

## Universal Light Monitor Type 775



- Replaces 4 separate instruments
- Thermal Radiation (IR)
- Ultra Violet (UV)
- Visible light (Lux or Foot-candles)
- Temperature (°C or °F)
- Solid metal construction
- Easy one handed operation
- Large, easy to read display
- Optional data logging (type 775C)

This single instrument enables measurement of four parameters that cause damage to buildings, valuable objects, documents etc: ultra-violet and visible radiation, thermal radiation (infra red) and temperature.

### Thermal Radiation (IR)

The measurement of thermal radiation (shown as  $W/M^2$ ) 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

### 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 775, measurements can be taken of the proportion of UV present ( $\mu W/lumen$ ), the total amount of UV ( $mW/M^2$ )

### 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.

### Data Logging

The optional data-logging function (type 775C) enables over 73,000 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 standard USB interface. The 775C behaves like a "flash disk", when it is plugged into a PC and it is automatically recognised without any special PC software. When logging data the 775 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 775 to be left taking readings for months at a time. Software is provided to display the measurements as graphs or text. Data is saved 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 775 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 20 seconds after the last reading unless a button is held down for over 3 seconds, this causes continuous measurements to be taken until another button is pressed. The large OLED 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 - 10,000 $\text{mW}/\text{M}^2$
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 - $\sim 40\mu\text{M}$
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% $\pm 1$ displayed digit UV: 15% $\pm 1$ displayed digit Temperature: $\pm 0.5^\circ\text{C}$ ( $\pm 0.9^\circ\text{F}$ ) IR: 5% $\pm 10\text{W}/\text{M}^2$
Angular response (Light & UV)	Cosine
Readout	128x64 OLED Display with automatic brightness control
Computer Interface	USB "flash disk"
Date functions	Display as day-month-year or month-day-year.
Batteries	4 off NiMH AAA type.
Battery Life	Approx 25 Hours continuous use (3,000 readings taking 30 seconds each) or over 100,000 log readings.
Charger	Input: 100-240V 50-60Hz Output: 5V (USB connector)
Operating Temperature	0-50°C 0-99%RH, non condensing
Dimensions	170 x 60 x 15mm 6.7 x 2.4 x 0.6 inches Including RH/Temperature probe
Weight	240g (8.5 oz) with batteries.

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