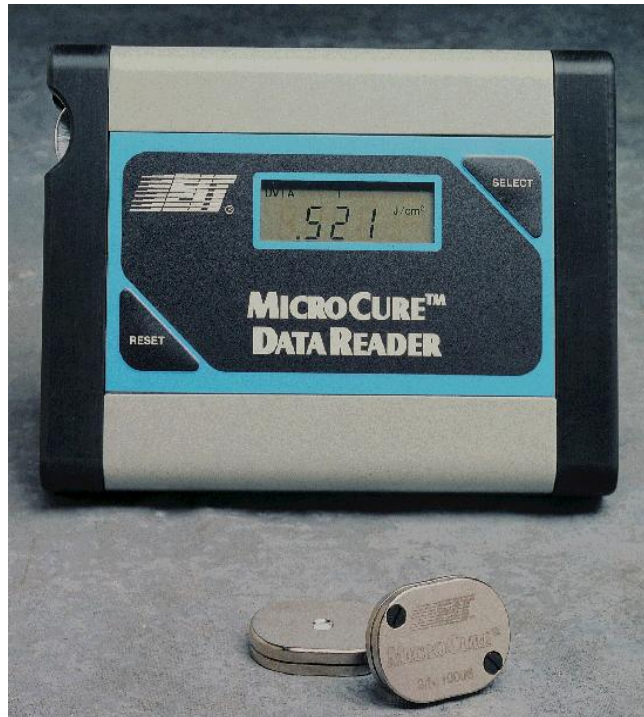


**MicroCure<sup>®</sup>**  
User's Manual



MicroCure<sup>®</sup> Radiometer and DataReader

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## Introduction

The EIT Instrument Markets MicroCure<sup>®</sup> is a radiometer that addresses UV measurement and process control in areas where radiometer placement is difficult. The MicroCure<sup>®</sup> combines its compact size and adaptability to address a variety of demanding physical and thermal environments. These attributes make it possible to obtain measurements in curing applications that were previously inaccessible to radiometers.

The MicroCure<sup>®</sup> radiometer is a microprocessor-based, calibrated, electro-optic instrument that measures and accumulates total UV energy and UV irradiance applied to its measurement surface. The DataReader reads and displays the data collected by the MicroCure<sup>®</sup> radiometer.



MicroCure<sup>®</sup> Radiometer

## Establishing a Cure or Process Window

A cure or process window is a set of parameters that defines equipment settings and run conditions to ensure proper curing. A cure window gives the user assistance in troubleshooting deficiencies in a UV process. Ideally, tests are run for every combination of coating and substrate so that a history can be obtained. This history helps establish baseline parameters for various chemical and material combinations and provides important

information for process control. The operator can compare a current measurement to the cure window and adjust the process to get the desired curing results.

The process value is often defined as total energy or total energy produced by a system. It is the mathematical integration of lamp intensity over time. The MicroCure<sup>®</sup> derives this value by measuring instantaneous lamp irradiance during the run and then summing them together. The process value must be maintained to get complete UV curing every time.

## Handling and Safety Precautions

Due to the radiometer's data transfer, case configuration, and the applications for which it was designed, the following precautions should be observed to ensure the radiometer's performance.



### Ultraviolet Radiation

Although this product is not a source of UV energy, it is used in a UV environment. Refer to the UV source's documentation for recommended protective measures against UV radiation present in the UV environment.

- Avoid conductive materials, including process chemicals, process vapors, and anti-static mists when handling the MicroCure<sup>®</sup>. These materials may cause the unit to short, reset and lose stored data.
- Handling the MicroCure<sup>®</sup> with gloves reduces the chances of a short occurring.
- Do not let the MicroCure<sup>®</sup> radiometers travel through print stations, die cutters, pinch rollers or other processes which may damage both the radiometers and your equipment.
- Do not short the two case sides of a MicroCure<sup>®</sup> together. Doing so will reset the unit and any stored data will be lost.
- Do not allow MicroCure<sup>®</sup> radiometers to touch each other. Data loss or corruption may occur.
- Do not mark or label the MicroCure<sup>®</sup> radiometer case.

## Operation

1. Insert the MicroCure<sup>®</sup> into the slot in the upper left side of the DataReader.
2. Press the RESET button to move the unit from standby/sleep mode to turn the unit on to active data collection mode. The DataReader will briefly display the software version (Px.xx), "rxx" where "xx" is the number of unit resets, then "0.00" to indicate that the unit is ready to take a reading.
3. Remove the MicroCure<sup>®</sup> from the DataReader and place it in the UV process with the optics aperture towards the UV source.

