



The SD11 special detector



For measurement of effective illuminance
in theatres, arenas, studios etc.

The SD 11 special detector



The SD 11 is a hemi-cylindrical detector for measurement of effective illuminance on theatre stages, in museums, sports arenas, television studios, workplaces, film studios and so on.

The SD 11 hemi-cylindrical detector is carefully filtered to give it a spectral response similar to that of the human eye. Its angular sensitivity is suited for the measurement of illuminance in places where people or other "three-dimensional objects" are to be seen by an audience or a camera.

The SD 11 can be connected to the Hagner Type S2 or S3 Universal Lightmeters or to the Hagner E4-X Luxmeter. The E4-X Luxmeter can then be calibrated together with the detector.

Conventional cosine corrected photometric detectors are intended primarily for measurement of planar illuminance, that is the light falling on a flat surface, such as a table or wall. Planar illuminance is therefore related to the visibility of such flat surfaces. However, where the objects viewed are three dimensional, such as actors on a stage, and especially where they may be viewed from a range of angles, the illuminance in one plane may be inadequate to characterize the lighting conditions. For instance, light from the side may be of little value in illuminating a wall or painting, but very important in revealing the form of a piece of sculpture.

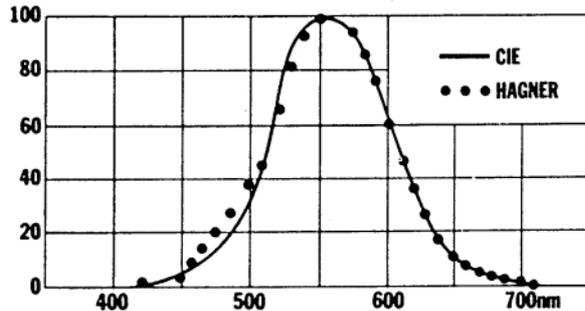
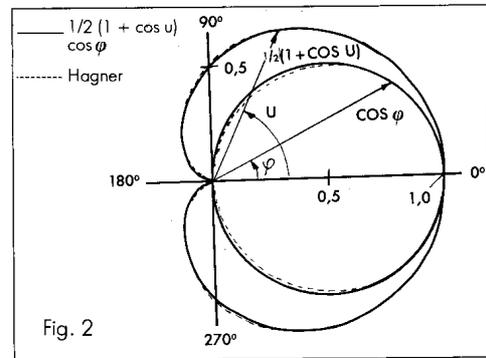


Fig. 1 Spectral response of the light receptors used in the Hagner Universal Photometer in comparison with the visibility curve of the CIE standard observer.

In such circumstances the use of a hemi-cylindrical detector which takes more account of light incident at an angle to the line of sight than a cosine corrected detector, may give readings which relate far better to the visibility of objects of interest.

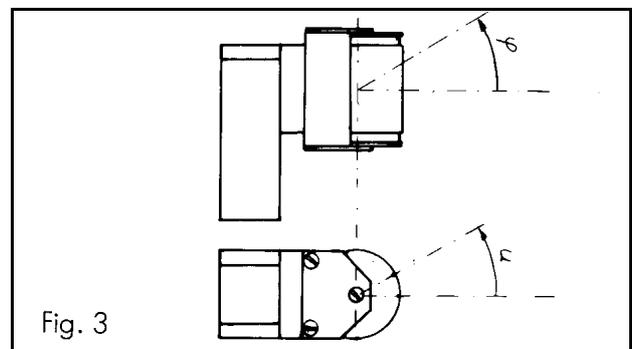
Technical description

The detector is filtered to produce the same spectral response as the human eye, as defined by the CIE (Fig. 1). Angular sensitivity in elevation is given by $\cos \varphi$, where φ is the angle measured vertically from the horizontal plane, as shown in Figures 2 and 3. The angular sensitivity in azimuth is $0,5 (1 + \cos u)$, where u is the angle in the horizontal plane from a line through the center of symmetry of the detector (Fig. 2 and 3).



The absolute sensitivity of the detector is about 100 pA/lux.

When calibrated together with an E4-X Luxmeter, illuminance can be read off from the Luxmeter directly. (An S1 or S2 Universal Lightmeter can also be calibrated together with an SD 11, although this is less usual.) If the detector and instrument have not been calibrated together, it will be necessary to determine an appropriate correction factor, K . This can be done from the formula $K=y/z$, where y =the sensitivity of the original detector and z = the sensitivity of the SD11. Sensitivity factors are shown on the detectors.



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