

# EIT<sup>®</sup> UV PRODUCT OVERVIEW

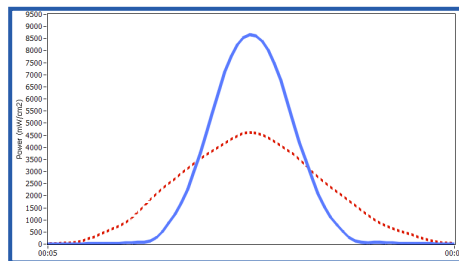
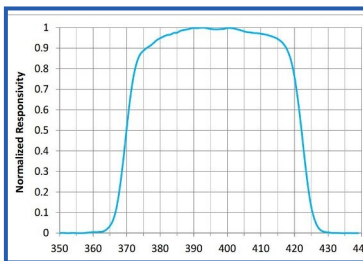
EIT Instrument Markets/EIT LLC designs, manufactures, sells, supports and services radiometers and on-line measurement systems for industrial UV curing applications. Products are available for LED and broadband (Arc, Microwave and Spot) UV sources. EIT instruments provide key information to establish & maintain a UV curing process and to communicate UV values; within a company and with formulators, substrate and source suppliers. Controlling your UV process leads to higher production yields & targeted effective maintenance programs, improving company profitability. This is an overview of our products. For more information, please contact EIT or one of our authorized representatives/distributors.

## RADIOMETERS: UV LED MEASUREMENT

The LEDCure<sup>®</sup> from EIT comprises a new family of radiometers designed specifically to measure the energy generated by UV LED systems. EIT's LEDCure instruments use a patented "Total Measured Optic Response" which incorporates all optics in the instrument "L-Band" response. The L-Band response supports variations in the LED Center Wave Length (CWL) and provides extremely consistent and extremely accurate readings; run-to-run, unit-to-unit and source-to-source.

### LEDCure<sup>®</sup> Radiometers

- **Single Band LEDCure<sup>®</sup>** instruments are available with L-365 (340-392 nm), L-385 (360-412 nm), L-395 (370-422 nm) or L-405 (380-432 nm) responses
  - ◊ **Standard Versions** of the LEDCure<sup>®</sup> provide Irradiance (W/cm<sup>2</sup>) & Energy Density (J/cm<sup>2</sup>) values. The irradiance profile (Watts/cm<sup>2</sup> as a function of time) is shown on the display.
  - ◊ **Profiler Versions** of the LEDCure<sup>®</sup> also allow the Irradiance Profile to be transferred to a computer for further analysis and evaluation with EIT's UV PowerView<sup>®</sup> III Software.
- **Four Band LEDCure<sup>®</sup> Profiler** is available with L-365, L-385, L-395 and L-405 responses



Top: LEDCure Radiometer  
Above: LEDCure Display Screen  
Far Left: L395 Total Measured Optic Response  
Left: Profiler Comparison of LED at different heights from the substrate

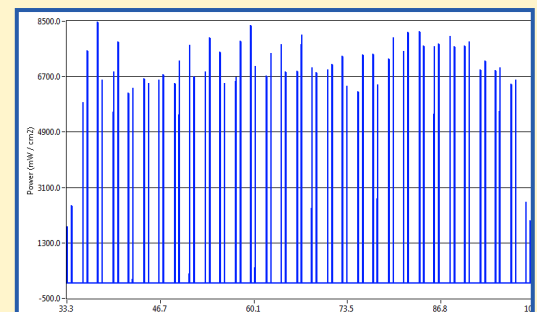
### LEDMAP<sup>™</sup> Radiometers

Applications with high process speeds, such as digital LED printers, require a radiometer with high sample rates to capture accurately the irradiance (Watts/cm<sup>2</sup>) and energy density (Joules/cm<sup>2</sup>) values and profiles as a function of time. These measurements can be made by the LEDMAP<sup>™</sup> which also can measure and profile process temperatures.

With an user adjustable (128-2048 Hz) data collection speed, the LEDMAP allows the user to measure and accurately plot individual LED passes at process speeds exceeding 400 feet (122 meters) per minute. The UV data is transferred to EIT's PowerView III Software.