**NOTE:** The MicroCure<sup>®</sup> must be exposed to UV energy within four minutes after being reset. Otherwise, the MicroCure<sup>®</sup> it will go back into standby/sleep mode. The DataReader automatically shuts down after thirty seconds of inactivity.

4. Remove the MicroCure<sup>®</sup> from the UV environment and place it back into the slot in the DataReader.
5. Press the SELECT button. The DataReader will display the total UV energy in Joules per square centimeter (J/cm<sup>2</sup>) or the irradiance in Watts per square centimeter (W/cm<sup>2</sup>). Press and hold the SELECT button to toggle between total energy and irradiance.
6. Press the RESET button when the reading is displayed to clear the current reading and to set the MicroCure<sup>®</sup> for its next reading.

## Error Messages

The DataReader displays error messages if there is a problem with it or the MicroCure<sup>®</sup>.

If "---" is displayed, communication between the MicroCure<sup>®</sup> and the DataReader has failed. Re-insert the MicroCure<sup>®</sup> into the DataReader and retry.

If "LO BATT" is displayed, the MicroCure<sup>®</sup>'s battery is low. If this occurs within a 200-reading/ 1-year period from date of purchase, the unit or battery may be defective. The battery in the MicroCure<sup>®</sup> is not user replaceable, contact EIT Instrument Markets for assistance.

When the DataReader's battery is low, it will scroll "LO" ten times and then shut down. The battery in the DataReader is user replaceable. Refer to the Maintenance section of this manual for replacement instructions.

If the DataReader displays a numeric error code, contact EIT Instrument Markets for assistance.

## High Speed Application

The MicroCure®'s sample rate of 2048 samples per second produces accurate readings at high system speeds. Since total energy readings are directly proportional to exposure time, a reading for a high-speed system can be derived from a reading taken at a lower speed. For example, if the system speed is 600 feet per minute (fpm), jog the system down to 60fpm and take an energy reading. This reading represents the UV total energy of the system at 1/10<sup>th</sup> the speed. To translate this to 600fpm, simply divide the energy reading by 10.

**NOTE:** Irradiance readings with the MicroCure® should be consistent and are not dependent on speed. The MicroCure® should register similar irradiance readings when consistent data collection techniques are followed.

The irradiance values displayed by the MicroCure® are instantaneous peak irradiance values versus average or RMS irradiance values. The irradiance values are similar to the irradiance values collected with EIT instruments used in the "Smooth Off" (instantaneous peak) mode versus "Smooth On" (average peak) mode.

## Maintenance

### MicroCure® Radiometer

Clean the MicroCure® Radiometer's aperture with a cotton swab and isopropyl alcohol. Use isopropyl alcohol and a soft cloth to clean the case of the MicroCure®.

Do not open the radiometer's case. There are no user-serviceable parts inside the unit.

The MicroCure® radiometer is given a one-time calibration before it is shipped from EIT Instrument Markets. It is specified to take 200 readings

or last for approximately one year. Once the unit meets one of these conditions, it must be replaced.

The MicroCure® Unit contains a battery. Any expired MicroCure® units may be returned to EIT for proper disposal of the battery.

### DataReader

The DataReader only requires occasional battery replacement. The DataReader will indicate a low battery condition by scrolling "LO" across its display.

1. Remove the two screws from the plate on the left side of the DataReader.
2. Remove the battery and replace it with a new 9-volt lithium or alkaline battery.
3. Reinstall the access plate and screws.

## Specifications

### MicroCure® Radiometer

Dynamic Range	Low Power (-2): 100mW/cm <sup>2</sup> to 2W/cm <sup>2</sup> High Power (-10): 500mW/cm <sup>2</sup> to 10W/cm <sup>2</sup> Display flashes if over-ranged
Peak Irradiance Accuracy	+/- 7% typical @ 25° -0.2% per °C over operating range
Spectral response	UVA (320-390nm)
Sample Rate	2048 samples per second
Total Energy	0-9999 Joules/cm <sup>2</sup> . Display flashes if over-ranged.
Energy Accuracy	+/- 7% typical @ 25° -0.2% per °C over operating range
Spatial Response	Approximately cosine
Operating Temperature Range	15-70°C internal
Time-Out Period	4 minutes nominal after last UV exposure
Batteries	Permanent lithium cell Expired units can be returned to EIT for proper battery disposal
Battery Life	200 readings with typical use or 1 year
Dimensions	1.30" long x 1.0" wide x 0.25" high (33.0mm x

	25.4mm x 6.4mm)
Weight	0.33 oz. (9.4 grams)
Materials	Plated aluminum, nylon

Specifications subject to change

Table 1. MicroCure® Specifications

### Data Reader

User Interface	Push button switches allow user to display data or reset the unit
Display	4 digit liquid crystal display
Dimensions	5.75" long x 4.38" wide x 1.2" high (139.7mm x 108mm x 25.4mm)
Weight	11.75 oz. (333.11 grams)
Operating Temperature Range	0-70°C
Timeout	30 seconds
Battery	9V lithium: 36,000 readings or 5 years Alkaline battery life not specified
Materials	Steel, nylon, polycarbonate

\*Specifications subject to change

Table 2. DataReader Specifications

## Warranty and Returns

### New Product Warranty

EIT Instrument Markets warrants that all goods described in this manual (except consumables) shall be free from defects in material and workmanship. Such defects must become apparent within six months after delivery of the goods to the buyer.

