better)
Pupil Focus Range	4 inch: ±2 m 6 inch: ±4.5 m
System Controller	High-performance workstation with Mx™ software running under Microsoft® Windows
Mounting Configuration	Horizontal or vertical
Remote Control	Wired and wireless remote
Options	Flying Spot for coherent artifact reduction and plano auto focus. DynaPhase acquisition.
Accessories	Smart Accessory compatible. See the Zygo *Laser Interferometer Accessory Guide*, *OMP-0463*
Physical Envelope (LWH)	50.1 x 37.8 x 33.7 cm (19.7 x 14.9 x 13.3 in.)
Weight	4 inch: 21.4 kg (47.2 lb) 6 inch: 23.6 kg (51.9 lb)
Warranty	3 years laser source, 2 years system

Laser Details

Laser Source	High power stabilized HeNe
Class	IIIa (meets 3R ANSI requirements)
Wavelength	633 nm
Frequency Stabilization	<0.0001 nm
Output Power	<3 mW
Coherence Length	>100 m

Utility Requirements

Power	100 to 240 VAC, 50/60 Hz
Compressed Air	80 psi (5.5 bar); dry and filtered source (required for optional vibration isolation)

Operational Environment[1]

Temperature	15 to 30°C (59 to 86°F)
Rate of Temp. Change	<1.0°C per 15 min
Humidity	5 to 95% relative, non-condensing
Vibration Isolation	Not required for QPSI or DynaPhase; recommended with PSI acquisition

Performance [2]

RMS Simple Repeatability [3]	<0.06 nm, λ/10,000 (2σ)
RMS Wavefront Repeatability [4]	<0.35 nm, λ/1800 (mean + 2σ)
Peak Pixel Deviation [5]	<0.5 nm, λ/1200 (99.5th %)
ITF [6]	4 inch: @ 1x: > 5.6 cyc/mm @ 0.7 ITF 6 inch: @ 1x: > 3.7 cyc/mm @ 0.7 ITF

Notations

1. Defines conditions under which the system can operate; does not represent environmental stability required to meet specified performance.
2. Performance qualified with the temperature set point between 20-23° C.
3. RMS Simple Repeatability is defined by 2X the std dev of the RMS for 36 sequential measurements (16 avgs) of a short plano cavity at 1X zoom.
4. RMS Wavefront Repeatability is defined by the mean RMS difference plus 2X the standard deviation for the differential between all even numbered measurements and a synthetic reference (defined as the average of all odd numbered measurements); 36 sequential measurements (16 averages) at 1X zoom form the basis for calculation.
5. Peak Pixel Deviation is defined by the 99.5th percentile of the pixel-wise std dev map for 36 sequential measurements (16 averages); this result measures time varying behavior (or Type A uncertainties) at 1X zoom.
6. Instrument Transfer Function (ITF) defines the spatial resolution of the instrument over all spatial frequencies.

Distribution in the UK & Ireland

Lambda

Characterisation, Measurement & Analysis

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Specifications subject to change without prior notice.