Right: Data collected at 400 FPM on a digital printer with an LED on either side of the print head. Irradiance profile shows 31 passes (62 LED exposures) over 68 seconds.



## EIT RADIOMETERS-BROADBAND SOURCES

EIT Radiometers (Power Puck® II, UviCure® Plus II, MicroCure®) provide peak UV irradiance ( $W/cm^2$ ) and total energy density ( $J/cm^2$ ) values. The EIT SpotCure® provides peak UV irradiance. The Power Puck II is a four-band (UVA, UVB, UVC, UVV) instrument while the other instruments are single-band. When selecting a measurement solution the user should consider instrument size, ease of use, source, dynamic range, spectral band(s), available service/support and how you will record, store and communicate the UV values measured.

## UVICURE® PLUS II & UV POWER PUCK® II

The UviCure Plus II (single band) and Power Puck II (four band) are easy to use and can be adjusted to measure and display collected data in different configurations including:

**Data Mode:** UV data (Joules/cm<sup>2</sup>, Watts/cm<sup>2</sup>) displayed on one screen for up to 4 UV bands.

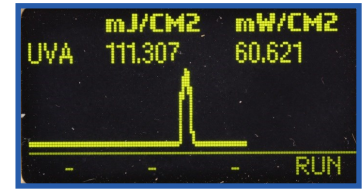
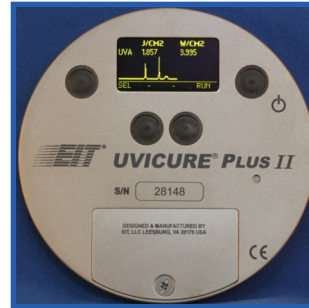
**Graph Mode:** A graph illustrating the collected UV irradiance and energy is displayed for each of the UV bands. Graph shows the irradiance profile as a function of time ( $mW/cm^2$  on y-axis, time on x-axis).

**Reference Mode:** Allows the user to store a run into the instrument memory to allow for easy comparison to current UV conditions.

**Setup Mode:** Ability to adjust modes, display units and instrument sample rate.

**Sample Rate:** User adjustable effective sampling rate of 25, 128 or 2048 Hz (samples per second)

**Dynamic Range:** Standard (10 W), Mid (1 W) or Low (100 mW) range instruments, specified at time of order along with the UV band (UviCure Plus II)



Top: Instruments

Middle: Data Mode (Left), Graph Mode (Right)

Bottom: Reference Mode

## MICROCURE® & DATA READER



The MicroCure® is intended for use in applications that cannot be accessed by EIT's "puck" sized radiometers. Applications include digital printing, small piece/conveyor applications, small dimensional objects and exposure chambers.

### MicroCure®

- Miniature radiometer 1.3"L x 0.95"W x 0.25" T (33.00 mm x 24.13 mm x 6.35 mm)
- High sampling rate of 2048 samples per second.
- Each MicroCure is good for 200 readings or one year, whichever comes first

### DataReader

- Portable reader used to communicate and display MicroCure peak irradiance ( $W/cm^2$ ) and energy density ( $J/cm^2$ ) values
- DataReader is a one-time purchase, user changeable 9 volt battery

## EIT PROFILING RADIOMETERS

EIT Profiling Radiometers provide a complete picture of the UV source and how the UV is delivered to the cure surface. In addition to peak UV irradiance ( $W/cm^2$ ) and total energy density ( $J/cm^2$ ) values, the UV irradiance (Y-axis) is displayed as a function of time (X-axis). Profiling radiometers quickly and easily identify:

- The number of lamps and bulb type in each UV station
- Lamp focus/Changes to the focus
- Process speed and/or exposure time variations
- Uniformity of the UV across the bulb length
- The performance of individual lamps in multi-lamp systems
- Maintenance needs before they impact product quality
- System changes over time with the comparison to stored files
- Differences between two UV systems



PowerMAP II: Smaller size, larger memory, USB connection, UV & temperature profiles

