



**InternationalLight**  
TECHNOLOGIES

10 Technology Drive  
Peabody, MA 01960  
Ph: 978-818-6180  
Fax: 978-818-6181  
Web: [www.intl-lighttech.com](http://www.intl-lighttech.com)

**DataLight II Software Manual  
for ILT5000/ ILT1000 Meters**

# **Meter**

**Rev 2.4.3, FW 3-0-7-5 or higher  
1/2016**

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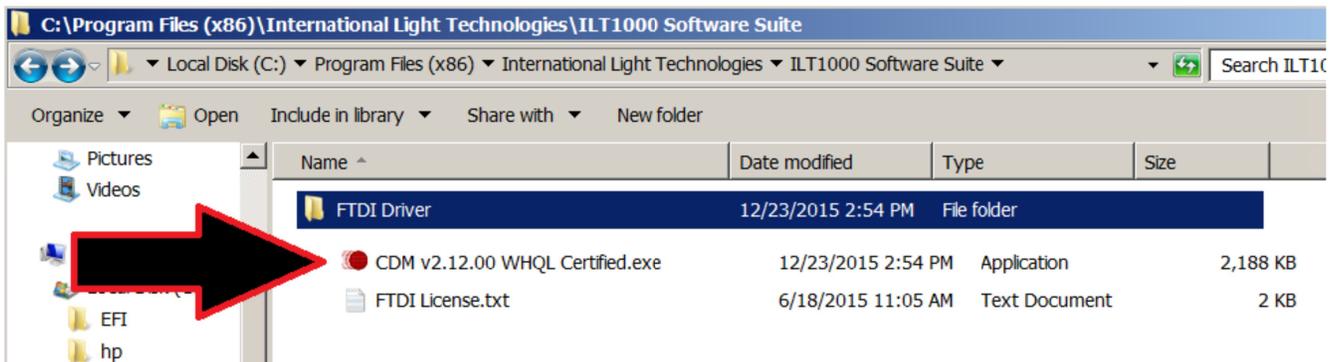


## 1. General advise and connection

Meter was designed to run the ILT5000 with its built in wireless communication and to mimic the format of ILT legacy meters such as the ILT1700. Meter can be run on Windows 7, 8 and 10, wired or wirelessly. Meter will run both the ILT1000 and the ILT5000 devices in single or multiple device/application mode. Meter will automatically save user settings upon exit, when File-Exit is used.

1a. *Initial set up*: Prior to running any DataLight applications, the device(s) must be “Ready for use”. **Initial set up cannot be performed wirelessly.**

*Set up procedure*; Connect device to a USB port on the computer, allow the computer to assign a com port and install FTDI drivers, as needed. Device drivers are located in C, Program Files, International Light Technologies, ILT<sub>device</sub> Software Suite, FTDI folder, double click driver .exe



Once your ILT1000/ILT5000 is “Ready for use”, double click on the Meter icon in the datalight folder on the desk top to open the software. You should see a note that says **locating and initializing devices**. Meter detects and displays the data for the first device found. If no devices are available an error message will appear advising you to connect your device and the software will close automatically. (Assure the ILT5000 power button is in the ON position before opening software)

Meter will access the internal memory of the attached device and display the correct model number (ILT1000 or ILT5000) in the upper right hand corner of the software display.

To monitor multiple units, simply plug in the additional unit(s), wait for a com port to be assigned and double click **METER** again (for each additional device). The software will seek out the next available device and open a new Meter software display box.

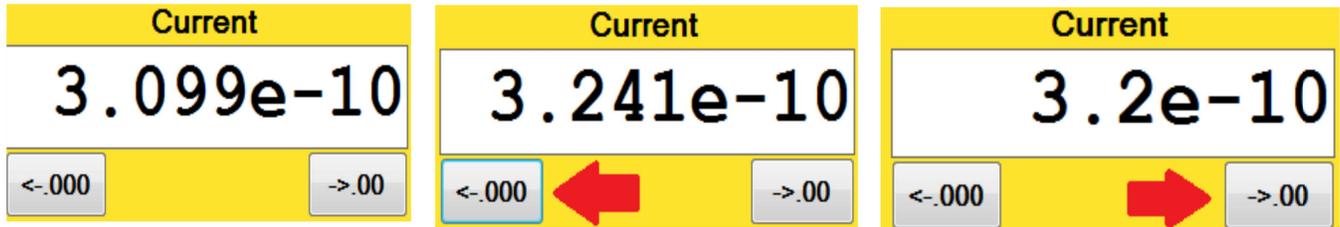
*(Note: It is only possible for one version of software to access one device. Attempting to open the software with no “available” meters will initiate an error notice. It is possible to run multiple versions of software simultaneously using multiple devices. Follow the same process of connecting a device, allowing the additional device to initialize and then selecting the version of software desired. IE run trend and meter or two meter applications with 2 devices connected and available for use.)*

**2. Factor Select:** Factor is the calibration factor used to convert readings from current to calibrated light measurements. Meter will open with the last calibration factor used active. Using the up and down toggle buttons, user can select from any of the 20 available channels.