EIT Instrument Markets' liability under this warranty is limited to replacing or repairing the defective goods at our option. EIT Instrument Markets shall provide all materials and labor required to adjust, repair, and/or replace the defective goods at no cost to the buyer only if the defective goods are returned, freight prepaid, to EIT Instrument Markets during the warranty period.



EIT Instrument Markets shall be relieved of all obligations and liability under this warranty if:

1. The user operates the device with any accessory, equipment, or part not specifically approved, manufactured, or specified by EIT Instrument Markets, unless the buyer furnishes reasonable evidence that such installations were not a cause of the defect. This provision shall not apply to any accessory, equipment, or part that does not affect the proper operation of the device.
2. Upon inspection, the goods show evidence of becoming defective or inoperable due to abuse, mishandling, misuse, accident, alteration, negligence, improper installation, lack of routine maintenance, or other causes beyond our control.
3. The goods have been repaired, altered, or modified by anyone other than EIT Instrument Markets authorized personnel.
4. The buyer does not return the defective goods, freight prepaid, to EIT Instrument Markets within the applicable warranty period.

There are no warranties that extend beyond the description on the face hereof. This warranty is in lieu of - and is exclusive of - any and all other expressed, implied, or statutory warranties or representations. This exclusion includes merchantability and fitness, as well as any and all other obligations or liabilities of EIT Instrument Markets. EIT Instrument Markets shall not be responsible for consequential damages resulting from malfunctions of the goods described in this manual.

No person, firm, or corporation is authorized to assume for EIT Instrument Markets, any additional obligation or liability not expressly provided for herein except in writing duly executed by an officer of EIT Instrument Markets.

If any portion of this agreement is invalidated, the remainder of the agreement shall remain in full force and effect.

This warranty shall not apply to any instrument or component not manufactured by EIT Instrument Markets.

## **Calibration and Repair Warranty**

EIT Instrument Markets will warranty calibration and/or repair services just performed, for 90 days. This Calibration and Repair Warranty does not apply to nor cover repairs that may otherwise occur to the instrument. Such repairs may be covered under the New Product Warranty based on the age of the instrument.

## **Returning the Instrument to EIT Instrument Markets**

### **1. Warranty Repair:**

Contact EIT Instrument Markets before returning your unit for warranty repair. An RMA is not required but each unit should be returned with a Service Request form that can be found on our website: [www.eit.com](http://www.eit.com). Look under UV Instruments, Customer Service.

When returning the MicroCure<sup>®</sup> and DataReader under warranty, please return the equipment in the original (or equivalent) packaging. You will be responsible for damage incurred from inadequate packaging, if the original packaging is not used.

**The customer is responsible for insuring the unit during transportation to EIT Instrument Markets.**

Equipment repaired under warranty will be returned to the user with no charge for the repair or shipping. EIT Instrument Markets will notify you of repairs not covered by warranty and their cost prior to performing any work on the equipment.

EIT Instrument Markets reserves the right to make changes in design at any time without incurring any obligation to install the same on units previously purchased.

**2. Non-Warranty Repair or Instruments Returned for Calibration:**

You do not need to contact EIT Instrument Markets before returning your unit for repair or calibration. An RMA is not required but each unit should be returned with a Service Request form that can be found on our website: [www.eit.com](http://www.eit.com). Look under UV Instruments, Customer Service.

Please return the MicroCure<sup>®</sup> and DataReader in the original packing (or equivalent) to the address below. You will be responsible for damage incurred from inadequate packaging, if the original packaging is not used.

**The customer is responsible for insuring the unit during transportation to EIT Instrument Markets.**

EIT Instrument Markets will contact you with the needed repairs and the cost of repair before service begins.

**Address for Returning All Instruments to EIT-IM**

Ship the unit, freight prepaid, to the address below:

EIT-SMS  
Instrument Markets  
22815 Glenn Drive Suite 104  
Sterling, VA 20164

Include the Service Request form which should include your company name, address, telephone number, fax number, and e-mail address. EIT Instrument Markets will contact you if any additional information is needed.