

## GI20 Flatness Measurement System

The GI20 grazing incidence interferometer provides high precision flatness measurement, suitable for use with lapped and semi-polished surfaces up to 150mm (6") $\varnothing$ . Unlike conventional fizeau interferometers, the GI20 can measure non-reflective surfaces, ideal for analysing lapped and/or ground surfaces prior to final polishing. The interferogram is displayed on a LCD screen on the front of the unit.



### Grazing Incidence Interferometry

A standard fizeau interferometer will, depending on the wavelength used, normally operate with fringe spacing approximately 0.3 $\mu$ m. This restricts flatness measurement to highly reflective materials that provide sufficient contrast on the monitor. The resulting short distance between fringes often impedes the analysis of "busy" images.

The Logitech GI20 grazing incidence interferometer overcomes such problems by reflecting laser light at a grazing incidence angle off the sample surface. This angled beam of light ensures that the monitor shows fringes on both reflective and non-reflective sample surfaces. It also allows a large visible aperture of 127mm x 150mm (5" x 6"), enabling samples up to 150mm (6") $\varnothing$  to be accurately assessed.

The 7" TFT screen allows rapid and accurate measurement to be made "in process" with fringe spacing displayed at a fixed 2 $\mu$ m interval, producing excellent contrast levels with surface finishes from polished samples up to 300nm Ra. Evaluation of fringe patterns can be done manually using an optional Logitech USB frame grabber utility.

### Applications

Applications for the GI20 Flatness Measurement System are virtually limitless. Whether the requirement is for flatness measurement or quality assessment, GI20 provides an excellent solution when processing semiconductor wafers; optical components; machined components and geological samples.

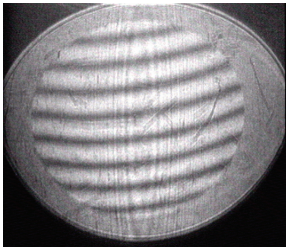
- *High precision flatness measurement of ground, lapped or semi-polished samples*
- *Measure 2 $\mu$ m per fringe with excellent clarity*
- *Surface roughness measurement from 1nm to 300nm Ra*

### Manual Grazing Incidence Interferometry

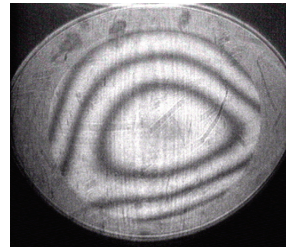
Each fringe shown on the screen represents a 2 $\mu$ m change in the air gap between the specimen and the reference. Convexity and concavity are determined by gentle finger pressure as if to close the air gap.

Fringes move away from the point of the air gap (i.e. area of roundness) and conversely towards the maximum air gap (i.e. area of hollowness). As interferometry determines any departure from specimen flatness and requires some degree of tilt between the specimen and the reference flat, it is necessary to compensate for any residual net tilt by visually minimising the fringe count.

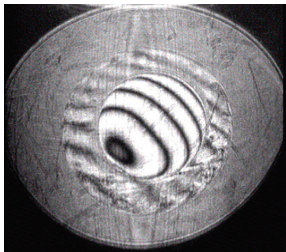
# G120 Flatness Measurement System



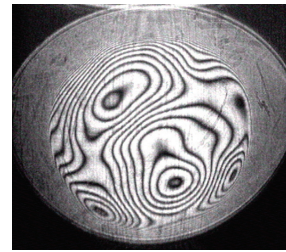
**Example 1**  
Fringe pattern of a flat specimen. The linear fringes show that the sample is being presented to the optical reference surface of the interferometer at an angle.



**Example 3**  
Fringe pattern of a flat specimen which is convex or concave, shown by the direction of fringe movement when the sample is touched. The annular fringe pattern indicates that the sample is being presented to the optical reference surface in a parallel plane.



**Example 2**  
Fringe pattern of a specimen which is convex or concave, shown by the direction of movement when the sample is being presented to the optical reference surface at an angle.



**Example 4**  
Fringe pattern of a sample with peaks and valleys. Again the annular fringe indicates that the sample is being presented to the optical reference surface in a parallel plane.

*Note: That the sample is not quite parallel to the mounting substrate and may require further processing.*

## Technical Specifications

Power Supply	220-240v 50-60Hz	110v 60Hz
Maximum sample size:	150mm (6") Ø	
Surface roughness:	1nm to 300nm Ø	
Fringe spacing:	2µm	
Height:	260mm (10.4")	
Depth:	602mm (24")	
Width	430mm (17.2")	
Weight	24kg	

## Accessories, Components & Consumables

A comprehensive range of accessories, components and consumables are available to support these systems, enabling optimum results and longevity of the machines. A selection of supporting products can be found below. For a more comprehensive listing or to order consumables online please go to [www.logitech.uk.com](http://www.logitech.uk.com)

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