ILT800 CureRight Instruction Manual

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1. Equipment Overview:

The ILT800 CureRight Series is designed to measure all types of UV curing methods and sources including conveyor, belt, oven, flood, area, spot, 3D printer, pulsed, traditional UV lamps, and UV/VIS LED's and LED Light sources.

 ILT800 meter purchase includes 1 meter with removable display shield, 1 USB cable, ISO 17025 accredited NIST traceable standard single point calibration, and a hard case for shipping/storage.

The ILT800 comes in many filtration versions:

ILT800-UVA   315-390 nm

ILT800-BAV   275-475 nm

ILT800-UV   250-400 nm

ILT800-UVF   275-450 nm, 360-400 nm flat

ILT800-CUV   215-350 nm

The ILT800 measures 6 inches long, x 4 inches wide x .5 inches thick.

2**. Quick Start Guide**

To turn **On** the meter, Press Button 1 and release

(software has a 2-3 second delay)To Turn **Off** the meter, Press and hold Button 1 for 2 seconds until dashes **" - - - -"** appear.

Home Screen:

When you turn on your meter you will see a brief splash screen showing the ILT logo, the meter model and serial number and the days left before re- calibration is due. You will then be directed to the home screen.

The meter will arrive set to **Auto mode.** In auto mode the meter will automatically obtain a measurement as soon as the minimum light level requirement is met.

To take a **Measurement of a large area source:** Close the shield. Place the input optic in the correct location to accurately mimic the placement of the product that is to be cured. Leave the meter in place for the required time. Remove from source. Lift shield. Review results on the display.
(**WARNING:** The Display and Buttons are not designed to withstand UV exposure.)

To take a **Measurement of a small forcussed source (spot cure/LED's).** Align the spot of light so the aperture is centered within the light spot. Leave the meter in place for the required time. Remove from the source. Review results on the display. (Shield usage is not required if the spot of light will not reach the display) To view live changes in intensity and dose, see … Live Mode.

(Note: the ILT800 accepts two #2-56 screws for securing spot cure adapters to assure the same/accurate working distance is used each time. Small changes in alignment and distance can cause changes in results when measuring spot cure sources and LED's.)

While in Auto mode the display will state **"Integrating"** while measuring.   When the light level has decreased below the programmed **minimum** light level threshold, there will be a 2 second **delay** and then the display will automatically update showing the Peak, Dose and a Graph of the light output over time. (Note the **delay** time and **minimum** light level threshold are a **programmable**. See advise on programming features using DataLight CureRight in section 13)

To Save the results of the most recent measurement, press Button 2 Details, then Button 1 Store. After saving the file the meter resets to the home screen.

To take a **new measurement**, expose the meter to light and it will automatically begin a new measurement as soon as the minimum light level requirement is met. Again the display will say "Integrating" and will update the display upon completion. (the previous graph will show on the display until the present measurement is complete.)

3. Power Requirements

- USB Micro, USB 2.0 or 3.0
- Power Note: The ILT800 is a sensitive light monitoring device. Noisy USB power circuits can introduce unwanted current in the sensitive measurement circuit which may cause the unit to count or incorporate the noise into the displayed results.

4. Power Up / Power Down

The unit is powered up under the following scenarios:

- Button 1 is pressed. Note there will be a brief delay before the screen lights up.
- The unit is plugged into an active/powered USB cable.

The unit is powered down under the following scenarios:

- Button 1 is held down for more than 1 second.
- The battery voltage falls below 3.5V.
- The unit is idle (no Button presses), while not charging, for 5 minutes (or the user programmed time period)

Powering down the device will automatically save the following data:

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

5. Standard Usage

The unit is ready for use immediately after it is turned on.

In **Auto mode**, the unit will automatically start **"Integrating",** tracking the dose and peak irradiance, once a pre-defined minimum light level is established. Once the light level returns below the pre-defined minimum for 2 seconds, the unit will automatically stop integrating followed by displaying the dosage, peak, and irradiance profile. (Note: Minimum light levels and time delays are programmed using the DataLight CureRight app. See advise on programming using DataLight CureRight in section 13.)

