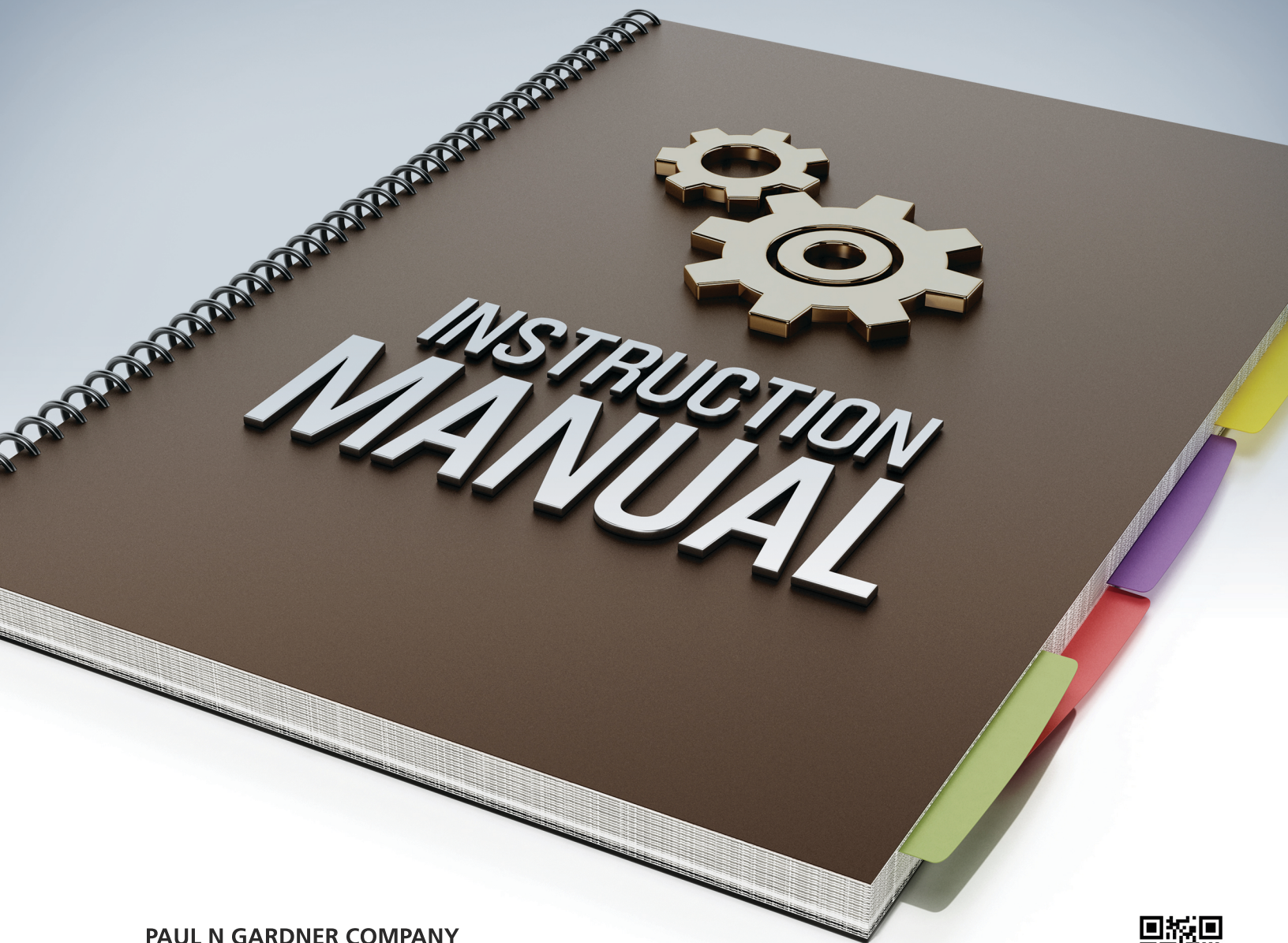




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INSTRUCTIONS

GARDCO DISTRIBUTED PRODUCTS





EIT 2.0[®]
UV Power Puck[®] II & UviCure[®] Plus II
User's Guide



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Introduction

The EIT 2.0 LLC UV Power Puck® II and UviCure® Plus II are used globally for industrial UV measurement and process control. With user selectable sample rates, reference modes, UV irradiance profile graphs and other features, these instruments can be used for fast or slow conveyor lines and the measurements are compatible with other EIT 2.0 products. The instruments are simple to use with one-button operation.

The UV Power Puck II and UviCure Plus II are self-contained, electro-optic radiometers that measure and display total UV energy and UV irradiance in a UV curing system. The UV Power Puck II and UviCure Plus II combine compact size and robust design to withstand the extremes of UV curing environments while providing accurate measurement.

The carefully designed optical sensing systems only measure wavelengths that are relevant to the UV process. The output of the sensing system is converted to digital form and displayed on an easy-to-read OLED display.

The UV Power Puck II simultaneously measures four different ranges of ultraviolet wavelengths with one pass through the UV process. The UV Power Puck II default wavelengths are UVA (320-390nm), UVB (280-320nm), UVC (250-260nm) and UVV (395-445nm). The UviCure Plus II includes a choice of one of the EIT 2.0 wavelength bands.

The instrument reading includes total energy and peak irradiance of all four transmission bands for the UV Power Puck II and one band for the UviCure Plus II.

The EIT 2.0 LLC UV Power Puck II and UviCure Plus II are designed and manufactured in the USA.

The Process Values

Reaching the energy density and irradiance values specified by your process along with the proper bulb type is necessary for achieving consistent acceptable UV cure.

The two process values read by the UV Power Puck II and UviCure Plus II are peak irradiance and total energy density.

The irradiance reading is the peak intensity measured during the exposure run. The radiometers measure and display irradiance in Watts, milliWatts or microWatts per square centimeter (W/cm^2 , mW/cm^2 , $\mu\text{W}/\text{cm}^2$). If the unit is used to measure multiple lamps, the peak irradiance value will correspond to the most intense lamp.

Total energy density (sometimes called dose) is a factor of the irradiance over time. The instruments derive this value from the irradiance values during the exposure run and the length of time of the run. Total energy is measured in Joules, milliJoules or microJoules per square centimeter (J/cm^2 , mJ/cm^2 , $\mu\text{J}/\text{cm}^2$). If the unit is used to measure multiple lamps, the total energy density value will be the sum of all lamps.



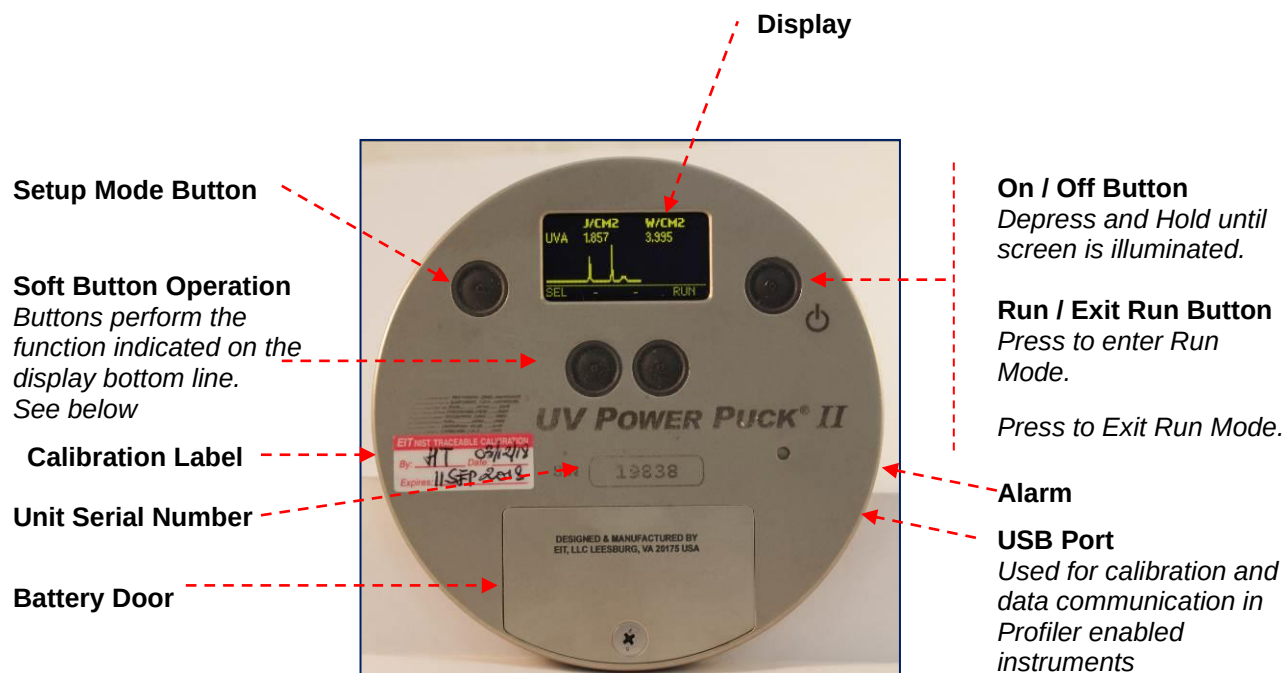
Ultraviolet Radiation

This product is not a source of UV radiation (energy/light).

