



The GOSSSEN SIXTICOLOR meter is a precision instrument for determining both automatically:  
the required light balancing filter  
the color temperature of light sources used for color photography.

1. Neck chain hook. Instrument is supplied complete with chain to prevent accidental drop. Leather carrying case is also included.
2. White indicator needle.
3. Push button. Releases indicator needle to give proper reading when pushed in, locks reading when released.
4. Scale showing light balancing filter required from B (bluish) 21-1 and R (reddish) 1-24.
- 5a. & 5b. Index marks for setting instrument for either  
5a. color temperature of film  
5b. type of film.
6. Scale showing degrees Kelvin (\*K). Three zeros omitted to save space, hence x1000.
7. Button for turning dial with Index Marks (5a & 5b) and filter scale (4).
8. Table showing color temperature for which most color films are balanced.

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### HOW TO USE THE SIXTICOLOR

- 1) Set the meter for film used. Turn the knurled knob (7) until index mark ▼ is set opposite the code letter for the film used. Or the upper index ▲ mark can be set against proper \*Kelvin (Illustration D (daylight film) 5800°K.). The meter need not be reset as long as the same film is used.
- 2) Point the opal disk of the meter towards the light illuminating the subject or scene. (Be sure that the disk is not shaded by a finger or other object). Push down Button 3 for a few seconds. Because releasing the button will lock the reading, it is not necessary to watch the instrument with the eye.
- 3) The white indicator needle (2) now shows the correct light balancing filter required as well as the color temperature of the light source.
- 4) The designation of the light balance filters from B1 to B21 (bluish) and R1 to R24 (reddish) is already in use by many filter manufacturers. The method is based on mathematical foundation and simplifies the filter designation considerably. It has the further advantage that two or more filter can be added to make another filter (Example: B3 + B6 = B9). For further explanation see page 8.

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If you do not have the filter indicated, use nearest weaker filter.  
For use with KODAK filters the following table, which also appears in the cover of the carrying case shows the equivalents:

SIXTICOLOR	KODAK	SIXTICOLOR	KODAK
B3	82 B	R3	81 B
6	82 + 82C	6	81 EF + 81
9	82C + 82C	9	85C
12	80B	12	85
15	80B + 82A	15	85B
18	80B + 82C	18	85B + 81B
21	80B + 82B + 82C	21	85B + 81EF
		24	85B + 81EF + 81D

Note: The SIXTICOLOR measures only color temperature.  
Correct exposure should be determined with a good exposure meter.  
Light balancing filters absorb a certain amount of light (exposure increase is given by the respective filter manufacturers), and the exposure time must be corrected, accordingly.  
The use of the SIXTICOLOR meter is extremely simple and covered by the preceding instructions. The following pages give a more thorough background of the function of the instrument, and the science behind it, for those who want to know.

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### Why Light Balancing Filters?

All color films are manufactured to be exposed in light of a certain spectral composition (daylight film at about 5800°K, artificial light either at 3200°K or 3400°K, flashlight at 3800°K, depending on type). If the light illuminating a scene or subject is not of that specific color temperature, the resulting picture will be off color: Too reddish (warm) if the color temperature of the light was lower, too bluish (cold) if it was higher than that for which the film was balanced. Off color results can be avoided by using so called light balancing filters. Light balancing filters, when set before the lens, change the color temperature of the light reaching the film to the value for which the film was balanced. When the resulting transparency is projected, it will appear as the scene would in normal daylight.

Because color film, unlike the human eye, cannot instinctively compensate for varying color temperature of light, the SIXTICOLOR meter is required to insure correct results.

On the other hand it must also be remembered that color appreciation is a subjective matter, whereas the SIXTICOLOR, like any instrument, measures objectively. Therefore if a certain mood is to be retained or created, as in a sunset scene, either a weaker filter than the instrument would indicate should be used, or possibly no filter at all.

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### What does "Color Temperature" Mean? (A little theory for the curious-minded)

The color temperature expresses the spectral energy distribution of light. Light is composed of rays of different wave lengths; short wave lengths, appearing to the human eye as blue-violet, long wave lengths as reddish light. The light emitted by incandescent bulbs for instance, contains more red than blue rays.

In color photography, such differences are very critical because the appearance of a colored object differs according to the type of illumination. While the human eye compensates for such differences to some extent, the color film does not.

The types of light most important in color photography have a spectral composition comparable to that of glowing objects whose spectrum can be determined by their temperatures.

Thus, these types of light can be characterized by indicating the temperature (in degrees Kelvin) to which a glowing object should be heated to emit light of comparable quality. This temperature, called "color temperature" is 273° higher than the Centigrade temperature reached. Therefore, an object heated to 5000° Centigrade, for instance, would be said to have 5273°K (degrees Kelvin).

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The light produced by fluorescent, sodium vapor, and mercury vapor lamps has a spectral composition different from that of glowing objects, and cannot be measured in terms of color temperature. Color photography under such light sources requires special care and testing.

**How the filter numbers originated**

Color temperatures can be expressed not only in degrees "Kelvin" but also in MIREL values (Micro Reciprocal Degrees). The mired value is derived by dividing 1,000,000 by the Kelvin degrees  $\frac{1,000,000}{\text{K-value}}$ . To obtain condensed values, the concept DECAMIREL is used: 10 mired = 1 decamired.

Example: 5000°K = 200 mired = 20 decamired.

The figures on the SIXTICOLOR Filter Scale mean decamired values and the white pointer indicates the decamired difference between the color temperature measured and that value for which the color film used is made. For instance, the scale on page 2 shows a filter reading of B 12 and a color temperature reading of 3400°K. The triangle on the lower part of the scale is marked on D whereas the triangle on the upper part indicates 5800°K. Thus the decamired difference is:

$$29.3 \text{ decamired (3400°K) minus } 17.3 \text{ decamired (5800°K)} \\ = 12 \text{ decamired, equivalent to B 12 filter}$$

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The bluish filter raise the °K value of the color temperature whereas the reddish R filters lower it.

**Guarantee:**

The SIXTICOLOR meter is a precision product made by GOSSEN, the World's largest manufacturer of photoelectric exposure meters. If used with normal care, it will give many years of reliable service.

It should be treated like any precision instrument: avoid excessive shock, do not drop, do not store near radiator or other hot places.

Keep instrument in closed case when not in use.

The SIXTICOLOR meter is guaranteed to the original purchaser for one year against all defects of material and workmanship, provided the registration card accompanying this instrument is filled out and mailed to us within ten days after purchase.

This guarantee does not cover damage due to accident, misuse or tampering. In case service is required, pack instrument carefully, and mail to

Kling Photo Corporation  
Instrument Service Dept.  
257 Park Avenue South,  
New York 10, N.Y.

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**Other GOSSEN**



**LUNASIX**  
Electronic Exposure Meter

128 times (7 f-stops) more sensitive than conventional meters; even measures illumination by candle or moon light! For reflected or incident light; shows exposure times from 1/1000 sec. to 8 hours. ASA 6-12000. For use with all still and motion picture cameras. Built-in foot candle conversion table.

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**Photographic Instruments**



**TRI-LUX**  
Foot Candle Meter

Extremely accurate. Has six measuring ranges: 0-12, 0-60, 0-600 and (with multiplying disk): 0-240, 0-1200, 0-12000 foot candles. A MUST for the motion picture studio, TV stage, lighting engineer, etc.

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GOSSEN  
MAIN FACTORY

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