2436352 Loctite EQ PM20 UV VIS Radiometer

2436353 Loctite EQ PM20 UV AB Radiometer

Operation Manual

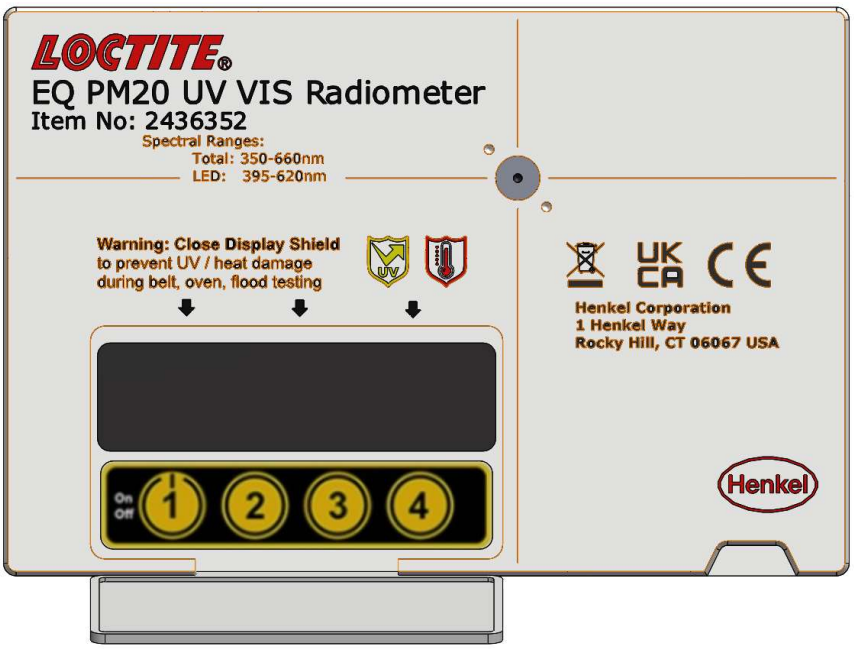


Table of Contents

1 Please Observe the Following

1.1 Emphasized Sections

⚠ Warning!
Refers to safety regulations and requires safety measures that protect the operator or other persons from injury or danger to life.

❗ Caution!
Emphasizes what must be done or avoided so that the unit or other property is not damaged.

☞ Notice:
A notice gives recommendations for better handling of the unit during operation or adjustment as well as for service activities.

1.2 For Your Safety

⚠ For safe and successful operation of the meter, read these instructions completely. If the instructions are not observed, the manufacturer can assume no responsibility.

⚠ Do not use the Meter for anything other than designed function.

⚠ Observe general safety regulations for the handling of chemicals such as Loctite® adhesives and sealants. Observe the manufacturer's instructions as stated in the Safety Data Sheet.

❗ Do not open the meter housing for any reason.

❗ Do not expose the meter display to high levels of UV light.

❗ Do not expose the meter to high humidity, chemicals, or liquid solutions to clean.

☞ While under warranty, the unit may be repaired only by an authorized Loctite service representative.

1.3 Unpacking and Inspection

Unpack the Loctite® EQ MP20 UV Radiometer and inspect for any damage. If unit is damaged, notify the carrier immediately. Claims for damage must be made by the consignee to the carrier and should be reported to the manufacturer.

1.4 Items supplied

1.4.1 Loctite® EQ MP20 UV Radiometer
1.4.2 Micro USB charging / data cable
1.4.3 Equipment instructions
1.4.4 Certificate of Calibration
1.4.5 Meter storage / shipping case

1.5 Additional Items Not Supplied

1.5.1 EQ PM20 UV Radiometer Manual (this document)
1.5.2 Loctite EQ PM20 UV Software

1.6 Features

1.6.1 Display, OLED
1.6.2 Feature and control buttons
1.6.3 Micro USB port
1.6.4 Tripod mounting
1.6.5 Data storage
1.6.6 Data CSV file export to computer
1.6.7 3 modes of operation; Automatic, Manual, and Live.
1.6.8 2 graph modes: sample and smooth.
1.6.9 Spot adapter mounting holes.

2 Description

The Loctite® EQ PM20 UV Radiometer is designed to measure UV light source outputs including Loctite® UV LED light sources, conveyor, flood, spot, and UV lamps.

Image 1: EQ PM20 UV Radiometer

1. OLED Display
2. ON/OFF & Feature control buttons
3. Display / Button Cover
4. Tripod mount (1/4”-20 thread)
5. Input Optic
6. Spot adapter mounting holes (qty 2 - #2-56 thread)
7. Micro USB port (power/data transfer)

3 Technical Data

Dimensions (L x H x W): 6” x 4” x 1/2" [152.4 mm x 101.6 mm x 12.7 mm]

Power Requirements: USB Micro, USB 2.0 or 3.0

☞ **Loctite® EQ PM20 UV Radiometer is a sensitive light monitoring device. Noisy USB power circuits may transfer to the measurement circuit and cause unit to count or incorporate the noise into the displayed results.**

Spectral Ranges Loctite® EQ PM20 UV Radiometers:

Item No.	Total	LED
2436352	350-660 nm	395-620 nm
2436353	280-405 nm	320-395 nm

4 Measuring Light Intensity and Energy

The successful use of light-curing products is very much dependent on light intensity or irradiance at the part surface. Thus, it is critical to measure and monitor this characteristic regularly. For best practice, light should be measured under actual production conditions and, if appropriate, through the substrate being assembled. Radiometers are designed to measure the appropriate wavelengths needed for polymerization enabling easy on production line monitoring. It is important to note that even if intensity readings at a specific wavelength are similar between two light sources, cure efficiency may not be the same, due to the potential differences in the entire spectral distribution from the light sources. However, measuring at one wavelength is an excellent means of determining optimum irradiance for a particular application and for monitoring the performance of the light source to ensure consistent cure results. Light energy is another measurement that is important to help a customer understand the interaction of light and the curing adhesive for proper polymer development. Light energy, which is also commonly called dose, measures the light intensity at the work surface (irradiance) multiplied by time (expressed in mJ/cm^2 or J/cm^2).