In **Manual mode**, the unit will start and stop based on the **Start/Stop** Button. When stopped, the unit will display the dosage, peak, and irradiance profile.

In **Live mode**, the unit is always sampling irradiance and updating the dose/integral. The dose/integral can be reset with the **"Zero"** option.

Within both Auto and Manual mode, the unit will display **"Saturation"** in the middle of the irradiance profile if light level exceeds the maximum measurable peak irradiance at any time.

Home Screen Auto

0.0 [Peak] mW/cm2   0.0 [Dose] mJ/cm2

Set ID   Details   [Auto]   Options

Manual

2.2 [Peak] mW/cm2   1.3 [Dose] mJ/cm2

Set ID   Details   Start   Options

Live

2.2 [Live] mW/cm2   1.3 [Dose] mJ/cm2

Set ID   Details   Zero   Options

In Manual and Auto modes, the Home Screen will display 0.0 for Peak and Dose values when turned on. These values and the profile will be updated once a measurement is taken.

The options available from this screen are as follows:

Button 1	Set ID	Presents the Set ID screen and menu
Button 2	Details	Presents the Details screen and menu
Button 3	[Empty] Start/Stop Zero	When in Auto mode, Button 3 is not used When in Manual mode, this option starts and stops the sampling When in Live mode, this option zeroes the integral/dose reading
Button 4	Options	Presents the Options menu

6. Option Menu [Home Screen]

0.0 [Live] mW/cm2   1.3 [Dose] mJ/cm2

Mode   Add-Ons   Info   Home

The Options Menu, displayed with the Home Screen, presents the following capabilities:
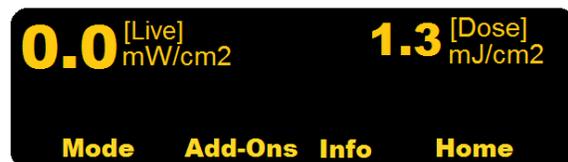
The options available from this screen are as follows:

Button 1	Mode	Allows setting of the Sampling Start mode to either Auto (triggered by light level) or Manual (start and stop with a Button press)
Button 2	Add-Ons	Presents the Add-Ons menu (not currently supported)
Button 3	Info	Present configuration information about the meter along with an option to capture "Live" data for informational or system setup debugging
Button 4	Home	Return to the Home screen

7. Set ID Screen

This screen allows *selection* of the active Device ID. This ID will be associated with all saved data going forward. The list of available ID's are set as described in *Setting the Device ID's* below.

```
Spot cure #147
UV Oven #236
None

Up        Down            Home
```

The options available from this screen are as follows:

Button 1	Up	Move the Device ID selection cursor up
Button 2	Down	Move the Device ID selection cursor down
Button 3		Not in use
Button 4	Home	Return to the Home screen

Note: ID's are programmed using the DataLight CureRight app. See advise on programming ID's using DataLight CureRight in section 13.

8. Details Screen

This screen shows additional details about the last data sample while also presenting further options related to data management on the meter. The highlighted "C" at

```
C Jan    Dose: 11.3  J/cm2        Time: 7.0 s
   15    Peak: 2.2 W/cm2          Temp: 66 F

     Store     History     Erase     Home
```

the upper left of the screen indicates that this is the Current sample, the most recent set of data captured.

The options available from this screen are as follows:

Button 1	Store	Stores the baseline (up to 1000 baselines can be stored), including the chart data, detail data, and Device ID
Button 2	History	Presents the History screen and menu
Button 3	Erase	Presents the Erase menu
Button 4	Home	Return to the Home screen

9. History Screen

This screen shows historical profiles and data, allowing insight into trends over time. This view also provides an option to view the difference between the currently captured data and any previously saved data.

```
C Feb  Dose: 40 mJ/cm2           Time 4.0 s
   28  Peak: 14 mW/cm2           Temp: 72

    Previous    Next    Rotate    Home
```

Note that all profiles are associated with the User Selected "Device ID" when Device ID is in use. To learn more about Device ID see sections 7 for Set ID and chapter 13 for programming Device ID.