It is used in an environment where UV is present and protective measures (eye/skin) against UV radiation should be followed.

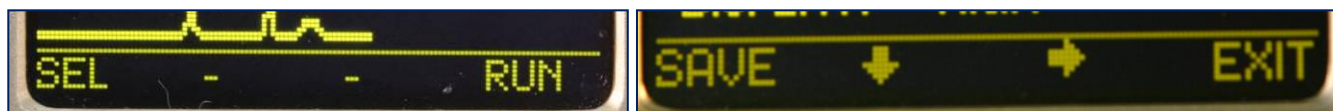
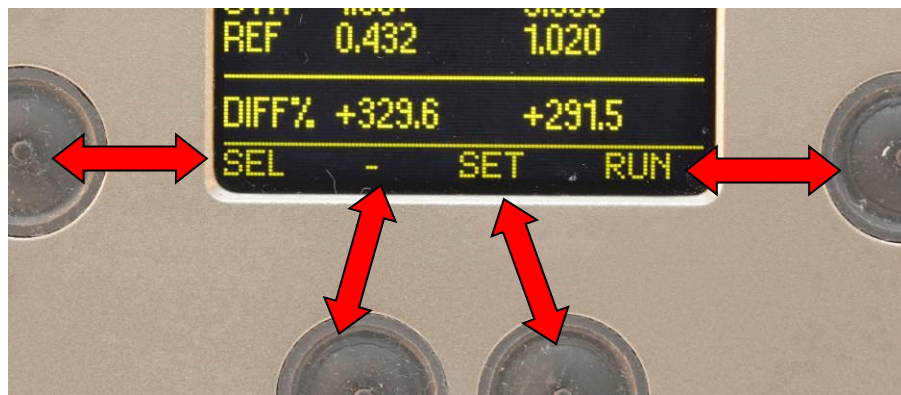
Refer to the UV source's documentation for information.

Operation and Features



Button Operation

The four buttons on the face of the instrument correspond to the adjacent function shown on the display. The functions will change automatically based on the instrument mode. Examples of different functions are shown below.



Examples of some of the different functions that will be shown under the instrument display

Unit Type

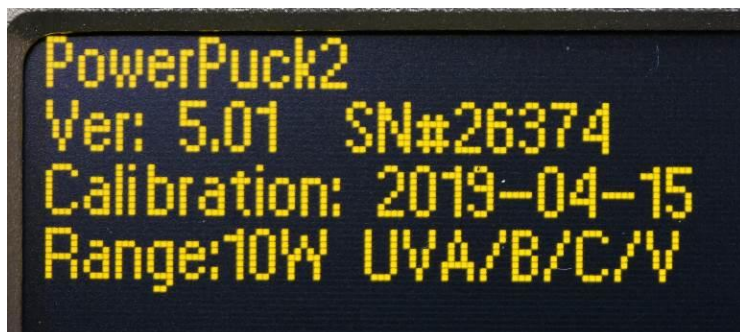
The first screen displayed momentarily when the unit is turned on will indicate the unit type and dynamic range. Pushing and holding the On/Off Button will keep the display on this screen.

Unit Type (Standard Power Puck II)

Internal Firmware Version & Serial Number

Last Calibration Date

Dynamic Range (10 Watts) and UV bands
(UVA, UVB, UVC & UVV)

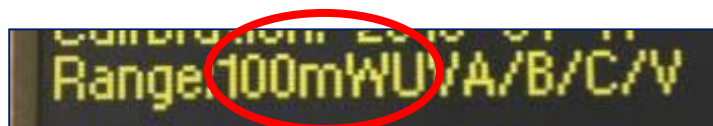
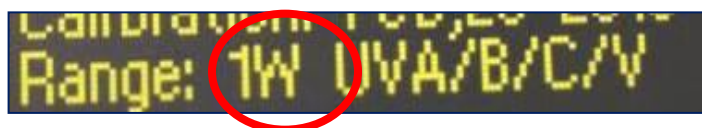
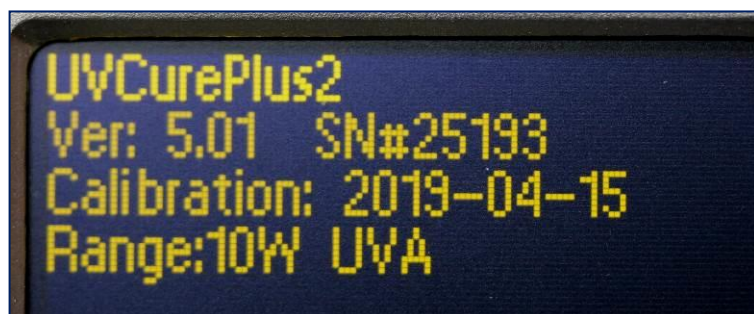


Unit Type (UviCure Plus II)

Internal Firmware Version & Serial Number

Last Calibration Date

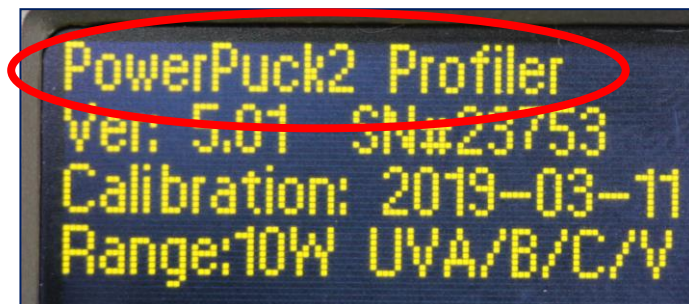
Dynamic Range (10 Watts) and UV band (UVA)



Above Left: Unit with Dynamic Range of 1 Watt

Above Right: Unit with Dynamic Range of 100 milliWatts

Right: Power Puck II Profiler on Startup screen.
See Appendix C for more information on the
Profiler Versions of our instruments



Operating the Radiometer

Turning “ON” the Radiometer: Press and Hold the ON / OFF button until the display illuminates. The display will briefly display the Radiometer Model Name, Serial Number, Software Version, Calibration Date, Range, and Wavelength Bands installed. (See previous page) The display will then enter the default mode and display the data from the last run before the unit was turned off.

Turning “OFF” the Radiometer: Press and Hold the ON / OFF button. A tone will sound. When tone stops, release the button. The unit turns off.

Entering the “RUN” MODE: A short press of the “RUN” button clears the memory and puts the unit in the “RUN” mode. The display shows “RUNNING” after shortly displaying the internal temperature of the unit. Confirm that the unit displays “RUNNING” before initiating a reading.