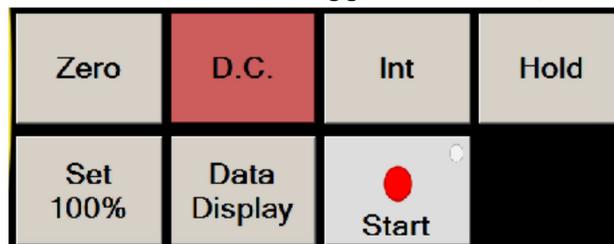
Users with multiple sensor(s)/ filter/optic/calibration combinations should pay close attention when selecting the calibration factor. **Each factor is unique to the exact detector, filter(s) and optic(s) that were used during calibration.** Please refer to the ILT supplied calibration certificate to verify calibration factors. (Note: changes to the actual stored calibration values can only be done in CLI and Trend)

**3. Read out Display:** When Meter opens, it will immediately begin displaying readings for current (amps) on the large alpha numeric readout display section.



**3a.Resolution:** The user can define the number of digits of resolution shown within the display box. To change the resolution, click on left resolution button to decrease the number of decimal places or the right button to increase the number of decimal places.

**4. Function Buttons:** Function buttons work to toggle on and off, or reset features within the Meter App.



**4a. Zero:** All ILT1000 and ILT5000 units come with a factory pre-set Zero (factory dark) setting. Customers can also create their own Zero to assure any noise from the environment is subtracted from the readings. When Zero is pressed, Meter will record a value and subtract that value from all future light measurements or until Zero is clicked again. ***ILT recommends performing a Zero prior to measurement if user is not certain of the accuracy of the previous Zero/Dark selection***

4a1. A **Dark Zero** is performed by covering the sensor with an opaque object to block all incoming light and pressing the Zero button. A dark Zero can also be taken by unplugging the sensor in situations where applying a cover is not possible. (Note: Unplugging the sensor for a dark zero does not take into account any dark current from the environment.)

4a2. An **Ambient Zero** is performed by exposing the sensor to low level ambient light and pressing Zero.

**4b. D.C.:** Meter opens in D.C. mode (button is RED/on). D.C. is deactivated when the integrate button is activated. Click on **D.C.** to re-activate and the button will turn RED. When the D.C. button is RED, you can record/display Current, Percentage or Light Level.

Zero	D.C.	Int	Hold
Set 100%	Data Display	Start	

**4c.INT:** The **Int** button is used to change from D.C. to Integrate. After assuring the meter is set to Light Level (see data display 4f), click the **Int** button once and it turns RED. Meter will display and record the “Integrated Light Level”(often called dosage or exposure) while the button is on/Red. During integration, Meter sums up the total light intensity once per second. The label above the readout display will indicate Integrated measurements are being taken.

**Note:** While using integrate the readouts are changed, but not displayed. For example; lux becomes lux\*seconds, W/cm<sup>2</sup> becomes J/cm<sup>2</sup>.

The Int button is more complex than the other buttons as it has four options under the file menu screen. See **6d. Set Peak/Integrate Function:** to learn more about the additional features of the Int button.

**4d. Hold** is a toggle on/toggle off button. Click on hold to activate and it will turn red. When on, it freezes the value on the display. Hold can be used in conjunction with both D.C. and Int. Hold does not stop the meter from continuing to measure, integrate or store readings behind the display. Simply un-click Hold to continue with your integration or D.C. measurements.

**4e. Set 100%:** The Set 100% button takes a reading and stores the value as the 100% baseline. Uses for 100%:

- **Transmission measurements:** Set up your light source and sensor in a fixed position. Click the set 100% button. This records the light output of the lamp. Insert your test sample and measure the percent transmission.
- **Reflectance measurements:** Set up your light source and reflectance standard in a fixed position. Click the set 100% button. Replace the reflectance standard with the test sample and measure the percentage reflectance of the sample.
- **Lamp comparisons:** Set up the Unit to measure the output of the primary standard lamp. Click the set 100% button. