



## UV Measurement and Process Control Instruments

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### EIT 2.0 Data Collection Instructions and Techniques

Collecting data in a consistent manner will produce consistent results.

#### **Prepare the EIT 2.0 Instruments:**

1. Make sure the EIT 2.0 instrument is matched to the source in terms of the UV Band or Responsivity
  - EIT 2.0 instruments designed for mercury sources should be used on mercury sources.
  - EIT 2.0 instruments designed for LED sources should be used on LED sources.
    - If the instrument response is not matched to the source type, the numbers obtained can be over or under reported and vary considerably source-to-source and instrument-to-instrument
2. Make sure the instrument Dynamic Range/Suggested Operating Range is matched to the source
  - Refer to the manual/product brochure or contact EIT 2.0 if you are not sure
    - EIT 2.0 High and Mid-range units have a silver optic window
    - EIT 2.0 Low range units have a milky white optic window
  - 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
  - If comparing multiple EIT 2.0 instruments, make sure the dynamic range is the same
3. For most applications, we suggest using an effective sample rate of 128 Hz (Samples per second)
  - On the Power Puck II, UviCure Plus II and LEDCure instruments, the instrument sample rate should be set to “Smooth Profiler” (128 Hz). Use “Smooth Off” for fast process speeds greater than 120 feet per minute (40 meters per minute)
  - On PowerMAP II and LEDMAP use 128 Hz. Increase the rate for faster process speeds
  - If comparing multiple EIT 2.0 radiometers, make sure each radiometer has the sampling set the same
  - The MicroCure sample rate is fixed at 2048 Hz.
    - Make sure the MicroCure case halves are not touching metal
4. Refer to EIT 2.0 cleaning guidelines and/or videos on the EIT2.0 website (<https://www.eit20.com/products/instrument-care-service-ordering/instrument-care/>)

#### **Prepare the UV Source and Process Equipment for Data Collection:**

1. Perform system maintenance including the cleaning of reflectors (if present)
2. Allow the equipment to warm up and stabilize per the recommendations from the manufacturer. If you do not know what that time is, we suggest waiting 30 minutes for mercury-based sources and 10 minutes for LED sources

3. Disable any infrared (IR) /thermal processes
  - If that is not possible, add the instrument after the thermal or IR section
4. UV systems can produce a tremendous amount of heat and you need to watch the instrument temperature
  - 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
  - On the Puck style (UviCure Plus II, Power Puck II, LEDCure) instruments, the internal temperature of instrument is shown on the display each time “RUN” mode is activated
  - The PowerMAP II and LEDMAP can display the internal board temperature in EIT 2.0 UV PowerView III Software
  - An alarm will sound when the unit reaches an internal temperature of 65°C or greater. Let the instrument cool between readings
  - Rule of Thumb: *If the instrument is too hot to touch, it is too hot to measure*
5. Disable the dispensing of any coating, ink, or adhesive
6. Multiple Sources:
  - Standard Radiometer: Measure each source one at a time, allowing time for each individual source to warm up
  - Profiler Enabled Radiometer: Use EIT 2.0's PowerView III Software to isolate individual lamps for comparison after taking one measurement
7. Multiple EIT 2.0 Radiometers:
  - Make sure each radiometer has the same range, optics and is placed in the same position
8. Avoid human error and 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

#### **Data Collection on a Conveyor**

1. Align the units on the belt so that they measure the system in the same exact spot
  - 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
2. Space the radiometers by at least 12 inches (30 cm) if sending one after the other
3. Orientate the optics window and radiometer body in the same position each time
4. 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 if the conveyor belt is ‘bouncing’ or the space between any rollers is causing an ‘up and down surfing’ motion. This can lead to inconsistent Watt values.
5. On wide arc-based systems, consider taking multiple readings (left-middle-right) across the width of the conveyor

#### **Data Collection in a Chamber**

1. Place the unit in the exact same position and orientation every time that data is collected
2. Alternate radiometers

3. Check the board temperature of the unit by powering it on and putting it in “Run” mode. The unit will briefly display the internal temperature
4. Prepare an area that allows the units to rest after running them to let them cool. Attempt to stay within the ambient temperature.

#### **Data Recording**

1. At the end of the data run, carefully upload or write down the data
2. Record the Watt and Joule data for each run on the EIT 2.0 Provided Spreadsheet
3. Check ambient temperature and cool the unit(s) if necessary
4. Repeat steps 1-3 two more times
5. If using a Profiler enabled unit, please also provide the files (\*.tdms) to EIT 2.0.