

Measuring Flatness Optically

Monochromatic light units

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.

Knight Optical monochromatic light units use a low pressure sodium light source which gives very economic running costs and a long operating life. The effective monochromatic wavelength is 5896A, so $\lambda/2$ is approximately 0.3 microns.

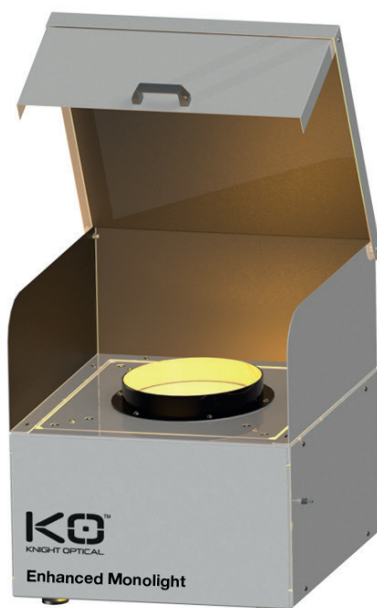
Knight Optical provide three types of Monochromatic light units.

Standard Monolight (TML4030):

In front of the lamp of our standard monochromatic light unit 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.



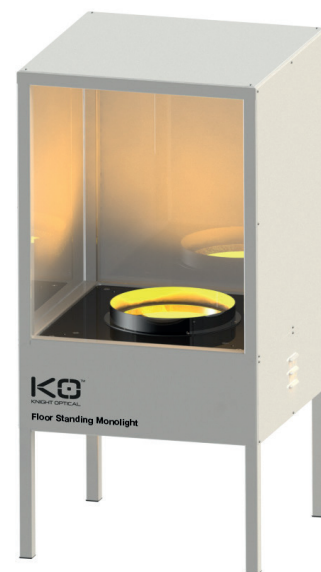
Enhanced Monolight (TML5454):



Floor standing Monolight (TML9191):

All monolight units are 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

Knight 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 Knight Optical 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.

Both single and double sided flats are available in solid or donut form.

All flats are checked using our Zygo Verifire XPZ interferometer fitted with Mx[®] software and are supplied with an inspection certificate. All flats come supplied in a sturdy storage box ensuring safe keeping of the flat when not in use.

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 please enquire. 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. Please speak to our technical sales team for a quotation.

Knight Optical also offer a re-polishing service of optical flats clouded by usage, or recalibration only if required with issue of new certification.

Contact our multilingual technical sales team and discover how Knight Optical's high quality monochromatic light sources and optical flats can improve your instrumentation and supply chain experience.