The options available from this screen are as follows:

Button 1	Previous	Locates and displays the sample, for the device selected within the Set ID screen, from the previous memory location. See the Note in the Erase Menu section below
Button 2	Next	Locates and displays the sample, for the device selected within

		the Set ID screen, from the next memory location. See the Note in the Erase Menu section below
Button 3	Rotate	Rotates the display among "C" **C**urrent profile, "B" the saved **B**aseline, and "D" the **D**elta between the Current profile and saved Baseline
Button 4	Home	Return to the Home screen

10. **Erase Menu [History Screen]**

This menu provides options to erase previously stored sample data from internal flash memory.

The options available from this menu are as follows:

Button 1	Shown	Erase the sample currently shown
Button 2	Device	Erase all samples associated with the device selected within the Set ID screen
Button 3	All	Erases all samples, for all devices
Button 4	Home	Return to the Home screen

Note: Memory location typically reflects chronological order, i.e. a the 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.

11**. Battery Status**

The battery charging system is designed to provide 2 hours of operation between charges for new batteries. The auto-off feature and the ultra-low battery drain while the unit is off together provide for extended periods of time between charges.
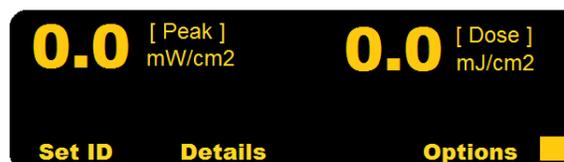
There are two charge status as indicated by a square in the bottom right corner of the display:

Charging	Solid square
Low Bat	Square blinks every 2 seconds

12. **Hard Reset**

Hard Reset If the meter becomes unresponsive, The unit can be reset, from any state or screen, but holding Button 1 for 15 seconds.

13. DataLight CureRight Application Installation

The DataLight CureRight application must be downloaded from the ILT800 Documents and dowloads page on the ILT website: link https://www.intl-lighttech.com

The file Datalight CureRight.exe   will install with no further prompts and the Application icon will be placed on the desk top.

**13A. Running DataLight CureRight Application:**

Plug in One Meter using a good quality USB mini cable (One is provided with each purchase). Note: DataLight CureRight does not support simultaneous programming of multiple units. Be sure only 1 meter/module is connected at a time.

The Application provides the following functions:

- Configuration of the ILT meter and modules 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 the DataLight CureRight Applications icon on the desk top.

The opening screen appears as follows:
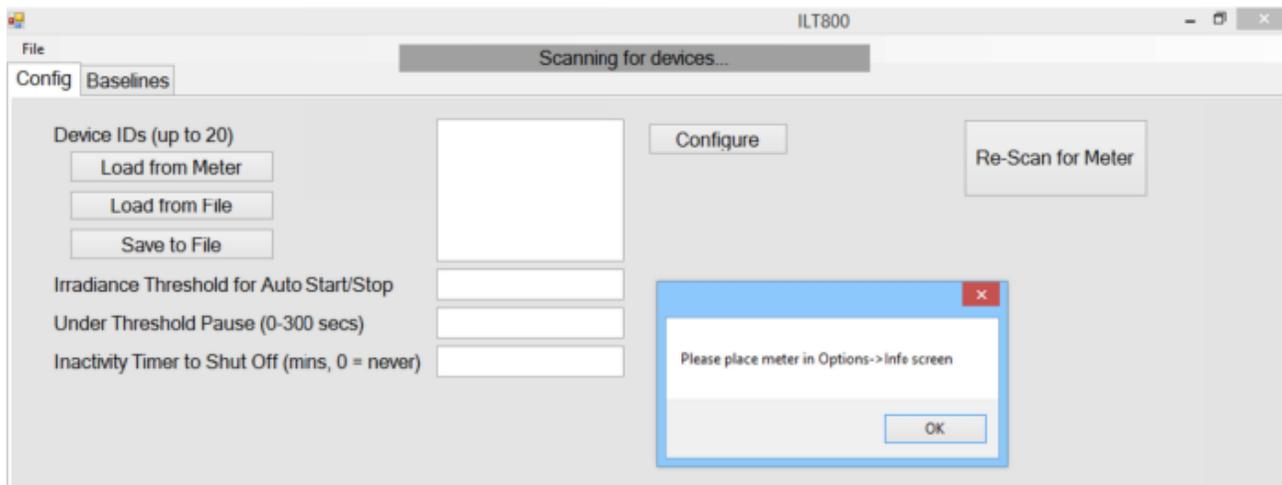
Retrieval of the baseline history (saved with Details -> Store above)e that the Meter needs to enter the "DataLight Ready" mode by selecting **Options and then info.**