## POWERMAP® II, UV POWER PUCK® II PROFILER & UVICURE® PLUS II PROFILER

### Instrument /Software Features

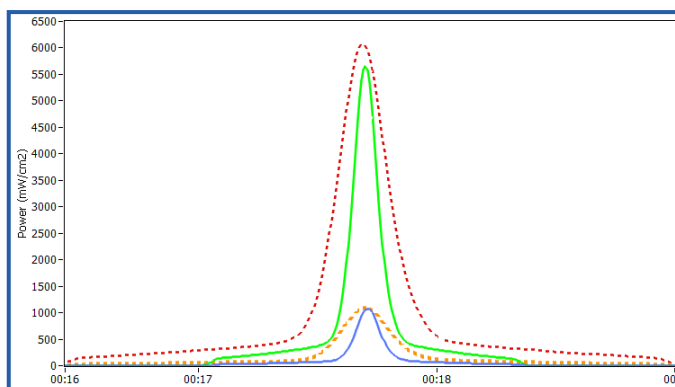
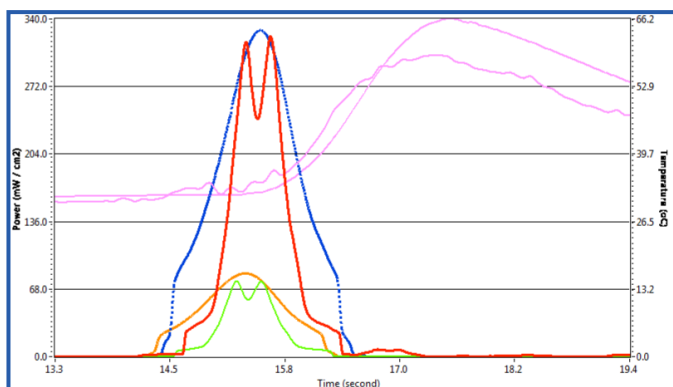
- USB Download
- LabView (\*.tdms) file format
- Files are easy to share and export to Excel
- Easily capture and share screen shots, add process notes to files

### PowerMAP II Features

- User adjustable sample rate from 128-2048 (Hz) samples per second
- Four UV bands plus thermocouple to measure temperature
- Small compact size of 5.5" x 2.1" x 0.55" (13.8 cm x 5.3 cm x 1.27 cm)
- Data collection time of 65 minutes, rechargeable battery

### Profiler Features

- Unit has display & functions the same as a Standard Puck in the same housing
- Profile on computer displayed at fixed sample rate of 128 Hz, approximately 100 minutes of data collection time available
- User changeable AAA batteries



View and compare data collected by PowerMAP II, LEDCure Profiler, Power Puck II Profiler and UviCure Plus II Profiler  
Left/Right Above: Irradiance Profiles Right: Data Table

Summary (by File)			
	Sample File	Reference File	Difference
UVA - Power (mW/cm <sup>2</sup> )	1607.559	453.032	1154.527
Power (%)	254.8	0	254.8
Energy (mJ/cm <sup>2</sup> )	251.011	157.236	93.775
Energy (%)	59.6	0	59.6
UVB - Power (mW/cm <sup>2</sup> )	1519.314	1486.910	32.404
Power (%)	2.2	0	2.2
Energy (mJ/cm <sup>2</sup> )	200.012	199.609	0.403
Energy (%)	0.2	0	0.2
UVC - Power (mW/cm <sup>2</sup> )	306.405	311.429	(5.024)
Power (%)	(1.6)	0	(1.6)
Energy (mJ/cm <sup>2</sup> )	28.160	30.082	(1.922)
Energy (%)	(6.4)	0	(6.4)
UVV - Power (mW/cm <sup>2</sup> )	2012.678	1514.450	498.227
Power (%)	32.9	0	32.9
Energy (mJ/cm <sup>2</sup> )	347.783	295.648	52.136
Energy (%)	17.6	0	17.6

## SPOTCURE®



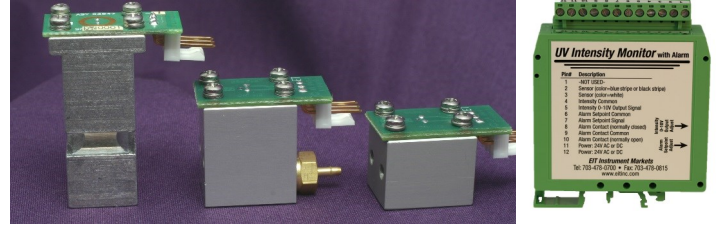
- Monitor spot curing system performance
- Measure light guide degradation and determine optimum positioning of the light guide
- Measures UV irradiance ( $W/cm^2$ )
- Easy to use, long lasting battery, adaptors to support different size light guides

