

Flatness



MEASURING FLATNESS OPTICALLY



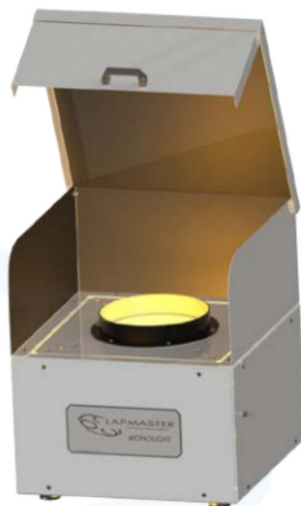
Floor Standing Monochromatic Light Unit

910L x 910W x 1800H



Standard Monolight

400L x 300W x 400H



Enhanced Monolight

540L x 540W x 560H

Bench Mounted Monochromatic Light Units

MONOCHROMATIC LIGHT UNIT

In order to obtain precise measurement and contrasting fringe patterns when using optical flats to assess the flatness of processed components, the field of view must be illuminated with monochromatic light, that is, light in which the rays have virtually the same wavelength.

The Lapmaster monochromatic light unit uses a low pressure sodium light source which gives very economic running costs and a long operating life.

The effective monochromatic wavelength is 5896Å, so $\lambda/2$ is approximately 0.3 microns.

On the standard monochromatic light unit, in front of the lamp is an opalescent diffusing screen with a straight line engraved across its face. By suitable adjustment of the flat, work and eye position, the reflection of the engraved line provides a straightness reference with which the bands can be compared.

Suitable for use on the following electrical services

- 220/240V, single phase, 50/60Hz
- 110V, single phase, 50/60Hz
- 12VDC *

* Selected units only.



OPTICAL FLATS

Lapmaster optical flats are test reference or proof flats used in the measurement of plano or nearly plano specular surfaces in conjunction with a monochromatic light source. A transparent distortion free material is needed for an optical flat, and Lapmaster use only Zerodur or Quartz material with ideal properties for this application. The diameter to thickness ratio is generally $\leq 7:1$ for mechanical stability.

Preparation of the highly specular flat surfaces is carried out in our own optical polishing facility. Both single and double sided flats are available in solid or donut form.

All flats are checked against our master flat which is calibrated regularly by the National Physical Laboratory at Teddington, UK and are supplied with an inspection certificate. A sturdy storage box ensures safe keeping of the flat when not in use.

Zerodur is a registered trademark of Schott Glaswerke, Mainz.

Popular standards of accuracy available include,

- 1/2 light band $\lambda/4$
- 1/4 light band $\lambda/8$
- 1/8 light band $\lambda/16$

Other accuracies are available.

Some specifications may depend on the size of optical flat.

Where λ is the monochromatic wavelength (sodium source).

A range of sizes is offered from 25mm to 600mm

Annular flats with a cut-out hole are available, to permit the checking of surfaces where a protrusion extends above the plane of work. Prices will be quoted on request.

Lapmaster also offer a repolishing service of optical flats clouded by usage, or recalibration only if required with issue of new certification.

Note: Bubbles which are seen to be open and on the surface of the material are not permitted. Bubbles fully enclosed in the bulk of the material - Per 100 cm³ can be:

Per 100 cm ³	
0.1 - 0.5mm	50

Bubbles smaller than 0.1mm are not counted.

No inclusions, obviously visible to the naked eye, are allowed.



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