Dose = Irradiance (mW/cm^2) * time(s)

Dose is also measured at a specific wavelength so one can determine the energy at the desired wavelength important for matching light absorption of the photo-initiator across different light sources.

Broad Versus Narrow

There are two types of radiometers (broad range and specific wavelength) on the market. If using a single wavelength radiometer, which measures the wavelength at which your adhesive cures, you can accurately compare two different pieces of light-cure technology equipment at that wavelength. If you are using a broad-range radiometer, you have the potential to overexpose or underexpose the adhesive. The reason is that bulbs and LEDs have different spectral outputs. So, if you are measuring a bulb that has the highest peak at 365 nm, the broad range will pick up this maximum peak. However, if you have a bulb that has its highest peak at 325 nm, the broad range will peak up this peak and not the 365 nm peak, which is where the adhesive cures. To elevate this, testing, along with broad range measurements is critical when comparing bulbs to ensure that the irradiance of the appropriate wavelength is being transmitted to the adhesive.

5 Operation

❗To prevent damaging the display with intense UV sources, the display and button cover must be closed when measuring UV light source.

5.1 Turn ON/OFF Meter

Loctite® EQ PM20 UV Radiometer will turn ON with the following conditions:

- Button 1 is pressed. Display lights up after brief delay.
- Meter is connected to a powered USB port.

Power up display:

Once the meter turns on, the following display appears for a few seconds.

Image 2: Meter Power Up Display

The display information contains meter type, serial number, calibration date, and days to calibration.

Loctite® EQ PM20 UV Radiometer will turn OFF with the following conditions:

- Button 1 is pressed for more than one second
- Battery voltage falls below 3.5V
- Meter is idle (no button presses), while not charging, for 5 minutes.

☞ Time to shut OFF can be programmed by user.

When the meter turns OFF, following data is saved:

- The active device ID (Programmed source ID in use)
- The measurement mode, i.e. “Auto”, “Manual”, or “Live”

5.2 Meter Menu Reference Chart

The below is a graphic display of the menus and selections.

- The main display selections are the available selections for buttons 1, 2, and 4. ❸ [mode] indicator and control are based on the meter mode selection. “Auto”, “Manual”, or “Live”, described in section
- The secondary display selections are the available selections based on main display button press.
- The tertiary display selections are used for meter memory management and configuration settings.

☞ **Yellow circles with numbers represent the four numbered selection buttons on the meter.**

☞ **❹ Home selection exists on all Secondary and Tertiary display selections. Home returns to previous display and selections.**

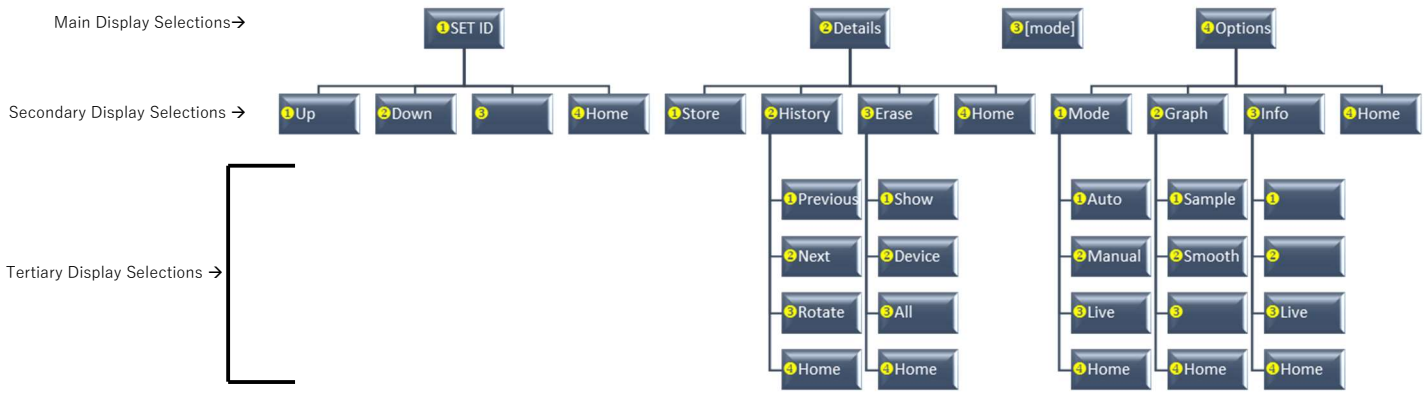


Image 3: Meter Menu Selections

5.3 Main Display –

Image 4: Main Display

1. **Peak Irradiance** – measured peak irradiance value. Units will auto scale based on the irradiance peak value.
2. **Peak Irradiance Graph Mode** – Graph mode will be displayed in graphics above irradiance units between brackets. [Peak] for sample graph mode and [Avg] for smooth graph mode.
3. **Dose** – measured dose. Units will auto scale based on the measured dose amount.
4. **Menu Selection Options** – menu selection options. Note: button 3 selection varies based on mode selection. See 5.4 Meter Modes and Use.

5.4 Meter Modes and Use

There are 3 modes of operation available for the meter once it is turned ON.

"Auto" Mode:

Meter will automatically start "integrating" in Auto mode. It will track the dose and peak irradiance once a pre-defined minimum light level is established. Meter will stop 2 seconds after the light level drops below the pre-determined minimum. The integration will stop, and the display will update with the dosage, peak, and irradiance profile.

☞ **Minimum light threshold and time delays are programmed using the meter software (Loctite EQ PM20 UV.exe)**

"Manual" Mode:

The meter Start/Stop button is used by the operator to begin and end measuring. When the operator stops the meter measuring, the display will then update with the dosage, peak, and irradiance profile.

“Live” Mode:

Meter is always sampling irradiance and updating the dose/integral. Pressing the zero button resets the dose/integral to zero.

! To prevent damaging the display with intense UV sources, the Live mode should not be used where the display can be exposed to intense UV from light sources.

Mode Displays:

Auto

Image 5: Auto Mode Display

Manual

Image 6: Manual Mode Display

Live

Image 7: Live Mode Display

In Auto and Manual modes, the peak and dose values will be 0.0 on the display when turned ON. Display updates with values and profile after a measurement is taken.

Button options for these displays are as follows:

Button 1:

Set ID - changes to Set ID display and menu

Button 2:

Details - changes to Details display and menu

Button 3:

[blank] - auto mode: button has no function.

Start/Stop - manual mode: button starts and stops the meter sampling.

Zero - live mode: button zeros the displayed integral/dose value.

Button 4:

Options - changes to Options display and menu

5.5 Option menu [Home Display]

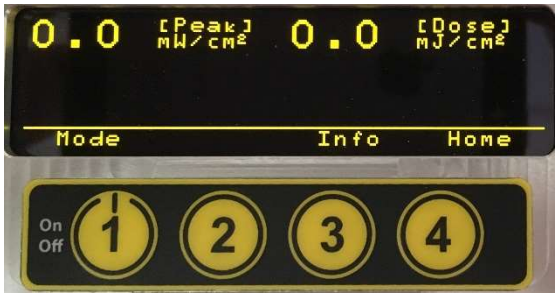


Image 8: Option Menu Display

The options menu, displayed with the home display, presents the following button options:

Button 1:

Mode - Sets sampling start mode to either Auto (light threshold trigger), Manual (Start/Stop with button), or Live.

Button 2:

Graph - Sets the graph mode to either Sample or Smooth. Sample mode should be used for most applications.

Button 3:

Info - Displays meter configuration information along with to capture “live” data for informational or system setup debugging.

Button 4:

Home - return to current set mode display

5.6 Set ID Display

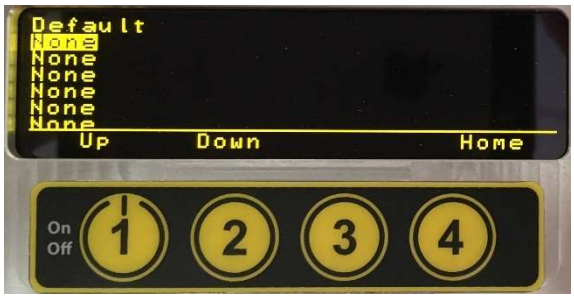


Image 9: Set ID Display

This display enables selection of active Device IDs. All subsequent saved data will be associated with the selected ID.

Device IDs are programmed using the "meter software". See section 10.3 Config Tab for entering device IDs.

Button options for the Device ID display are:

Button 1:

Up - Selection cursor moves up the device ID list

Button 2:

Down - Selection cursor moves down the device ID list

Button 3:

[blank] - Not used

Button 4:

Home - return to current set mode display

5.7 Details Display

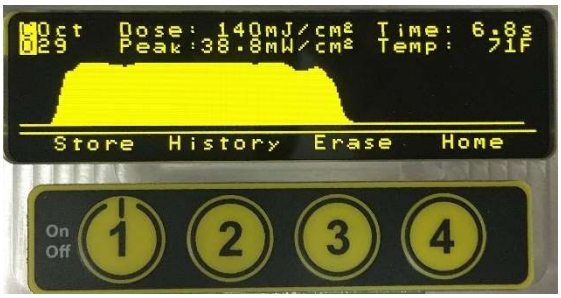


Image 10: Details Display

Last data sample additional details are shown on this display along with meter data management options. Current sample is indicated by a highlighted "C" in the upper left corner of the display. Current sample is the most recent set of data captured.

Button options for the Details display are:

Button 1:

Store - Saves the baseline including chart data, detail data, and Device ID. Up to 1000 baselines can be stored.

Button 2:

History - Changes to History display and options.

Button 3:

Erase - Changes to the Erase display and options.

Button 4:

Home - return to current set mode display

5.8 History Display

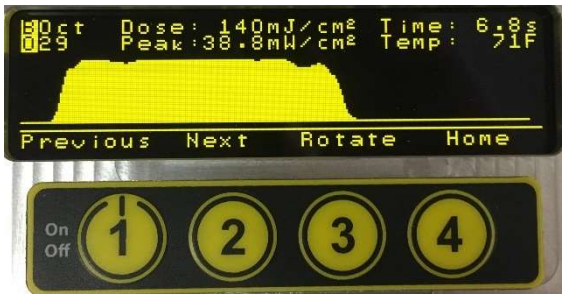


Image 11: History Display

Display historical profiles and data. From this display there is an option for viewing difference of any previously saved data and the current captured data.
All profiles are associated with the selected Device ID.

Button options for the History display are:

Button 1:

Previous - Locates and displays the sample from previous memory location for the selected device ID. Device ID is selected from the Set ID display. ***see note in 5.9 Erase Display [History Display]***

Button 2:

Next - Locates and displays the sample from the next memory location for the selected device ID. Device ID is selected from the Set ID display. ***see note in 5.9 Erase Display [History Display]***

Button 3:

Rotate - Rotates the display between “C” current profile, “B” saved baseline, and “D” delta between the current and saved baseline.

Button 4:

Home - return to current set mode display

5.9 Erase Display [History Display]

Image 12: Erase Display

Display allows for erasing previously stored sample data from internal memory.

Button options for Erase Display are:

Button 1:

Shown - Erase currently displayed sample data.

Button 2:

Device - Erases all data samples associated with the selected Device ID. Device ID is selected from the Set ID display. *****

Button 3:

All - Erases all sample data for all device IDs.

Button 4:

Home - return to current set mode display

*** Data in memory location is typically in chronological order, i.e. previous memory location contains the sample previously saved in time. If individual "shown" baselines are erased, as opposed to "Device" or "All", a previous memory location can represent a later point in time.**

5.10 Battery Status

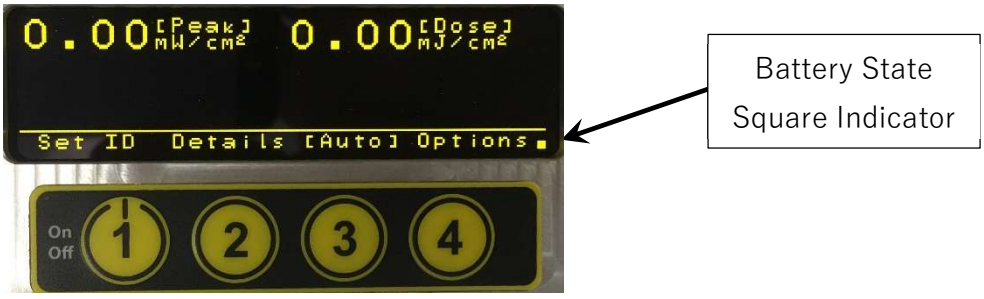


Image 13: Battery Status, Square Indicator

New batteries should provide around 2 hours of operation between charges. An auto-OFF feature and ultra-low battery drain while the unit is OFF, together provide for extended periods of time between charges.