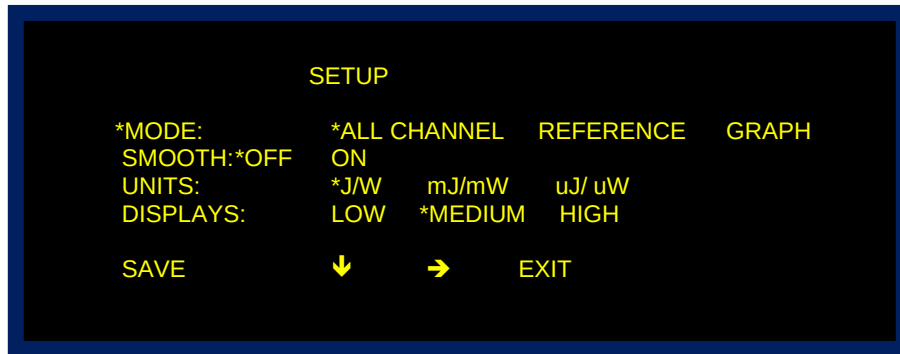
Place the radiometer on the belt or object with the optic window looking toward the UV source. The display and buttons will be facing away from the UV source. When the radiometer exits the curing chamber, the display will still be flashing “RUNNING”.

CAUTION: Exposing the display to high UV radiation will damage the display.

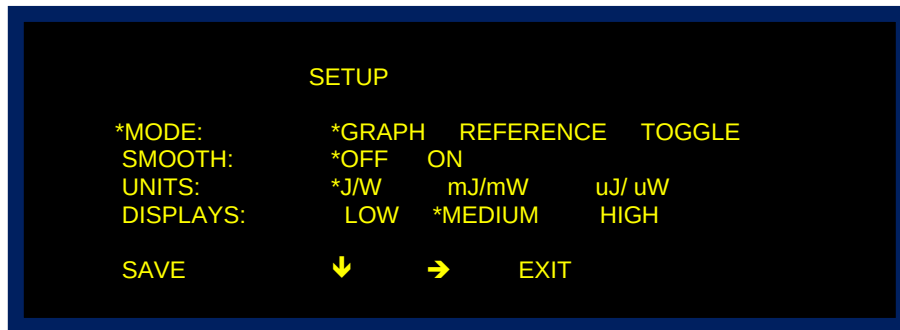
Exiting the “RUN” MODE: A short press of the “STOP” button (Soft button display bar indicates “STOP” next to the “ON / OFF” button) will exit the “RUN” mode and will return to the same default mode prior to making the exposure run, but will display the new value.

Setup & Default Modes

To enter the Setup Mode, use the soft button to the left of the display, Press and hold for 0.5 second, then release. The Setup screen will display the current settings. Default modes are designated using an *asterisk. The setup screen below shows all possible choices for each mode.



UV Power Puck II Setup Screen



UviCure Plus II Setup Screen

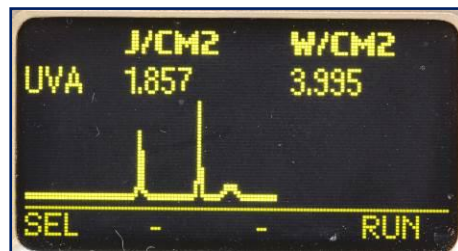
To change selections, use the down ↓ and right → arrow buttons located under the arrows to scroll in the indicated direction. To change the default selection, first select the line, then the setting on each line. Press the SAVE button to save the setting as the new default. An *asterisk will appear next to the setting.

When changes are completed, press the EXIT button to return to the default mode.

Explanation of Settings:

MODE:

GRAPH – Illustrates the irradiance profile for the UV source(s). UV Data is stored and displayed as a graph of time (X axis) vs. intensity (Y axis) for each UV lamp source.



REFERENCE – Make a run, data will appear next to the UV band.

CAUTION: *Be sure you want to overwrite the current data on the REF line before pressing SAVE.* Press SAVE, data is transferred to the REF line. The data will remain until it is overwritten. The difference or change between the current run data and the reference data is displayed as a percentage change on the DIFF% line.



TOGGLE (*UviCure Plus II Only*) – Pressing the SEL button, the user can “toggle” between the GRAPH and REFERENCE modes shown above.

ALL CHANNEL (*UV Power Puck II Only*) – displays Joules and Watts for each of the four (4) UV bands (UVA, UVB, UVC, UVV)



SMOOTH: There is a detailed discussion of SMOOTH in the **Instrument Sample Rate** section of the User's Guide

UNITS: J/W, mJ/mW, μJ / μW – Select the unit values

DISPLAYS: LOW, MEDIUM, HIGH – Select the display intensity

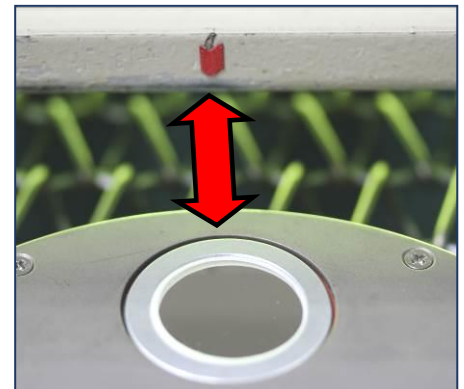
SAVE ↓ → **EXIT** – Soft Button Indicators



Data Collection Techniques

Collect the data in a consistent manner for consistent results. The following techniques will help you to get better data with the Power Puck II or UviCure Plus II.

1. Match the **Instrument Response** to the source
 - The Power Puck II and UviCure Plus II bands (UVA, UVB, UVC and UVV) were designed and optimized for mercury based sources
 - You will get numbers on the instruments when they are used on a LED but chances are the numbers will be under or over reported and vary source-to-source and instrument-to-instrument
2. Match the **Dynamic Range** of the instrument to the source
 - The Power Puck II and UviCure Plus II are available in three dynamic ranges
 - The ranges below are based on the irradiance (intensity) of the source, not the number of Joules that will be collected
 - **Suggested Operating Ranges** for Power Puck II and UviCure Plus II instruments
 - **10 Watt Standard (High- H) Range:**
 - UVA, UVB, UVV - 100mW/cm² to 10W/cm²
 - UVC - 10mW/cm² to 1W/cm²
 - **1 Watt Mid (M) Range:**
 - UVA, UVB, UVV - 10mW/cm² to 1W/cm²
 - UVC: 1mW/cm² to 100mW/cm²
 - **100 milliWatt Low (L) Range:**
 - UVA, UVB, UVV - 1mW/cm² to 100mW/cm²
 - UVC - 1mW/cm² to 100mW/cm²
 - Units will “turn on” (Start Threshold) at a much lower value than the Suggested Operating Range values
 - Using an instrument outside of the Suggested Operating Ranges can lead to variations in the readings
 - If the unit is used well below the Suggested Operating Range, there can be variations in the Joules, especially on long runs
 - If you try to use an instrument on a source well above the Suggested Operating Range, you may wind up ‘maxing’ out the unit on each run
3. Follow EIT 2.0 LLC **Optics Cleaning Guidelines**
 - Your Power Puck II or UviCure Plus II is an electro-optical instrument designed to measure UV in an harsh environment
 - Follow the Guidelines in Appendix A of this User’s Guide for proper cleaning techniques
 - The Guidelines as well as an instructional video on proper cleaning techniques are posted on our website at: <https://www.eit20.com/products/instrument-care-service-ordering/instrument-care/>
4. Use **Consistent Data Collection Techniques**
 - For best results, place the instrument in the same location with the optics in the same orientation
 - A small index mark on UV System allows the user to align the optics in the same location and orientation each time on the conveyor
 - On wide arc based systems, consider taking multiple readings (left-middle-right) across the width of the conveyor
5. Evaluate your **UV System Stability**
 - Allow your system to warm up and stabilize per the recommendations of the manufacturer.
 - Avoid Human Error
 - Double check and confirm the applied power and speed controller settings before taking a reading
 - Applied power and speed controller settings are not always linear and can vary widely



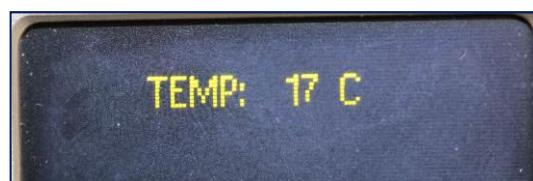
- With appropriate UV eye protection, check to make sure the instrument optics are maintained at a consistent height throughout the path of travel in the UV system
 - Consider the use of a fixture to stabilize the instrument height and to prevent 'up and down surfing' motion between the rollers. This can lead to inconsistent Watt values.

