

Universal Light Monitor Type 774



- **Replaces 4 separate instruments**
- **Thermal Radiation (IR)**
- **Ultra Violet (UV)**
- **Visible light (Lux or Foot-candles)**
- **Temperature (°C or °F)**
- **Sized like a small mobile phone**
- **Easy one handed operation**
- **Large, easy to read display**
- **Optional data logging**

A single instrument enables measurement of the three types of radiation that are of most interest: visible (Lux), thermal radiation and ultraviolet. The 774 also measures temperature in °C or °F.

Thermal Radiation (IR)

The measurement of thermal radiation (shown as W/M² or btu/hour/ft²) allows the user to estimate how much solar heat is coming through windows, check the performance of heat reflecting films, measure the heating effect of lamps on objects etc.

Visible Light

The amount of visible light is important, not only to check illumination in work areas, galleries etc but also to control damage to light sensitive objects that is also caused by normal light. Measurements can be displayed as Lux or Foot-candles.

Ultraviolet (UV)

For many years it has been recognised that one of the major causes of damage to museum objects and other sensitive objects, soft furnishings etc is the fading and rotting effect of light on the object. The most damaging part of the illumination is its ultraviolet content. Since 1976 Littlemore Scientific (ELSEC) has been providing instruments that enable the conservator to measure the UV content of light and thereby protect valuable exhibits. Using the 774, measurements can be taken of the proportion of UV present ($\mu\text{W}/\text{lumen}$) and the total amount of UV (mW/M^2).

Data Logging

The optional data-logging function enables over 10,000 readings of all four parameters to be automatically taken at selectable intervals (every 10 seconds to 1 hour). The saved data can then be transferred to a computer by a wireless infra-red link (IrDA compatible). Many modern computers have an infra-red interface built in; for those that do not, adapters are available. When logging data the 774 can be turned off to save power and the built in clock will turn the unit on whenever a reading needs to be taken, this enables a 774 to be left taking readings for months at a time. Software is provided to display the measurements and save the logged data in CSV format that can be accessed and displayed by many programs (e.g. Microsoft Excel).

Easy to use

Much trouble has been taken to make the 774 as easy to use as possible. Anyone can take measurements straight out of the box with little, if any, reference to the instruction manual. The appropriate button is pushed depending on the measurement required and the reading is taken. The unit automatically turns off 10 seconds after the last reading unless a button is held down for over 5 seconds, this causes continuous measurements to be taken until another button is pressed. The large 8 line display enables an easy to use menu system to select the more advanced functions, change units etc.

Units of measurement for UV

Traditionally UV has been measured in museums as the *proportion* of ultraviolet present. This result is useful for checking a particular lamp or window because the proportion of UV does not change with the distance from the light source. Using a simple rule, the amount of UV on an object can be limited (it is usual to arrange that the

proportion of UV should not exceed $75\mu\text{W}/\text{lumen}$ in museums). The damage is done by the total amount of UV falling on the object, so it is useful to be able to measure this directly, especially if non standard amounts of illumination are required. The amount of UV should be as little as possible but in general should not exceed $20\text{mW}/\text{M}^2$.

Specifications

Visible wavelength range	400-700nm (CIE response). No correction required for different light sources.
Visible power range	0.1 - 200,000 Lux (0.1 – 20,000 Foot-candles)
UV wavelength range	300 - 400 nm
UV power range	2 - 50,000 mW/M ²
UV proportion range	0 - 10,000 $\mu\text{W}/\text{Lumen}$
Thermal radiation sensor	Bismuth/Antimony thermopile with KBr window
IR/Thermal wavelength range	350nm - $\sim 40\mu\text{M}$
Thermal radiation range	0-1000 W/M ²
Display resolution	Lux: 0.1 up to 100 then 1 Foot-candles: 0.1 up to 100 then 1 UV: 0.1 up to 100 then 1 Proportion of UV: 1 $\mu\text{W}/\text{Lumen}$ Temperature: 0.1 °C or °F IR: 0.1 up to 100 then 1
Accuracy	Visible: 5% ± 1 displayed digit IR: 5% $\pm 10\text{W}/\text{M}^2$ UV: 15% ± 1 displayed digit Temperature: $\pm 0.5^\circ\text{C}$ ($\pm 0.9^\circ\text{F}$)
Angular response (Light, UV & IR)	Cosine
Readout	8 line graphical Liquid Crystal Display with automatic backlight
Data logging time intervals (Time until full)	10 seconds (30 hours), 1 minute (7 ¹ / ₂ days) , 10 minutes (75 days), 1 hour (454 days)
Data logging storage capacity	10,900 readings of all 4 parameters
Computer Interface	IrDA compatible wireless infra-red link.
Date functions	Display as day-month-year or month-day-year.
Batteries	2 off alkaline AA type.
Battery Life	Approx 100 Hours continuous use or 12,000 readings taking 30 seconds each. Battery life will be less if the display backlight is used
External Power Supply (If available)	4.0-5.2V DC, 100mA. A connection for an external supply is provided to special order at extra cost.
Operating Temperature	0-50°C
Dimensions	150 x 65 x 25mm 5.9 x 2.5 x 1 inches Including IR/Temperature probe
Weight	165g (5.6 oz) with batteries.

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