The display has a square in the bottom right corner that indicates two charge states.

Charging - Solid square

Low Bat - Square blinks every 2 seconds

6 Sample and Smooth Graph Modes

EQ PM20 UV meter firmware 1.1.4.3 and later have two graph modes available for displaying collected data, sample and smooth.

Sample graph mode displays the peak irradiance measured and would be used for most applications. Always begin all application measurements with this graph mode.

Smooth graph mode is to be used for low irradiance readings with noisy light sources and must be used only when necessary. The smooth graph mode calculates an average of peaks to filter out or reduce spikes in irradiance due to lamp noise and fluctuations.

Smooth graph mode calculations would incorporate include any irradiance ramp-up, ramp-down, or variations during data capture for average peak irradiance. An example of ramp-up and ramp-down would be data capture of a UV conveyor system as the meter travels along the conveyor.

☞ **IMPORTANT: The following examples of a noisy light sources are only to provide basic understanding of bulb "flicker" and the difference between sample and smooth graph modes. This example does not represent all bulb systems. each application will have its own characteristics. It is the responsibility of the meter user to understand the basic physics of light and appropriate energy for curing the UV product within the application.**

6.1 Example of noisy light source with average of peaks

This example of a noisy light source is only to provide basic understanding of bulb "flicker" and the difference between sample and smooth graph modes. This example does not represent all bulb systems. each application will have its own characteristics. It is the responsibility of the meter user to understand the basic physics of light energy and what is appropriate for the UV product within the application.

Bulb light sources typically have fluctuations in lamp intensity output. Some bulb light sources can also contain a high "flicker" of intensity. This is not an issue for curing UV resins, but it can create variations in peak irradiance readings from measurement to measurement. Especially if the peaks are random or behave randomly.

Image 14 below was an EQ PM20 UV meter sample graph captured from the meter computer software. Irradiance spikes can be seen and caused a significantly higher irradiance peak than the process required.

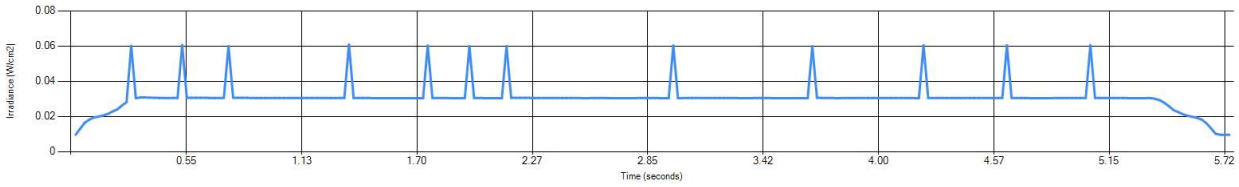


Image 14: EQ PM20 UV Graph Output with Fluctuations

Image 15 'A' and 'B' below are high sample rate data capture of the same light source from Image 14. This special test was performed to evaluate the smooth graph mode results. 'A' contains light irradiance versus time with spikes, the results are like that of the sample graph mode. 'B' contains the data from 'A' processed with the spikes removed.

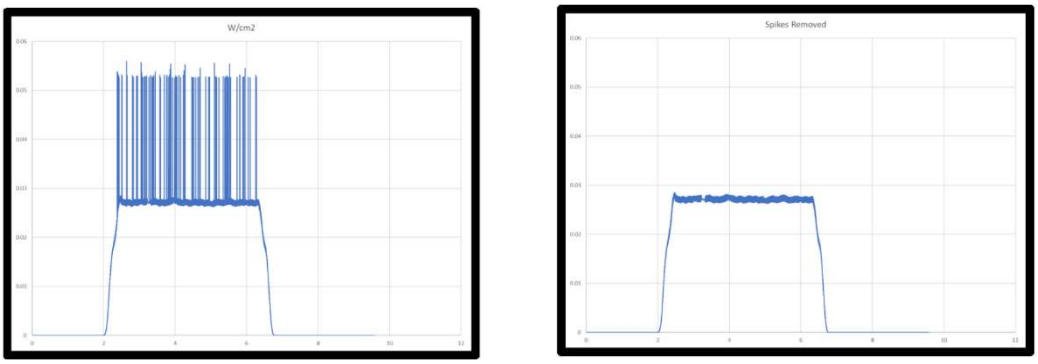


*Image 15: **A**-High Sample Rate Raw Data Capture **B**-High Sample Rate Raw Data Spikes Removed*

Calculation results of image 15 'A':

Average Irradiance = 12.4 mW/cm^2. True peak irradiance value of a high "flicker" lamp output.

Peak Irradiance = 55.9 mW/cm^2

Total Dose = 118.9 mW/cm^2

Removed "spikes" from data, with spikes data is 1% high on dose without compensating for loss of spike in next rolling average.

Calculation results of image 15 'B':

Average Irradiance = 12.3 mW/cm^2

Peak Irradiance = 28.5 mW/cm^2

Total Dose = 117.7 mW/cm^2

☞ **NOTE: The spikes in sample graph mode are the true peak irradiance from the light source.**

6.2 Example of Pulse Width Modulated LED

One method of adjusting the intensity of light emitting diodes (LED) is powering them with a pulse width modulation. Pulse width modulation is a method of changing the average power delivered to a load, in this case LEDs. The signal ON and OFF durations are used to calculate the duty cycle. 50% duty cycle is when the signal ON and OFF durations are the same. 75% duty cycle is when the signal is ON duration is three times longer than the OFF duration. 100% duty cycle the signal is always ON.

Image 16 is of a graph containing three duty cycles of a pulse width modulated light source. This was from a Loctite CL10 controller and spot light source. The graph contains a small time segment of a high sample rate data capture to show the pulse width modulation of the light irradiance. The LED output was a direct response to the power signal turning it ON and OFF.

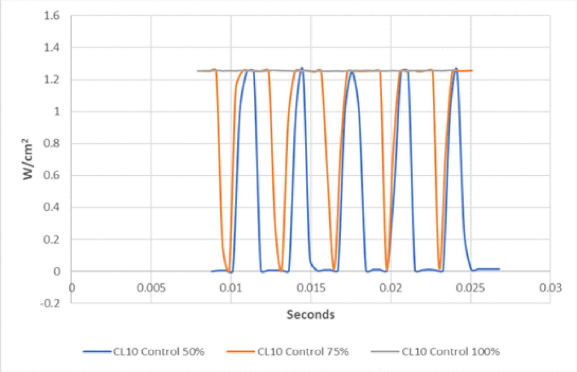


Image 16: Loctite CL10 Pulse Width Modulation

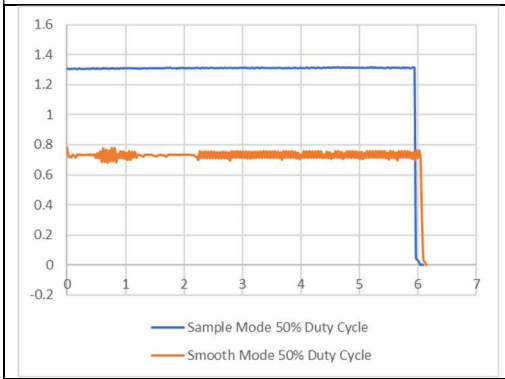
In the graph above 50, 75 and 100 percent duty cycles are seen.

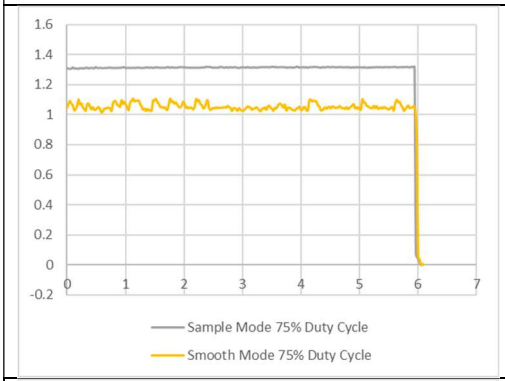
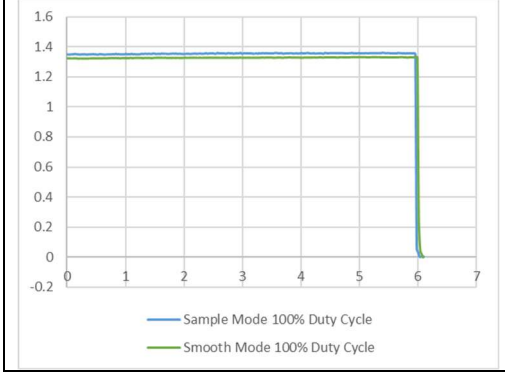
The following table contains collected data from a CL10 system with settings for 50, 75, and 100 percent output.

Note the peak irradiances in sample mode are the same regardless of duty cycle. This is characteristic of pulse width modulation. Also, sample mode measures the true peak irradiance.

Since smooth mode is an average of peaks, the calculated peak irradiance value is proportional to the controller setting (duty cycle).

All dose measurements were consistent regardless of graph mode and proportional to the controller setting (duty cycle). Variation in the Dose values are a combination of many normal variations including meter placement between testing and dose time variations.

Duty Cycle Graph (W/cm^2 vs. time)	SAMPLE MODE	SMOOTH MODE
	50% Duty Cycle Dose: 3.97 J/cm^2 Dose Time: 6.09 s Peak Irradiance: 1.32 W/cm^2	50% Duty Cycle Dose: 4.01 J/cm^2 Dose Time: 6.15 s Peak Irradiance: 0.72 W/cm^2

Duty Cycle Graph (W/cm² vs. time)	SAMPLE MODE	SMOOTH MODE
	75% Duty Cycle Dose: 6.19 J/cm² Dose Time: 6.09 s Peak Irradiance: 1.32 W/cm²	75% Duty Cycle Dose: 6.27 J/cm² Dose Time: 6.10 s Peak Irradiance: 1.03 W/cm²
	100% Duty Cycle Dose: 8.10 J/cm² Dose Time: 6.10 s Peak Irradiance: 1.36 W/cm²	100% Duty Cycle Dose: 7.95 J/cm² Dose Time: 6.08 s Peak Irradiance: 1.31 W/cm²

7 Troubleshooting

7.1 Unresponsive Meter

If the meter is unresponsive, the unit can be reset from any state or display by a meter “Hard Reset”. To perform a “Hard Reset”, hold Button 1 for 15 seconds.

8 Care and Maintenance

8.1 Conditions for Use

Operating Temperatures:

The Loctite® EQ PM20 UV Radiometer housing reduces risk of internal component overheating (rated up to 75°C) by reflected UV light.

Can withstand short durations of temperature up to 350°C. Make sure housing is cool before exposing to higher temperatures. Repeated exposure

to high temperatures, without cooling, can cause overheating of the components inside.

! The display and button cover must be closed to protect from UV light and overheating.

Humidity:

0-95% non-condensing.

Electrostatic Discharge (ESD):

Follow basic electrostatic discharge practice when handling device. Any static buildup can be discharged by touching a grounded conductive surface before handling the meter or its connector.

Housing is not rated for immersion, spray, or high levels of moisture.

8.2 Maintenance and Repair

The Loctite® EQ MP20 UV Radiometer is **NOT** field serviceable. This meter must be repaired by qualified Henkel service personal in a controlled environment. Opening the Loctite® EQ MP20 UV Radiometer by non-Henkel personal voids all warranties and calibration.

8.3 Cleaning

Do not use chemicals or liquid solution to clean the Loctite® EQ PM20 UV Radiometer housing. The housing is not sealed to prevent liquids from reaching the internal components.

The optic window has clear quartz to allow cleaning. The aperture must be kept clean and free from debris, dirt, cracks, scratches, or discoloration. These will cause readings to deviate.

Use glass cleaning wipes or a cotton tipped applicator with a very small amount of class cleaner, or alcohol to gently clean the window.