6. Perform **UV System Maintenance**

- Keep reflectors clean and replace as needed
 - 60-80% of the UV energy arriving at the substrate comes off the reflector(s)
 - Reflectors with even a little contamination transmit less energy, especially in the shortwave (UVC) region than clean reflectors
- Maintain the belt/conveyor tension to prevent slippage
 - Inconsistent speeds can lead to variations, especially in the Joule readings
- Verify the correct bulb type has been installed and that it is situated in the reflector as expected
- Purchase UV bulbs based on performance (output, life, spectral content) and not cost
 - Carefully evaluate bulbs from new suppliers before switching
- Follow the maintenance recommendations for these parts of your UV system if present:
 - Cooling supply-air and or water
 - Power Supply
 - Shutters
 - Quartz Plates
 - Specialty (dichroic) Reflectors
 - RF related items: Screens, gaskets and magnetrons

7. Watch the **Instrument Temperature**

- The internal temperature of instrument is shown on the display each time "RUN" mode is activated
- An alarm will sound when the unit reaches an internal temperature of 65°C or greater
- Avoid pre-heat, "flash-off" and/or IR sections of your line
- Repeated, slow long runs on high power UV systems without letting the instrument cool between runs can damage the radiometer and/ or give inconsistent results
- Let the Power Puck II or UviCure Plus II cool between readings
- Rule of Thumb: If the instrument is too hot to touch, it is too hot to measure



8. Establish a process to **Collect, Record & Maintain Instrument Values**

- Based on your process, decide how and who will collect data. This includes:
 - Line conditions
 - Speed and power levels
 - Frequency of measurement
 - Instrument settings (see section on Instrument Sampling below)
- Decide how to record/store
- Keep **both** the Joule and Watt values



9. **Maintain Your Instrument**

- EIT 2.0 instruments are calibrated on a six month cycle. The Power Puck II and UviCure Plus II can be used in harsh conditions including intense energy (UV, visible, infrared), temperature and coatings
- Instruments can become coated, dropped or stuck in a system
- When your instrument needs service, use EIT 2.0 or an EIT 2.0 LLC Authorized Service Center
 - EIT 2.0 and our Authorized Service Centers have the training, procedures and software to properly service your instrument
 - If repairs or replacement optics are needed, EIT 2.0 and our Authorized Service Centers have genuine replacement components
- EIT 2.0 and our Authorized Service Centers can work with you to determine the best bulb type to use when calibrating your instrument



Customer damaged instruments

10. Decide on the best **Instrument Sample Rate** for your application

- When comparing values within your supply chain, clarify what sample rate was used
- This is discussed in detail in the next section: Instrument Sample Rate

Instrument Sample Rate

Instrument Sample Rates

Collecting accurate, repeatable source values depends on getting an adequate number of samples while the instrument is under the UV source. The area of peak irradiance normally corresponds to the bulb diameter; typically 0.35-0.75" (9-19 mm).

EIT 2.0 LLC instruments designed in the early 1990's were state-of-the-art for the time and featured a 'blazing' sample rate of 25 Hz (samples per second). The two-button Power Puck/UviCure Plus units had a maximum suggested 'speed limit' of 40 feet (12 meters) per minute to allow the units to collect an adequate number of samples to measure the peak irradiance and energy density values. Exceeding the suggested 'speed limit' when collecting data would lead to variations, especially in the irradiance values.

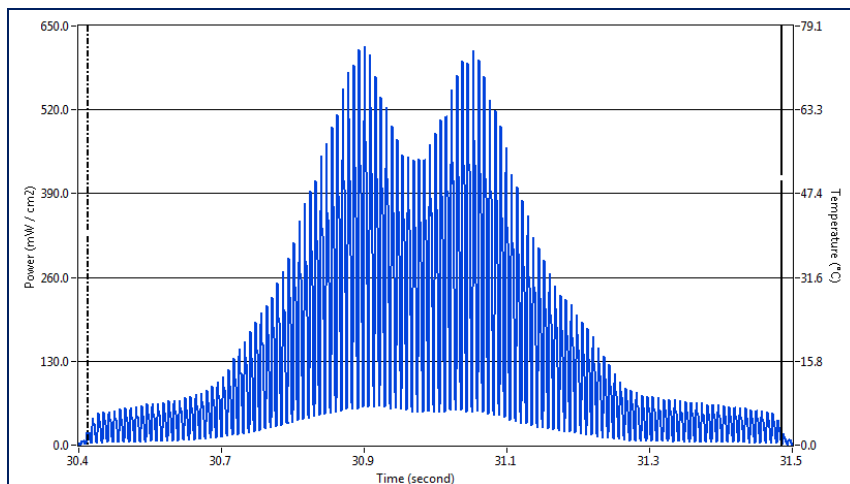


As technology improved, the sample rates in our instruments have also dramatically increased. The PowerMAP when released had a user adjustable sample rate of 128-2048 Hz (samples per second) and the MicroCure a sample rate of 2048 Hz.

The data (especially the irradiance value) collected and displayed EIT 2.0 LLC instruments can vary based on the:

- Speed at which the data was collected
- The effective instrument sample rate which impacts how the irradiance values are reported

The two examples below show UVA data for the same exact lamp and conditions in two different ways. Both are technically correct based on how you elect to measure the irradiance. Note: The X-Axis is time and the Y-Axis UV irradiance

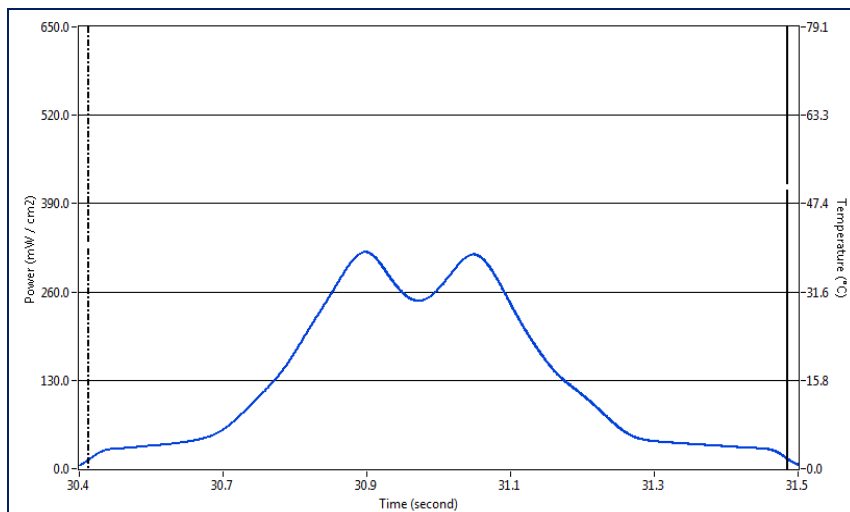


The data in this example was collected at an effective sample rate of 2048 Hz.

The peak UVA irradiance in this example is **618.0 mW/cm²**, the total UVA energy density is **139.9 mJ/cm²**

If you zoom in (see next page), you can see the lamp irradiance cycling at the same frequency (usually 50 or 60 Hz) as the alternating current (AC) from the power company.

The irradiance values and profile shown are referred to as the instant peak or "**Smooth Off**" intensity.

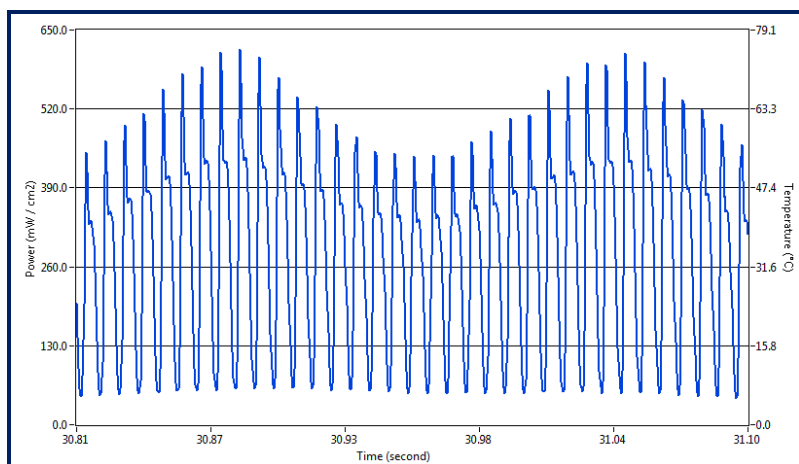


The data in this example was collected at an effective sample rate of 128 Hz.