## ON-LINE UV MEASUREMENT SYSTEMS

EIT offers On-Line UV Measurement Systems for applications requiring continuous monitoring, with limited space, lamps in hard to reach locations and/or high-value products. On-Line Systems can be used in conjunction with radiometers or by themselves. Our systems provide continuous monitoring and feedback of the UV intensity and can alert the user to both gradual (e.g. bulbs aging) or sudden (equipment malfunction) changes in the UV intensity. Results are relative and are presented on a scale of 0-10 volts or 4-20 milliamps for input to a PLC.

The EIT On-Line System consists of two components:

- **Compact Sensor:** Durable Sensor that has been designed to withstand the harsh UV environment. The Compact Sensor is available in different EIT bands for both mercury and LED sources, ranges and housing shapes based on the source and application.
- **DIN Rail Signal-Conditioning Unit:** Connects to the Compact Sensor and provides a means to track the real-time data. The EIT UV Intensity Monitor (DIN Rail) offers output in 0-10 volts or 4-20 milliamps.



Top Left: EIT Compact Sensors / Top Right: UV Intensity Monitor  
Bottom: EIT Quartz Rod used with Compact Sensor

Contact EIT or one of our Representatives/Distributors to discuss On-Line Monitoring Systems for your application.

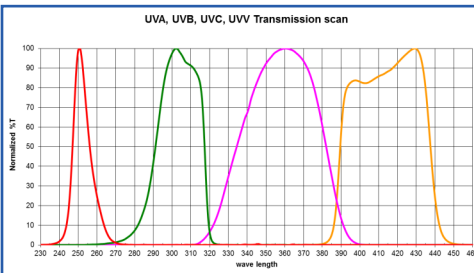
## INSTRUMENT CARE & SERVICE

Proper instrument handling, care and cleaning will help your EIT instrument perform as designed between service intervals at EIT. Cleaning guidelines are posted on our website. Please contact us with specific questions.

Periodically, instruments need adjustment back to factory settings. Service is available at EIT in Leesburg, Virginia or through one of our authorized service centers worldwide. Service related questions can be directed to [calibration@eit.com](mailto:calibration@eit.com)

## EIT INSTRUMENT RESPONSES

EIT has optic responses for Broadband (Mercury) and LED sources. Matching the optic response to the source will provide the best and most accurate reading.

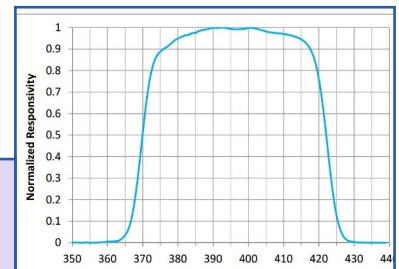


### EIT Broad Band (Mercury) Responses

UVA: 320-390 nm / UVB: 280-320 nm  
UVC: 250-260 nm / UVV: 395-445 nm

### EIT LED (L-Band) Responses

L-365: 340-392 nm / L-385: 360-412 nm  
L-395: 370-422 nm (Shown) / L-405: 380-432 nm



LED L395 (370-422 nm)

## ABOUT EIT

Founded in 1977, EIT provides contract electronic manufacturing & engineering services for medical, industrial, analytical instrument, telecommunications and aerospace customers from multiple facilities in Virginia and New Hampshire. EIT LLC designs, manufactures, sells, supports and services EIT radiometers and on-line measurement systems for industrial UV curing applications. EIT UV products have been sold since 1986 and are available for UV LED and Broadband (mercury) arc, microwave and spot sources.

**For more information contact EIT or one of our authorized representatives or distributors**

**EIT Products are designed and manufactured in the USA.  
Product Specifications Subject to Change without Notice**

P/N IM-0106 Rev C Product Overview March 2021