! Be sure to avoid liquid entering the sides of the optic window to prevent damaging inner components.

8.4 Calibration

Over time the band pass filters and integrating sphere in the meter may begin to degrade due to the extreme UV exposure. This gradual degradation manifests itself in changes in total transmission and band pass characteristics, both of which adversely affect the calibration. It is, in part, for this reason that the meter should be calibrated on a regular basis.

Calibration is recommended once a year for the Loctite® EQ PM20 UV Radiometer. The recalibration procedure includes evaluation of the charging system and batteries, evaluation of the internal optics (sensor, filter, and integrating sphere), and a complete optical and electrical calibration traceable to N.I.S.T.

In some cases, with extreme use (irradiance, frequency, or temperature) shorter calibration cycles are required.

For calibration and repair (US & Canada):

E-mail: equipment.services@henkel.com

Phone: 860-571-5174

For calibration and repair (outside US & Canada):

Contact Local Henkel Affiliate.

9 Accessories and Spare Parts

9.1 Replacement Micro USB Cable

Micro USB Charging / Data Cable – Henkel P/N: 9002063

9.2 Adapter Selection

The Loctite® EQ PM20 UV Radiometer is designed to be used with chambers, conveyors, and Loctite® LED curing devices. When using certain Loctite® devices, it is recommended to use the proper adapter which are purchased separately. Adapter must be installed by fastening with two #2-56 screws before taking readings.

☞ **Using adapters help provide accurate/repeatable working distance and position when measuring. Small changes in alignment and distance can cause significant changes in measurements of spot curing sources and LEDs.**

2436352 EQ PM 20 UV VIS RADIOMETER	
EQUIPMENT DESCRIPTION	**RADIOMETER ADAPTER**
98003(158531) Zeta 7415 Ultraviolet Benchtop Conveyor, With V bulb 983471	1403403 with Filter
98004(218283) Electrodeless Lamp Assembly & Power Supply 208 Volt, With V Bulb 983471	1403403 With Filter
98005(158532) Electrodeless Lamp Assembly & Power Supply 240 Volt, With V Bulb 983471	1403403 With Filter
98039(478495) Zeta 7401 UV Curing System, 110Volt, With Bulb 983050	1403403 With Filter
98413(630560) Zeta 7411-S UV Flood Systems, with Bulb 983050	1403403 With Filter
98665(883979) 7703-HD LED Light Source, Indigo	1403405
806038 7703 LED Light Source, Indigo	1403405
976418 LED Cure Jet Indigo	1403401
976420 LED Cure Jet 405 nm	1403401
1113131 Focused UV Flood System, With Bulb 983050	None
1167589 LED Flood Array,100 x 100mm, Indigo	None
1167593 LED Flood Array,100 x 100mm, 405nm	None
1369537 LED Cure Jet Indigo Head	1421420
1369538 LED Cure Jet 405nm Head	1421420
1427231 7700 LED Light II,405nm	1403405
1427232 7700-HD LED Light II,405nm	1403405
1449336 LED Single Line Array,405nm	1403403 With Filter
1470727 Assure Cure Optics External Interface Assembly	1527709
1746633 CL 10 Single LED Head 405nm	1430402
2182207 LOCTITE EQ CL32 LED SPOT SYSTEM	2251337
2183340 LOCTITE EQ CL 28 CUREJET™	1421420
2139180 LOCTITE EQ CL30 LED FLOOD	None
2209919 LOCTITE CL34LED LINE ARRAY SYSTEM	None
2104788 LOCTITE EQ CL 25 LED HEAD	1403402

2436353 EQ PM 20 UV AB RADIOMETER	
EQUIPMENT DESCRIPTION	**RADIOMETER ADAPTER**
98003(158531) Zeta 7415 Ultraviolet Benchtop Conveyor, With D bulb 983469	None Required
98003(158531) Zeta 7415 Ultraviolet Benchtop Conveyor, With H bulb 983470	None Required
98004(218283) Electrodeless Lamp Assembly & Power Supply 208 Volt, With D Bulb 983469	None Required
98004(218283) Electrodeless Lamp Assembly & Power Supply 208 Volt, With H Bulb 983470	None Required
98005(158532) Electrodeless Lamp Assembly & Power Supply 208 Volt, With D Bulb 983469	None Required
98005(158532) Electrodeless Lamp Assembly & Power Supply 208 Volt, With H Bulb 983470	None Required
98039(478495) Zeta 7401 UV Curing System,110 Volt, With Bulb 97246	None Required
98413(630560) Zeta 7411-S UV Flood System, With Bulb 97246	None Required
980160 (218334) Mercury Arc UV Irradiator & Power Supply,120 Volt, With Bulb 980161	None Required
982440 (256941) Mercury Arc UV Irradiator & Power Supply,230 Volt, With Bulb 980161	None Required
1113131 Focused UV Flood System, With Bulb 97246	None Required
1167582 LED Flood Array,100 x 100mm, 375nm	None Required
1241543 UV Benchtop Conveyor, With bulb 983091	None Required
1369539 LED Cure Jet 375 Head	1421420
1449337 LED Single Line Array,365nm	None Required
1538499 CL 10 Single LED Head 365nm	1403402
2182210 LOCTITE EQ CL32 LED SPOT SYSTEM	2251337
2183339 LOCTITE EQ CL 28 CUREJET™	1421420
2139181 LOCTITE EQ CL30 LED FLOOD 380nm	None
2139182 LOCTITE EQ CL30 LED FLOOD 365nm	None
2210212 LOCTITE CL34LED LINE ARRAY SYSTEM	None
1984957 LOCTITE EQ CL 25 LED HEAD	1403402

10 Meter Application Software

10.1 Download and Installation

Meter application software must be downloaded from the Loctite® EQ PM20 UV Radiometer page of the Loctite® equipment web site: http://equipment.loctite.com/

Install the file "**Loctite EQ PM20 UV Software 1-2-8-0.exe**" software. There will be no further prompts and the software icon will be placed on the desktop."

☞ **Important: older computer software does not support EQ PM20 meters with graph mode setting. This will cause an error when trying to link to meter. For EQ PM20 meters without graph mode setting use the older computer software "Loctite EQ PM20 UV.exe".**

10.2 Running Meter Software

Plug in a meter to a computer using the included USB mini cable. Make sure only 1 meter / module is connected at a time.