The peak UVA irradiance in this example is **318.3 mW/cm²** and the UVA energy density is **139.9 mJ/cm²**

The irradiance profiles shows the average RMS lamp power.

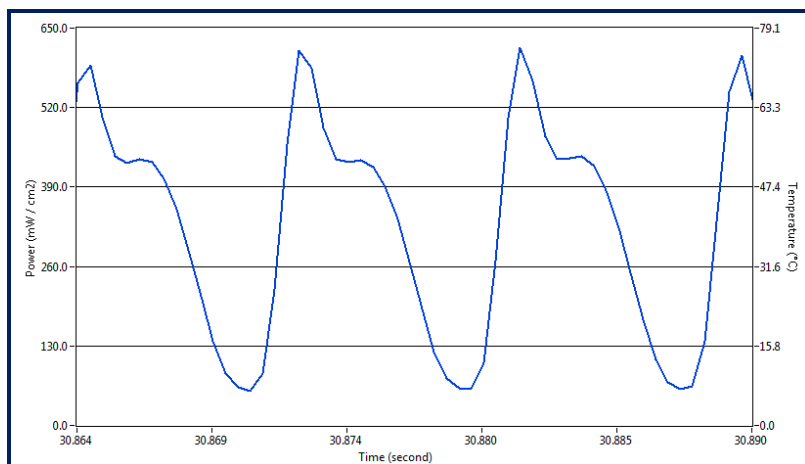
The irradiance values and profile shown are normally referred to as the Average Peak Intensity or “**Smooth Profiler**” intensity.



This example shows a 0.30 second section of the file collected at 2048 Hz.

It is clear from this example that the power supply is cycling.

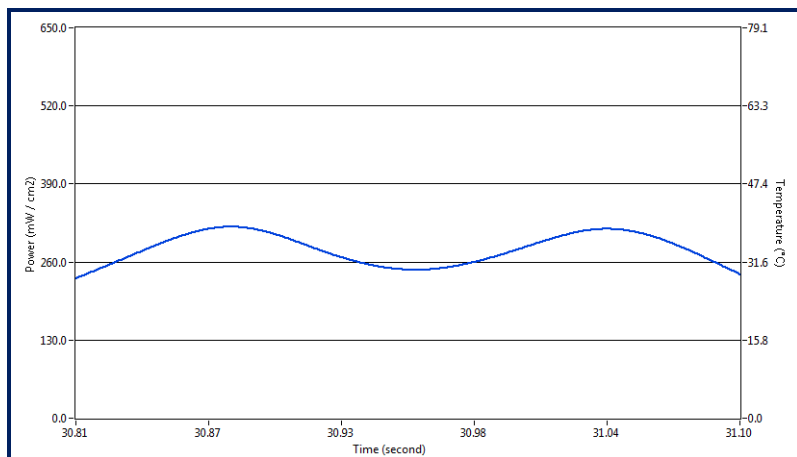
The irradiance values shown are “**Smooth Off**” values at an effective sample rate of 2048 Hz.



This example further zooms in on the example collected at 2048 Hz and shows a 0.03 second section.

It is clear that the power supply is cycling.

The irradiance values shown are “**Smooth Off**” values at an effective sample rate of 2048 Hz.

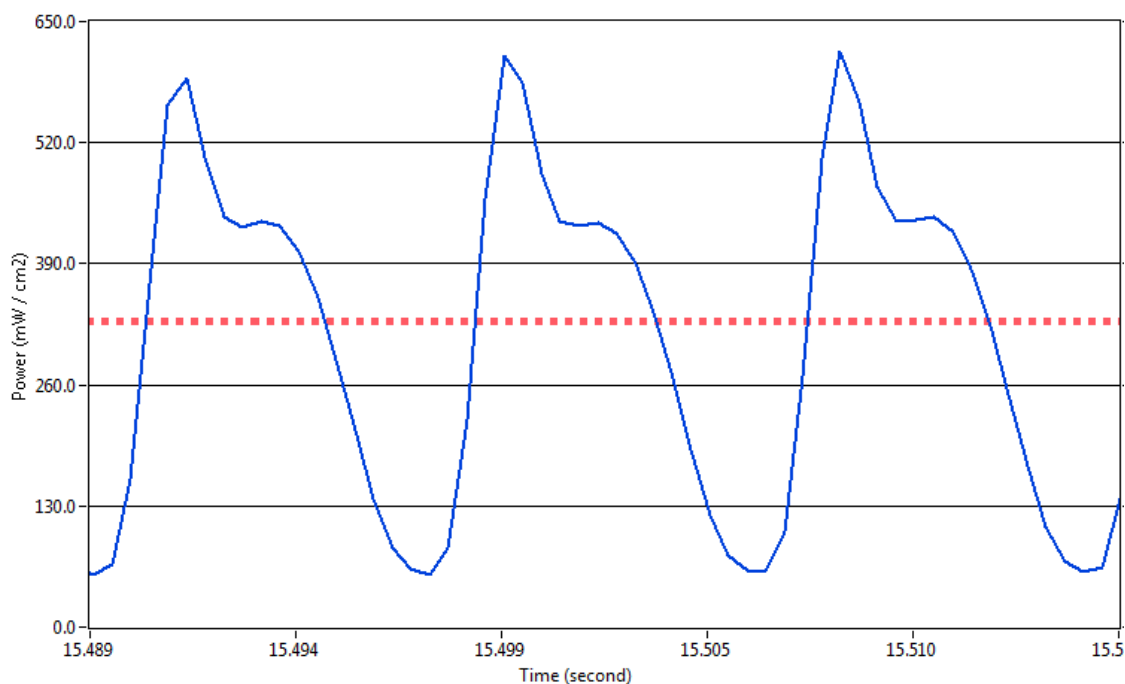


This example shows the same 0.30 second section of the UV lamp in the top example on this page, with an effective sample rate of 128 Hz.

The irradiance value is the RMS or “**Smooth Profiler**” irradiance at an effective sample rate of 128 Hz.

The irradiance profile below shows two other files.

- The time on the X-Axis is approximately 0.026 seconds
- The **blue** irradiance profile below shows data collected at 2048 Hz (**SMOOTH OFF**)
- The peak irradiance value for this **blue** file is 618 mW/cm², EIT 2.0 LLC UVA
- The **red** irradiance profile below shows data collected at 128 Hz (**SMOOTH PROFILER**)
- The peak irradiance for this **red** file was 329 mW/cm², EIT 2.0 LLC UVA.
- Both values are technically correct and are based on the how the UV was sampled and is reported.



Smooth/Smoothing

The UviCure Plus II and Power Puck II ‘oversample’ at a very high sample rate. The user is able to adjust the effective sample rate to one of three settings in the set-up menu of the instrument.

The effective sample rate is based on the Data (not Optical) Filter Bandwidth. EIT 2.0 LLC instruments use different bandwidths for the data filters.

From a technical standpoint we use 7, 35 and 700 Hz data filters in the UviCure Plus II and Power Puck II instruments.

