High Energy UV Integrating Radiometer

UVICURE® Plus

Features

- Truly compact: 4.60” diameter – same as a CD!
- Self-contained, battery-powered
- Total UV Energy Density, joules/cm^2
- Peak UV Irradiance, watts/cm^2
- UV ranges – Choice of UVA, UVB, UVC, UVV
- Low battery indicator
- User replaceable lithium batteries

Applications

- Measure UV curing system performance
- Determine UV lamp efficiency
- Establish UV level for proper curing
- Meet ISO 9000 requirements
- Establish, document & maintain your UV process window

Introduction

The UVICURE PLUS is a self-contained, electro-optic instrument designed to measure and display peak UV irradiance and total UV energy density applied to a workpiece in a UV curing system. The UVICURE Plus has a unique compact design, only 4.60 inches in diameter and ½inch high, which allows it to be placed directly in most curing environments. The instrument operates successfully in the extremes of UV and thermal radiation often encountered in UV curing systems.

A carefully designed optical sensing system measures total UV energy density in a particular bandwidth. The output is converted to a digital form and then displayed on the LCD. Total UV energy density measured in joules/cm^2 is the result of the integrated irradiance during exposure time. It is how much actual UV energy was impinged on the unit from the time it encountered UV until the time the UV source was removed. The UVICURE Plus also has the distinct advantage of being able to monitor the peak irradiance in watts/cm^2. This allows the operator to determine not only the total energy density, but also how that energy is delivered; i.e., at what irradiance level.

Why Use a Radiometer

When product is passed through a curing system and the resulting cure is satisfactory, the operator normally does not know what UV level was required to obtain this cure. Therefore, he may not be able to repeat this process successfully next week or next month. With the use of a radiometer, the operator can immediately quantify the process. After product is cured satisfactorily, the operator exposes the radiometer to the same UV process. The UV level readings are displayed on the radiometer.

By using the data provided by the radiometer, true process control can be achieved. At start-up each day, the operator exposes the radiometer to the curing process, takes readings, and observes if the readings are within his curing parameters for a satisfactory cure for the particular product to be run. The operator can make adjustments by changing length of exposure time, cleaning reflectors, or even relamping in order to obtain the desired UV levels, thereby assuring consistency in the curing process. The radiometer quantifies the UV curing system, and takes a great deal of guesswork out of the overall curing process. Contact EIT for more information on establishing and maintaining your UV process window.

Operation

The EIT UVICURE Plus is very easy to use. Simply push the “Reset” button and send the unit through a curing system, either conveyorized or stationary. The unit begins accumulating data when UV energy is encountered which is greater than its built-in threshold. After the UVICURE Plus has been passed through the UV process, the results of its measurements can be easily accessed by touching the “Select” button to toggle the display menu. Measurements displayed will be the UV bandwidth being monitored, the total UV energy density in joules/cm^2, and the peak UV irradiance in watts/cm^2. If a low battery condition exists, this will also be displayed.

The unit will time itself out after approximately two minutes on non-use to conserve battery life. After the unit times itself out, the first measurements obtained by the UVICURE Plus can be accessed by pushing the “Select” button again. This information will remain available until the user pushes the “Reset” button to initiate a new reading.

EIT, Inc. 108 Carpenter Drive, Sterling, VA 20164 Phone (703) 707-9067 Fax (703) 478-0815 www.eitinc.com

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The unit is able to withstand extremely demanding operating conditions. Since the internal temperature should not exceed 80°C, a safety, audible high temperature alarm will provide a warning that the unit is approaching an unsafe internal temperature.

The EIT UVICURE Plus can accommodate energy irradiance levels up to 5W/cm^2. An optional 10W/cm^2 is also available. Also available are several Low Power options.

Total energy range of UVICURE Plus is 0 to 250 J/cm^2.
The EIT UVICURE Plus is battery powered using lithium, user-replaceable batteries. A weak battery will trigger a "Lo Batt" status. Data remains valid even in "Lo Batt" status. When the battery voltage affects data integrity, zeros are displayed in all locations.

The EIT UVICURE Plus comes in a protective foam-lined carry case.

Specifications

Range	**Standard Version** UVA, UVB, UVV – 5mW/cm^2 to 5W/cm^2 UVC – 5mW/cm^2 to 1W/cm^2 **10 Watt Version** UVA, UVB, UVV – 10mW/cm^2 to 10W/cm^2 UVC – 5mW/cm^2 to 1W/cm^2 **Low Power Versions** UVA, UVB, UVV – 50 microW/cm^2 to 50mW/cm^2 UVC- 50 microW/cm^2 to 10mW/cm^2 or UVA, UVB UVV – 100 microW/cm^2 to 100mW/cm^2 UVC – 50 microW/cm^2 to 10 mW/cm^2
Display	4 Digit LCD
Data Readings	UV Bandwidth: Choice of: UVA (320-390nm) UVB (280-320nm) UVC (250-260nm) UVV (395-445nm) Total Energy Range: 0-250 joules/cm^2 Peak Irradiance: 0 to 5 W/cm^2 (UVA, UVB, UVV); Optional 10W/cm^2 unit also available 0 to 1 W/cm^2 (UVC) Internal Radiometer Temperature Degrees Celsius (80°C max) Lo Batt indicator
User Interface	Push button switch allows user to obtain data from both display modes, irradiance and energy dosage
Accuracy	+/-5% typical, +/-10% guaranteed
Spectral Response	Choice of: 320-390nm (UVA) 280-320nm (UVB) 250-260nm (UVC) 395-445nm (UVV)
Spatial Response	Approximately cosine
Operating Temperature Range	0-80° C internal. The unit will tolerate much higher external temperatures for short periods. A safety audible alarm will sound if internal temperature rises above a safe level.
Time-Out Period	Approximately 4 minutes RUN mode; 2 minutes DISPLAY mode
Batteries	Two user replaceable lithium cells, Duracell DL2450, Sanyo CR2450 or equivalent
Battery Life	Over 1500 readings with typical use
Dimensions	4.60" diameter x .50" high (11.7cm x 1.27cm)
Weight	11.75 oz. (333.11 grams)
Package Material	Stainless and aluminum
Carrying Case	Cut polyurethane interior. Soft, Scruff-resistant nylon cover, 1 lb. (453.6 grams)

Specifications subject to change