☞ **Software does not support simultaneous programming of multiple units.**

The meter software provides the following:

- Configuration of the Loctite EQ PM20 UV Radiometer irradiance threshold.
- Configure allowable delay (travel time, lamp to lamp while below threshold)
- Configure Auto-OFF (set, activate, de-activate)
- Setting Device ID's

Click on meter software icon that appears on the computer desktop.

The following window opens:

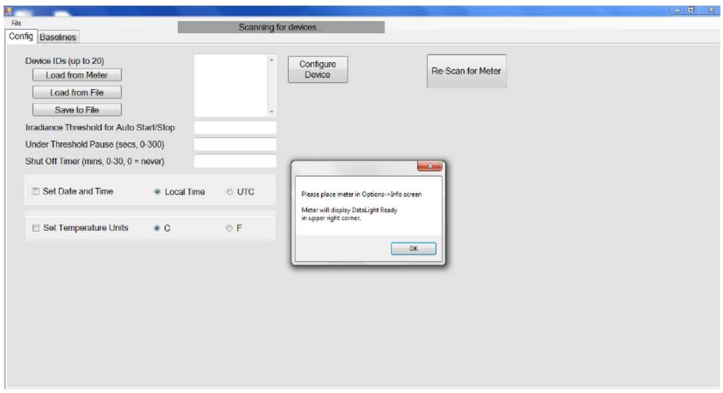


Image 17: Loctite EQ PM20 UV Software Start Display

Retrieval of the baseline history (saved with Details -> Store above) that the meter needs to enter the software ready mode by selecting; Button 4 “Options” and then Button 3 “Info”.

Meter software halts all internal meter activity to allow the software to interact with the meter. After selecting Options -> Info on the meter and selecting “OK” in the software, the meter settings and stored baselines will upload into the software.
If there is no meter connected or detected, the following window will appear.

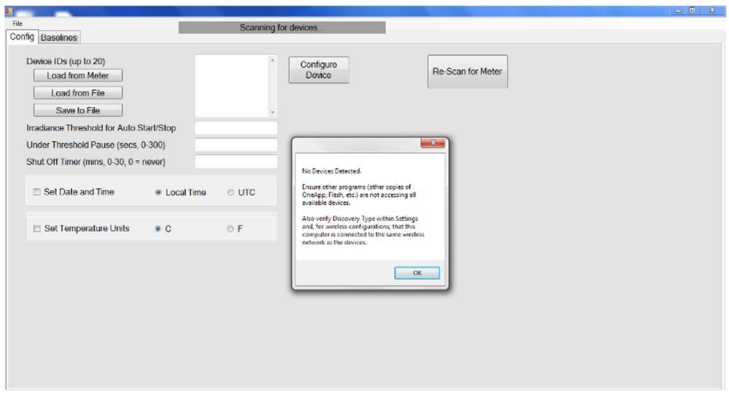


Image 18: Display if No Connected or Detected Meter

Double check the meter is connected to the PC and Info has been selected.
Select “OK” in the software and select “Re-Scan for Meter” if software does not auto-update.

10.3 Config Tab

The Config Tab is where retrieving and setting the meter Device ID's. Device ID's can be a light source type, operation, make, model serial number, or other unique description. A maximum of 20 Device ID's can be created.

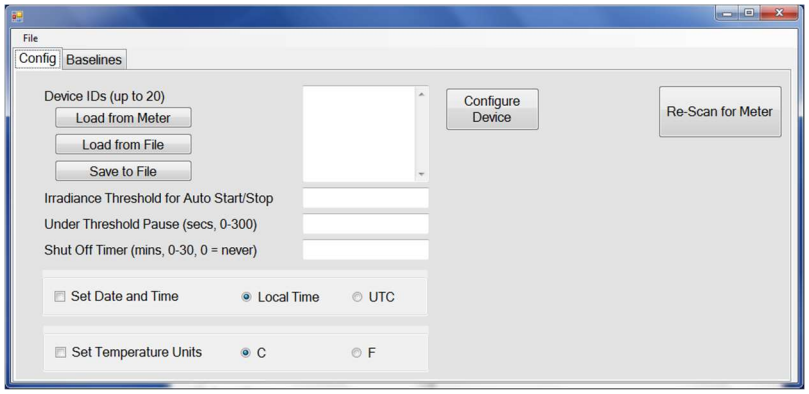


Image 19: Software Config Tab Window

Window radio buttons and entry fields perform the following functions:

- The "Load from Meter" button when selected, loads the list of Device ID's from the connected meter.
- The "Load from File" button when selected, loads the list of Device ID's that was previously saved with the "Save to File" button.
- The "Save to File" button when selected, saves the list of Device ID's to computer drive or memory device.
- The "Irradiance Threshold for Auto Start/Stop" is where the meter threshold can be changed for the Auto Mode trigger to start and stop data collection.
- The "Under Threshold Pause (0-300 secs)" is where the pause to OFF time is set for when the input drops below the threshold setting.
- The "Inactivity Timer to Shut Off (mins, 0 = never)" is where the OFF time is set when the meter is not used.
- The "Configure" button when selected, will download the entered parameters and Device ID's to the meter.
- The "Re-Scan for Meter" button when selected, establishes link with meter if there are communication issues or, more commonly, used to

recognize the next meter for programming. Note that at any time, only one meter should be connected to the computer.

- Set Date and Time – Sets date and time to Local or UTC time.
- Set Temperature units – Sets temperature units to degrees Celsius or Fahrenheit.

10.4 Baseline Tab

This tab is used to download all the baselines for the selected Device ID. This is accomplished by selecting the "Download Baselines" radio button.