The three data filters in the Power Puck II/UviCure Plus II units equate to the following sample rates:

- 7 Hz : Effective sample rate of 25 samples/second, referred to as **Smooth On**
- 35 Hz: Effective sample rate of 128 samples/second, referred to as **Smooth Profiler**
- 700 Hz: Effective sample rate of 2048 samples/second, referred to as **Smooth Off**

From a practical stand point we refer to this data filtering as an effective sample rate or “Smooth /Smoothing”. The button to the left of the instrument display will allow you to access the Setup Menu to adjust the Smooth or sample rate



SMOOTH: ON

- **SMOOTH ON** displays the Peak Irradiance at an effective sample rate of 25 samples per second (25Hz)
- This rate matches the old legacy two button Power Puck and UviCure Plus instruments
- This rate should only be used when trying to compare the irradiance values on old two-button legacy Power Puck and UviCure Plus units
 - Old Legacy units should not collect data as line speeds over 40 feet (12 meters) per minute
 - All support on the legacy Power Puck and UviCure Plus units ends December 31, 2019

SMOOTH: PROFILER

- **SMOOTH PROFILER** displays the Peak Irradiance at an effective sample rate of 128 samples per second (128 Hz)
- This rate matches the slowest sample rate on the PowerMAP and PowerMAP II systems

SMOOTH: OFF

- **SMOOTH OFF** displays the Peak Irradiance at an effective sample rate of 2048 samples per second (2048Hz)
- This rate (2048) matches the fastest sample rate on the PowerMAP and PowerMAP II systems
- This rate (2048) also matches the sample rate on MicroCure radiometers

“SMOOTH” PROFILER vs. PROFILER “INSTRUMENTS”

EIT 2.0 uses the term “**PROFILER**” to describe two separate instrument features.

When **PROFILER** is used in the “**SMOOTH**” context, it refers to an effective sample rate of 128 Hz as described above.

When **PROFILER** is used in the “**INSTRUMENTS**” context, it refers to instruments (Power Puck II **Profiler**, UviCure Plus II **Profiler**, LEDCure **Profiler**) that have the ability to transfer the irradiance profile (Watts/cm² as a function of time) to a computer for further analysis.

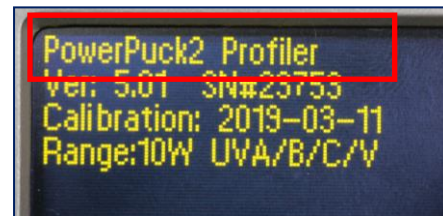
Profiler enabled “**INSTRUMENTS**” can be identified in the first line of the start-up screen.

Please see **Appendix C** for more information on **PROFILER** enabled instruments

Right: Display referring to SMOOTH PROFILER (Sample Rate)



Far Right: PROFILER Enabled Instrument



Diagnostics & Error Messages

The UV Power Puck II and UVICURE Plus II continuously conduct internal self-diagnostics. If the unit detects an internal problem, it will display one or more of the following error codes in the upper left corner on the display. Error codes are two alphanumeric characters preceded by an *. If two errors are experienced at the same time, both error codes will flash alternately on the screen every 0.5 seconds. Certain error codes may indicate problems that require returning the unit to the factory for service.

Low Battery Indicator

*LB – Low Battery

If this happens during an exposure run, the reading is still valid. The low battery indicator is designed to illuminate early enough so that your data remains valid. Under severe low battery conditions, the unit does not operate. Therefore, confirm that the unit flashes “RUNNING” before initiating a reading.

Over-Temperature State

*OT – Over Temperature

If the internal temperature of the UV Power Puck® or UVICURE Plus exceeds 65° C during an exposure run, the unit will emit a steady beeping tone after the run. However, the data it has collected is accurate and can be read by pressing the Select button. When doing this, the beeping tone stops and you can scroll through the data readings. In addition, if the internal temperature of the unit exceeds 75° C, the unit beeps once then displays the internal temperature continuously. The unit will not operate until the internal temperature drops below 75° C. The maximum internal temperature is 80°C. If the internal temperature exceeds 80°C, the warranty is voided. **CAUTION:** If you press the Reset button to initiate the RUN mode before the unit cools to 75°C, all data from the previous exposure run is cleared from memory. The unit beeps and again continuously displays the temperature.

Over Range State

*OR – Over Range

The over range error message will be displayed if the peak irradiance value is too large for the instrument to measure. Note that a unit's full scale range will be marginally higher than the normal range. Readings that exceed the nominal range and do not result in an *OR error are valid.

Suggested Operating Ranges for Power Puck II and UviCure Plus II

- **10 Watt Standard (High- H) Range:**
 - UVA, UVB, UVV - 100mW/cm² to 10W/cm²
 - UVC - 10mW/cm² to 1W/cm²
- **1 Watt Mid (M) Range:**
 - UVA, UVB, UVV -10mW/cm² to 1W/cm²
 - UVC: 1mW/cm² to100mW /cm²
- **100 milliWatt Low (L) Range:**
 - UVA, UVB, UVV - 1mW/cm² to 100mW/cm²
 - UVC - 1mw/cm² to 100mW/cm²

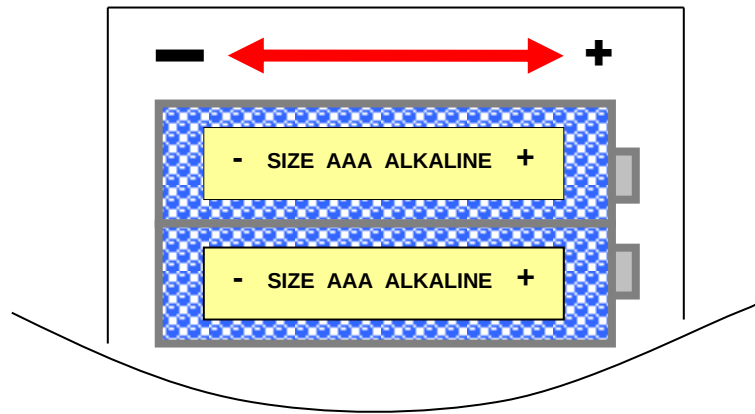
Other Error Codes

For all other error codes, please call EIT 2.0 for disposition.

Replacing the Batteries

The UV Power Puck II or UVICURE Plus II should be turned OFF.

1. Loosen the screw on the battery door and remove the door.
2. Remove the old batteries and dispose of them properly.
3. Install two new AAA size alkaline cells, observing polarity. **Both cells are installed in the same direction.**
4. The proper direction is indicated on the PCB and on the housing inside the battery compartment. The unit is designed so it will not operate with reversed cells.
5. Replace the door and the screw.



Maintenance – Cleaning and Calibration

Cleaning-Display

Use a soft cloth to clean the display window. If needed, the use of Isopropyl Alcohol is acceptable.

WARNING - DO NOT USE ACETONE TO CLEAN THE DATA DISPLAY SCREEN AS IT WILL DAMAGE THE DISPLAY.

Cleaning-Optics

Use caution when touching the optics surface of the instrument.

To clean the optical surface, refer to the detailed Optics Cleaning Instructions provided in Appendix A or on our website: [Instrument Care - EIT 2.0 LLC \(eit20.com\)](http://eit20.com)

Calibration

EIT's 2.0 calibration period for the Power Puck II or UviCure Plus II is six months. This based on our historical data and experience. This data is a culmination of over twenty years of calibration experience. Most of these units are exposed to extreme environmental conditions and though they are very robust; the opportunity for error climbs higher, over a prolonged period of time.

EIT 2.0 does not know how many times the instrument will be used each day, power of lamps, application conditions such as heat and how the instrument will be handled, cleaned and stored.

An individual company based on the feedback they receive from EIT 2.0 or an EIT 2.0 LLC Authorized Service can elect to set their own internal calibration interval. If you desire to extend the cycle on your own behalf; it is your privilege to do so.

Many internal quality processes allow for the unit owner to determine through historical data, frequency of use, etc. to extend the cycle if it is warranted. In fact ISO 9001 section 7.6 (Control of monitoring and measuring devices) states your organization can adjust or re-adjust as necessary your calibration cycles as long as it is consistent with the monitoring and measurement requirements of your process.

Returning an Instrument to EIT 2.0 UV Instruments

You do not need to contact EIT 2.0 before returning your unit.

Please include a Service Request Form in each shipment sent to EIT 2.0.

Service Request Forms can be found on our website ([Instrument Service - EIT 2.0 LLC \(eit20.com\)](http://Instrument%20Service%20-%20EIT%202.0%20LLC%20(eit20.com)))) under UV Measurement Products and then Care, Service, Ordering. Finally under Instrument Service.

You may also email calibration@eit20.com for a Service Request Form.

When returning the UV Power Puck II or UviCure Plus II, 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 2.0.

Please see our Warranty Policy below. Equipment repaired under warranty will be returned to the user with no charge for the repair or shipping. EIT 2.0 will notify you of repairs not covered by warranty and their cost prior to performing any work on the equipment.

