

# cal-LIGHT 400

## Operating Instructions

### 1. Operating the cal-LIGHT 400

The cal-LIGHT 400 is ergonomically designed for easy operation. When held at arm's length in a comfortable reading position, the angled silicon light sensor is automatically positioned horizontally and ready to measure illuminance from the lightsource at which is pointed.

- a) To switch on the cal-LIGHT 400 click the front button. The autoranging display will indicate footcandles (fc) or lux (lx). The display is read directly without multipliers, except when a number is followed by a "k" indicating units of 1000.

Eg. 3.89 kfc reading = 3.89 kilofootcandles  
The reading is calculated as  $3.89 \times 1000 = 3890$  fc.

- b) The cal-LIGHT 400 allows you to easily measure and read the display simultaneously. If you wish to "freeze" the reading, press and hold the front button, and release the button to continue measuring.
- c) The cal-LIGHT 400 features auto-power off in about 2 minutes.


### 2. Changing measuring units between footcandles (fc) and lux (lx) units

- a) Slide out the battery cover.
- b) Remove the battery (do not disconnect the battery).

You will now see a Phillips-head screw which holds the instrument together. Do not touch this screw.

- c) Above the screw head you will notice a slit opening which conceals a barely visible sliding switch. Insert an open paperclip or a small screwdriver approximately 30 degrees to the back surface of the cal-LIGHT and in about 1/4-3/8", and slide the switch to one side. If the cal-LIGHT reads fc, the sliding switch is on the left side of the slit. Slide it to the right side and the cal-LIGHT will now read in lx. Reverse the operation to change units from lx to fc.

### Low Battery Sign

If this  sign appears in the top left hand corner of the display, it indicates that the battery output is too low and should be replaced to prevent erroneous readings.

## Taking illuminance measurements with the cal-LIGHT 400

This illuminance measuring lightmeter measures the light which falls onto a surface from a light source in footcandles (fc) or lux (lx) units.

Only a calibrated lightmeter can give reliable measurements, and the calibration must be traceable to a known national standard. The cal-LIGHT 400 is calibrated against NIST or NRC National Standards, and every cal-LIGHT is supplied with an individual calibration certificate.

When taking illuminance measurements from a table or desk surface, hold the instrument near the surface so the light sensor is parallel to this surface. This will allow you to comfortably read the measurement from the cal-LIGHT display. When taking illuminance measurements at a vertical surface, repeat the operation so the light sensor is parallel to the surface. This allows for comfortable reading of the display, while simultaneously taking the measurement.

A convenient support stand that swings out from the cal-LIGHT enables remote measurements from a flat surface. This permits the silicon light sensor to be parallel to the surface, and allows you to read from long distances. While using the support stand to hold the cal-LIGHT upright, depress the ON button and position yourself a reasonable distance away from the cal-LIGHT. This way, physical shadows or clothing reflections do not interfere and alter your measurements. cal-LIGHT's large LCD display can be read from a distance of 15 feet or more.

The high sensitivity and high stability silicon photodiode light sensor has two filters on the front. The filter visible from the exterior is a cosine corrector and compensates for incident angle. It's easy to clean and protects the delicate optical system behind it. Use a mild detergent or methanol only. **DO NOT USE ACETONE OR OIL BASED CLEANERS.**

The filter located internally is a color filter that works together with the silicon light sensor behind it, that allows the cal-LIGHT to see exactly like the human eye sees.

The Illuminating Engineering Society (IES) has published a variety of papers on methods of measurement of illuminance under various environmental conditions. These papers are described in the IES publications catalogue and can be obtained from the address below:

Illuminating Engineering Society of North America  
120 Wall Street, 17<sup>th</sup> Floor, New York, NY 10005-4001 U.S.A.

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