DataLight Ready halts all internal meter activity to allow the application to interact with the meter. After selecting Options->Info on the meter and selecting "OK" in the application, the app will load the connected meters settings and stored baselines.

13B. The Config tab

Config allows setting and retrieving the Device ID's on the meter(Device ID can be the light source type, make, model serial number etc.).

The "Load from Meter" option will load the previously set Device ID's from the meter.

The "Load from File" option will load the list that was previously saved with the "Save to File" option.

This Save/Load to file facilitates the programming of multiple ILT800 units.

The Config tab also allows the setting of the following meter parameters:

- Irradiance Threshold for Auto Start/Stop, i.e. when using the Auto Mode
- The Threshold Pause time (seconds)
- The Inactivity Time to shut off the meter (minutes)
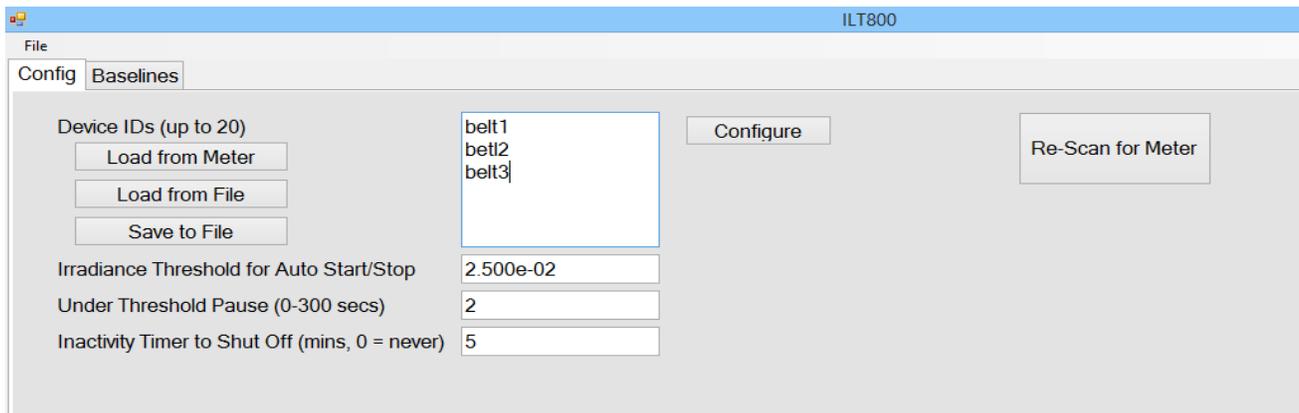
The "Configure" Button will load the meter with the parameters entered.

The "Re-Scan for Meter" is used if there are communication issues with a meter or, more commonly, to recognize the next meter for programming. Note that only one meter should be connected to the computer at a time.