EIT 2.0 reserves the right to make changes in design at any time without incurring any obligation to install the same on units previously purchased.

Address for Returning All Instruments to EIT 2.0

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

EIT 2.0 LLC
Attention: Service Department
900 Sycolin Rd, Suites #130
Leesburg, VA 20175

Include a Service Request Form with your shipment which has your contact information.

EIT 2.0 will contact you if any additional information is needed.

EIT 2.0 UV Instrument New Product and Calibration/Repair Warranty

New Product Warranty

EIT 2.0 LLC 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 2.0's liability under this warranty is limited to replacing or repairing the defective goods at our option. EIT 2.0 LLC 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 2.0 during the warranty period.

EIT 2.0 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 or manufactured by EIT 2.0 LLC, 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 2.0 LLC authorized personnel.
4. The buyer does not return the defective goods, freight prepaid, to EIT 2.0 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 2.0. EIT 2.0 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 2.0 LLC, any additional obligation or liability not expressly provided for herein except in writing duly executed by an officer of EIT 2.0.

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 2.0 LLC.

Calibration/Repair Warranty

EIT 2.0 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.

Appendix A: Optics Cleaning

Display Cleaning Instructions

Use of a Soft Cloth is recommended for Cleaning the Display Window. If needed, use of Isopropyl Alcohol is acceptable.

WARNING – DO NOT USE ACETONE TO CLEAN THE DATA DISPLAY SCREEN. IT MAY DAMAGE THE DISPLAY.

Optics Cleaning Guidelines

Guidelines and a video on cleaning are posted on our website at: [Instrument Care - EIT 2.0 LLC \(eit20.com\)](http://Instrument Care - EIT 2.0 LLC (eit20.com))

EIT 2.0 LLC radiometers are used to design, measure and control industrial UV applications in a wide variety of locations. The environmental conditions that our instruments are exposed to vary from pristine (medical clean room) to challenging (wood manufacturing facility). Careful cleaning of the outer optics using these guidelines will help your EIT 2.0 LLC instrument perform as designed between service intervals at EIT 2.0. The guidelines are general and specific questions should be directed to EIT 2.0 (uv@eit20.com). Instruments that stop functioning when accidentally dropped, get stuck in equipment or wind up covered or immersed with the product being cured need to come back to EIT 2.0 for further evaluation.

General Cleaning Guidelines

1. Establish an area for cleaning with the necessary supplies.
2. Avoid cleaning the optics with anything dry or abrasive such as a cloth, towel or clothing.
3. Fingerprints, oils from your hands, lint, dust, or contamination on the optics window usually increases the UV values reported.
4. Scratches to the metallic coating on optics window also most often cause the readings to increase.
5. There are two cleaning methods (Wipes, Swabs) described on this Guide. Select the one that best suits your needs and train your staff on these techniques.
6. Further information including a link to videos showing these techniques can be found on the EIT 2.0 web site at: [Instrument Care - EIT 2.0 LLC \(eit20.com\)](http://Instrument Care - EIT 2.0 LLC (eit20.com))

Steps For Cleaning with Swabs and Isopropyl Alcohol (IPA)

1. Examine the instrument to determine if it needs cleaning.
2. Carefully blow or brush loose particles away from the optics. Handheld bulbs to blow air are available from camera stores.
3. If needed, use “canned air” in very short (< 1 second) bursts from 8-10 inches or more away from the optics. Short bursts from a distance will minimize the transfer of any additives from the ‘canned air’ to the optics. If using compressed air, make sure it is oil free, “instrument grade” air.
4. Plan to use a minimum of two lint free swabs to clean the optics. The first swab, once moistened with the IPA is used to gently apply the IPA solution in a circular motion.
5. Rotate the swab between your fingers as you work your way around the optics window in a circular fashion.
6. No double dipping-do not put this swab back into the IPA. Discard it to prevent contamination of the IPA from any material picked up from the optics. Use a clean swab if additional IPA is needed.



7. Use a clean swab in a gentle circular motion to dry the IPA on the optics. Again rotate the swab between your fingers as you gently move it over the surface. Stop when the majority of the IPA has been absorbed by the swab. Properly dispose of the swabs.
8. Repeat steps 4 and 5 if needed using new swabs.

Hints

1. Label the IPA as required & follow the Safety Data Sheet (SDS) for IPA. Consider a dedicated IPA dispenser to avoid cross contamination from other activities.
2. Do not use IPA with detergents or other additives.
3. Use lint free cotton swabs. If you see streaking, consider another brand of cotton swab.
4. If you “double dip” by inserting a used swab into your IPA, the IPA can be compromised from material transferred from the instrument optics via the swab. Glue holding the cotton to the applicator stick may also be dissolved by the IPA and transferred to the IPA.

Steps For Cleaning with Instrument Wipes

EIT 2.0 LLC has sourced an industrial grade wipe that can be used for cleaning the optics on our UV measurement products. The Instrument Wipe contains a fast evaporating, mild solvent for cleaning EIT 2.0 LLC optics. The wipe is non-linting, non-abrasive and does not contain any detergents or surfactants that can harm the optics. Each wipe stays sealed until used to prevent contamination of the cleaning solution.

1. Examine the instrument to determine if it needs cleaning.
2. Carefully blow or brush loose particles away from the optics. Handheld bulbs to blow air are available from camera stores.
3. If needed, use “canned air” in very short (< 1 second) bursts from 8-10 inches or more away from the optics. Short bursts from a distance will minimize the transfer of any additives from the ‘canned air’ to the optics. If using compressed air, make sure it is oil free, “instrument grade” air.
4. EIT 2.0 suggests the use of gloves to prevent the transfer of oils from your hands to the wipes and possibly to the optics of the instrument. Handle the gloves from the wrist and not the part of the glove that will hold the wipe.
5. Once the sealed package is opened, the wipe can be unfolded and the optics cleaned with a gentle circular motion. We suggest bunching a small section of the wipe to start.
6. Move to different areas of the cloth wipe and bunch new sections as you clean. The Wipe is large enough that you may be able to clean multiple instruments. Properly dispose of the wipe



Hints

1. EIT 2.0 strongly suggests the use of gloves to prevent the transfer of oils from your hand to the optics on the unit.
2. Each wipe is fresh and ready for use. The IPA in the wipe does not contain any detergents or surfactants and is not subject to being compromised from a cleaning of a previous instrument and/or other use in your facility.
3. The Safety Data Sheet (SDS) for EIT 2.0 LLC Instrument Wipes is posted on our website (www.eit20.com) under UV Measurement Products. There is also a link to a video showing the cleaning technique with the Wipes.
4. EIT 2.0 LLC Instrument Wipes are available for purchase in boxes of 50

Additional information and detailed instructions about cleaning can be found on the EIT 2.0 web site at: [Instrument Care - EIT 2.0 LLC \(eit20.com\)](http://www.eit20.com)

Appendix B: Specifications

(Specifications subject to change without notice)