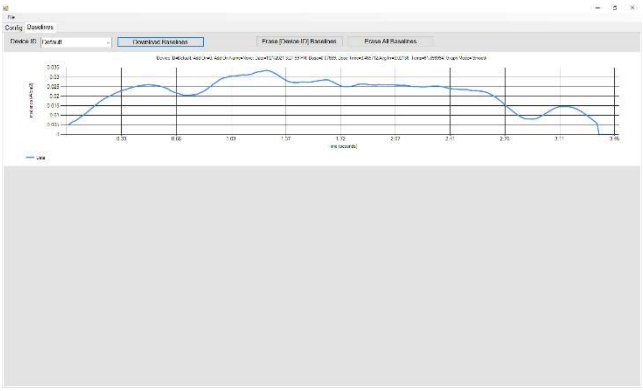


Image 20: Software Baseline Tab Window

Window radio buttons and entry fields perform the following functions:

- The "Device ID" field when selected, the list of Device ID's will be visible for selection.
- The "Download Baselines" button when selected, downloads the selected Device ID's saved data to computer for viewing.
- The "Erase [Device ID] Baselines" button when selected, erases the selected ID baselines from the meter.
- The "Erase All Baselines" button when selected, erases all the ID baselines from the meter.

With mouse pointer on any graph, a right-click, will open a window with options of Copy to Clipboard, Save to CSV, and Save all to CSV.

- Copy to clipboard: copies the selected graph image to the computer clipboard. This image can be used in other documents.
- Save to CSV: saves selected graphs irradiance versus time CSV file.

- Save all to CSV: saves all graph irradiance versus time to a single CSV file.

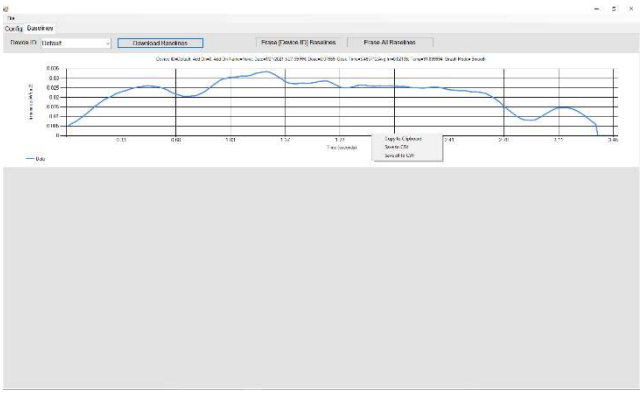


Image 21: Software "Copy to Clipboard", "Save to SCV", or "Save all to SCV" Menu

10.5 Window Functions

The software window functions use the standard computer window size and control functions.

Selecting "file" in the upper left-hand corner of the window displays a pull-down menu with the selections "about" and "exit". About opens an application window that displays the computer software's version (application version) and the EQ PM20 device firmware version. Exit closes the computer software.

11 Declaration of Conformity

11.1 English

Declaration of Conformity	
The Manufacturer according to the EC regulations	Henkel AG & Co. KGaA Standort München Gutenbergstr. 3 D-85748 Garching bei München
declares that the unit designated in the following is, as a result of its design and construction, in accordance with the European regulations, harmonized standards and national standards listed below.	
Designation of the unit	EQ PM20 UV AB Radiometer/Dosimeter EQ PM20 UV VIS Radiometer/Dosimeter
Unit number	IDH 2436353, 2436352
Applicable EC Regulations	EC Directive for Electro-Magnetic Compatibility 2014/30/EU EC Directive of RoHS 2011/65/EU EC Directive of WEEE 2012/19/EU
Applicable harmonized standards	CISPR 11, EN 61000-4-2, EN 61000-4-3, EN IEC 63000:2018
Authorized person for technical files	Henkel AG & Co. KGaA Site Munich Gutenbergstr. 3 85748 Garching bei München Germany
Garching, 23.03.21	(R. Neumayer) Technical Customer Service, Technology & Segment Management Europe Site Manager Munich

11.2 Deutsch

Konformitätserklärung	
Der Hersteller gemäß der EU-Richtlinien	Henkel AG & Co. KGaA Standort München Gutenbergstr. 3 D-85748 Garching bei München
erklärt, dass das nachfolgend bezeichnete Gerät auf Grund seiner Konzipierung und Bauart den unten aufgeführten europäischen Richtlinien, harmonisierten Normen und nationalen Normen entspricht.	
Bezeichnung des Gerätes	EQ PM20 UV-AB-Radiometer/Dosimeter EQ PM20 UV-VIS-Radiometer/Dosimeter
Gerätenummer	IDH 2436353, 2436352
Einschlägige EU-Richtlinien	EU-Richtlinie Elektromagnetische Verträglichkeit 2014/30/EU EU-Richtlinie RoHS 2011/65/EU EU-Richtlinie WEEE 2012/19/EU
Angewandte harmonisierte Normen	11, EN 61000-4-2, EN 61000-4-3, EN IEC 63000:2018
Bevollmächtigter für die technischen Unterlagen	Henkel AG & Co. KGaA Standort München Gutenbergstr. 3 D-85748 Garching bei München
Garching, 23.03.21	(R. Neumayer) Technical Customer Service, Technology & Segment Management Europe Standortleiter München

12 Warranty

Henkel expressly warrants that all products referred to in this Instruction Manual for (2436352 Loctite® EQ PM20 UV VIS Radiometer, 2436353 Loctite® EQ PM20 UV AB Radiometer) (hereafter called “Products”) shall be free from defects in materials and workmanship. Liability for Henkel shall be limited, as its option, to replacing those Products which are shown to be defective in either materials or workmanship or to credit the purchaser the amount of the purchase price thereof (plus freight and insurance charges paid therefor by the user). The purchaser’s sole and exclusive remedy for breach of warranty shall be such replacement or credit.

A claim of defect in materials or workmanship in any Products shall be allowed only when it is submitted in writing within one month after discovery of the defect or after the time the defect should reasonably have been discovered and in any event, within (12) months after the delivery of the Products to the purchaser. This warranty does not apply to perishable items, such as (indicate items: fuses, filters, lights, etc.). No such claim shall be allowed in respect of products which have been neglected or improperly stored, transported, handled, installed, connected, operated, used or maintained. In the event of unauthorized modification of the Products including, where products, parts or attachments for use in connection with the Products are available from Henkel, the use of products, parts or attachments which are not manufactured by Henkel, no claim shall be allowed.

No Products shall be returned to Henkel for any reason without prior written approval from Henkel. Products shall be returned freight prepaid, in accordance with instructions from Henkel.

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