13C. The Baseline Tab

The Baselines tab will download all the baselines for the selected Device ID. Right-clicking any graph gives the option of copying the graph to the clipboard, saving the graph data to a CSV file, or saving all the data, from all the graphs, to a CSV file.
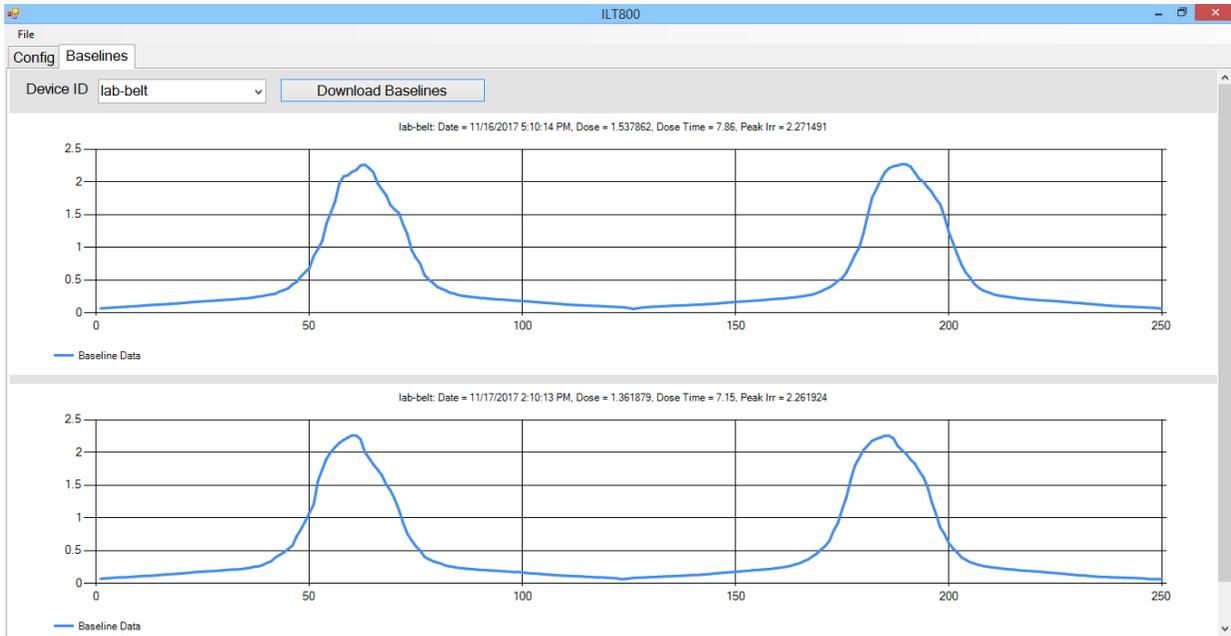
14. Care and Handling

The ILT800 internal board is a sensitive electronic device. Due to risk of board damage, only trained personnel should attempt opening the housing on the ILT800. Opening the ILT800 by non-ILT personnel voids all warranties and may adversely affect the calibration of the meter.

Operating Temperature: The Housing of the ILT800 was designed to reflect UV in order to reduce the risk of over heating the internal components which are rated for up to 75 Deg C. The ILT800 can withstand temperatures as high as 350 Deg C for a short duration. Before insertion into high temperatures, the ILT800 housing should be cool to the touch. Repeated exposure to high temperatures, without cooling, can cause overheating of the internal components.   The shield is required to protect the display and Button board from overheating and UV damage.

Humidity: 0-95% non-condensing.

ESD: Use basic ESD precautions and practices when handling the device. It is advisable to discharge any static buildup by touching a grounded conductive surface before making contact with devices or its connectors.

Cleaning: No chemicals or liquid solution should be used to clean the ILT800 housing. The housing is made of durable anodized aluminum, however, the housing does not provide a sealed barrier to protect the internal components from moisture. The input optic has a clear quartz window to allow cleaning. The center of the window has an aperture that must be kept clean. Any dirt, debris, build up, cracks, scratches or discoloration on the center of the window will cause deviation in the readings. Glass cleaning wipes or a cu-tip and very small amount of glass cleaner, or alcohol can be used to gently clean the window. (care must be take to assure no liquid enters the sides of the input optic)

Submersion/Overspray: The housing is not rated for submersion or high levels of moisture. Should over spray inadvertently be applied to the housing, it should cleaned and polished.