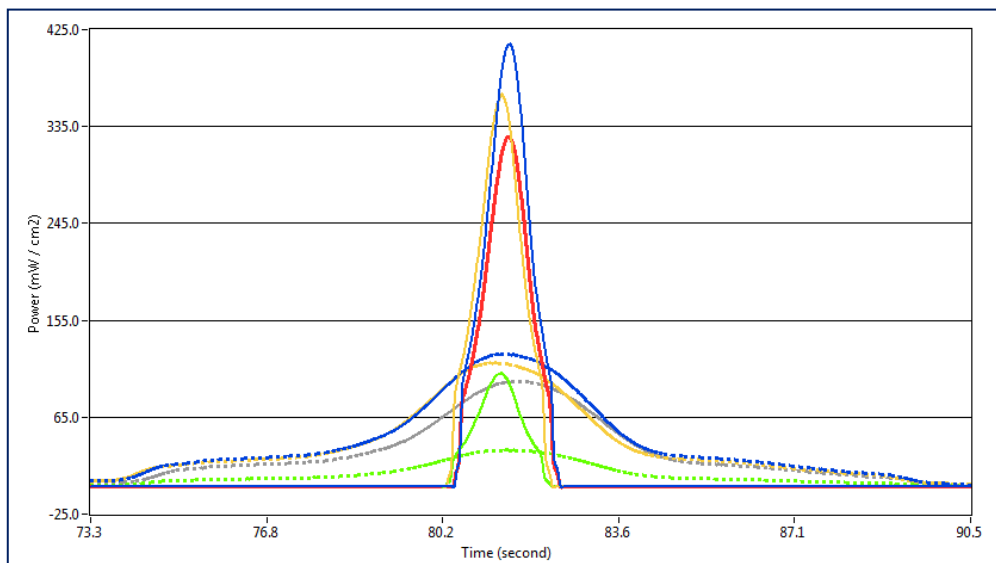
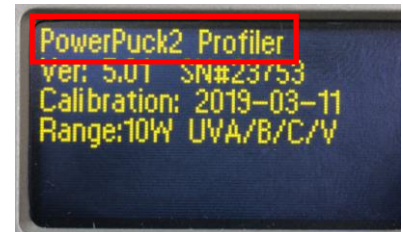
Display	Easy to Read, Yellow Text on Black Background
Suggested Operating Ranges	Standard High Range: UVA, UVB, UVV - 100mW/cm² to 10W/cm² / UVC - 10mW/cm² to 1W/cm² Mid-Range: UVA, UVB, UVV -10mW/cm² to 1W/cm²/ UVC: 1mW/cm² to100mW /cm² Low Power: UVA, UVB, UVV - 1mW/cm² to 100mW/cm² / UVC - 1mw/cm² to 100mW/cm² The suggested Operating Ranges are where the instrument performs best. Units will “turn on” and display data at irradiance values much lower than the suggested Operating Ranges.
Accuracy	+/- 10%; +/- 5% typical plus ±0.2% of full scale Typical +/- 5% or better
Calibration	Supplied with NIST traceable calibration certificate
Spectral Ranges (UV Power Puck® II)	Four channel monitoring of UVA (320-390 nm), UVB (280-320nm) , UVC (250-260nm) and UVV (395-445nm)
Spectral Ranges (UVICURE® Plus II)	One channel monitoring of UVA (320-390 nm), UVB (280-320nm) , UVC (250-260nm) or UVV (395-445nm) , selected at the time of purchase
Spatial Response	Approximately cosine, “Lambertian”
Operating Temperature	0-75°C Internal temperature; tolerates high external temperatures for short periods (audible alarm indicates when temperature has exceeded tolerance)
Smooth Modes	Smooth ON: Effective Sample rate of 25 samples/second Smooth PROFILER: Effective Sample rate of 128 samples/second Smooth OFF: Effective Sample rate of 2048 samples/second
Time-Out Period	2 minutes DISPLAY mode (no key activity). A no time-out mode can also be ordered
Battery/Battery Life	Two user-replaceable AAA Alkaline Cells/Approximately 20 hours with display on
Dimensions	4.60 x 0.50 inches; 117 mm x 12.7 mm (D x H)
Weight	10.1 ounces (289 grams)
Instrument Materials	Aluminum, stainless steel
Carrying Case Material/Weight	Cut polyurethane interior, scuff resistant nylon exterior cover/9 ounces (260 grams)
Carrying Case Dimensions	10.75 x 3.5 x 7.75 inches; 274 x 89 x 197 mm (W x H x D)

Appendix C: Instrument Types and Software

There are two versions of each “Puck” style instrument: “Profiler Version” and “Standard Version”

The Profiler Version

- Profiler versions are available for the Power Puck II, UviCure Plus II and LEDCure. Each unit operates the same as the Standard Version of the instrument
- The Profiler option needs to be specified when the instrument is ordered
- The Profiler Version adds the ability to download the irradiance profile (Watts/cm² as function of time) to a computer using EIT 2.0 LLC's PowerView® III Software
- The Profiling function allows for detailed analysis of the UV sources and application. The Profiler quickly identifies bulb type, focus, changes in speed and power. It also allows the user to break down the contribution from each individual lamp on multi-lamp systems.
- EIT 2.0 LLC's UV PowerView® III Software for **Profiler enabled instruments** is available from the EIT 2.0 website and is designed to work on Windows 7-10
- For best matching between the instrument display values and PowerView III calculated values, the sample rate of the Profiler enabled instrument should be set to SMOOTH Profiler
- More information on Profiler instruments is available from EIT 2.0 or local EIT 2.0 representative/distributor
- Please contact EIT 2.0 to see if your “Standard Version” instrument can be upgraded to a “Profiler Version”
- Examples of PowerView III screens are below



Left: PowerView III Graph View with UV irradiance on the Y-Axis and Time on the X-Axis.

Two files are shown with different irradiance levels and data collection speeds

Right: Data Table Summary with Watt and Joules values from two files

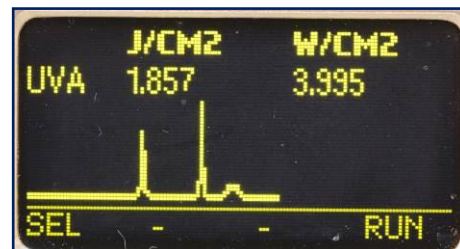
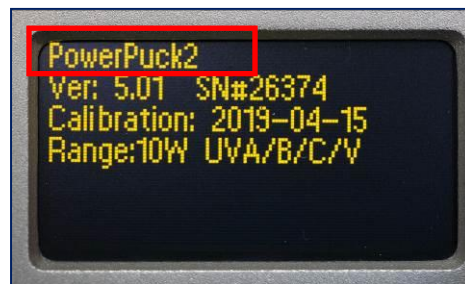
Summary By Table				
	Sample File	Reference File	Difference	%
UVA- Power (mW/cm2)	411.703	123.707	287.996	232.8
UVB- Power (mW/cm2)	364.889	115.459	249.430	216.0
UVC- Power (mW/cm2)	105.443	34.338	71.105	207.1
UVV- Power (mW/cm2)	325.437	98.340	227.096	230.9
UVA- Energy (mJ/cm2)	444.784	718.538	-273.753	-38.1
UVB- Energy (mJ/cm2)	396.529	670.646	-274.117	-40.9
UVC- Energy (mJ/cm2)	118.129	205.020	-86.891	-42.4
UVV- Energy (mJ/cm2)	358.530	567.458	-208.927	-36.8
Enable cursors	ON			
Time	70.17			
Time - Ref	94.12			
Smoothing	ON			
Sync Plots	ON			
Use Threshold	OFF			

The Standard Version

- The Standard can be identified on the start-up screen as shown to the right
- All information is shown on the display of the instrument
- Standard Puck style instruments with USB ports have the ability to be upgraded to a Profiler Versions at EIT 2.0

Discontinued Standard Version Software

- Standard Versions of the Power Puck II and UviCure Plus II that shipped prior to January 1, 2017 included a basic software program that transferred only the Joule and Watt numerical values to a computer screen
- This basic software program, which worked on Windows 7 or earlier is no longer shipped or supported by EIT 2.0 LLC
- It is available for download on the EIT 2.0 website: [Products & Software - EIT 2.0 LLC \(eit20.com\)](https://www.eit20.com/Products%20Software)



Top: Start-up screen showing a Standard Version of the “Puck”

Above: Instrument Display with all information

Left: Screen display of the basic software program no longer supported by EIT 2.0

Appendix D: Regulatory Statements

United States:

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Power Puck II & UviCure Plus II

The Power Puck II & UviCure Plus II were CE tested as a Class B device in accordance with Council Directive: 98/34/EEC (Technical Standards & Regulations Directive procedure for the provision of information in the field of technical regulations and rules on information society services) and EMC Directive 2004/108/EC (Electromagnetic Compatibility) with Amending Directives: 92/31/EEC, 93/68/EEC, 91/263/EEC

The Product Standard for testing was: EN 61326-1: 2005.

The Specific Test Standards evaluated were:

- Emissions (EN 55011: 2007)
- Electrostatic Discharge (EN 61000-4-2: 2009)
- Radiated Immunity (EN 61000-4-3: 2006 +A1: 2008)



This equipment is in conformity with the above standards and therefore bears CE marking.

Authorized CE representative in the European Community

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Germany

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EIT 2.0 Products are Designed and manufactured in the USA.