Calibration: ILT typically recommends an annual calibration for all equipment. Per ISO17025, the customer may, through their own QC process, create their own calibration cycle. Please contact ILT if a different calibration cycle is required.

 (Due to the risk of UV degradation, customers measuring intense UV sources (near or above W/cm2) or requiring frequent (daily/hourly…) measurements of sources with UVC / UVB may require a shorter calibration cycles to prevent out of tolerance, as found conditions)

Service: Before returning any equipment to ILT for service (including warranty evaluations)

Please visit the ILT website and obtain an RMA before shipping products for service:

http://www.intl-lighttech.com/services/return-material-authorization/rma-form

15. Warranty

The equipment you have purchased from International Light, Inc. has been expertly designed and was carefully tested and inspected before being shipped. If properly operated in accordance with the instructions furnished, it will provide you with excellent service. The equipment is warranted for a period of twelve (12) months from date of purchase to be free of defects in material or workmanship. This warranty does not apply to damage resulting from improper set up, accident, alteration, abuse, loss of parts or repair by other than International Light Technologies. The equipment will be repaired or replaced, at our option, without charge to the owner for parts or labor incurred in such repair. This warranty shall not apply unless the equipment is returned for our examination with all transportation charges prepaid to International Light Technologies, 10 Technology Drive, Peabody, MA 01960. International Light Technologies has no other obligation or liability in connection with said equipment.

16. Addendum: AVG, Peak, Sample, Smooth Graph Mode:

FW 1.1.3.3 provided all ILT800 models with access to

Options (4):   Graph (2):

Along with "Sample" (1) and "Smooth" (2) Graph Modes

FW 1.1.3.4 reverts all ILT models to the standard mode which allows used of the ILT850 Add ons. Customers can upgrade their ILT800 to the latest firmware located on the ILT website:

https://www.intl-lighttech.com/light-meter-software

16A. Use of Graph "Smooth" or "Sample" in FW 1.1.4.3:

Background: When graphing data, the ILT800 displays time-based irradiance data on a 256-pixel wide chart. Because the dataset is considerably larger than this (often greater than one hundred thousand data samples), each of the 256 pixels on the chart represents either the *average* or the *peak* of all the irradiance data collected during that time. The "Graph Mode" dictates which method is used as follows:

"Smooth" Graph Mode (the default mode): In Smooth mode, each of the 256 graph data points is calculated as the average of all samples taken within that period. The numerical data for the chart will be displayed as the "Avg", matching the chart's average data graph.

"Sample" Graph Mode: In Sample mode, each of the 256 graph data points is calculated as the maximum or peak of all samples taken within that period. The numerical data for the chart will be displayed as the "Peak", matching the chart's peak data graph.

Selecting Graph Mode using FW 1.1.3.3:
Using the ILT800 buttons: The Graph Mode is selected using the Options (4) -> Graph (2) and either Sample (1) or Smooth (2).

Selecting Graph Mode using FW other than 1.1.3.3 requires a PC and use of the API:

Sample: Send command: setgraphmode 0   enables "Sample" mode

Smooth: Send command: setgraphmode 1   enables "Smooth" mode

Note: Will revert to standard sample peak when powered off.

Other Notes Regarding Graph Mode

- Graph mode and graph mode selection was only enabled in FW 1.1.4.3
- This was fixed in FW 1.1.4.4, where all ILT800 models are set to SAMPLE (peak) mode.
- This mode can be temporarily switched via the API commands above but will default back to SAMPLE (peak) upon power cycle.
- The graph mode data is saved with the chart data such that the CureRight application can properly display Peak vs Avg information.
- The Smooth mode was put in place to better match the methods used by the older model 400 meters which display average data for each pixel. There remains a discrepancy in that the ILT800 Smooth mode graphically displays the average data and numerically displays the *average of the average* data, while the 400 graphically displays the average data and numerically displays the *peak of the average* data. This numerical data is often very close in value.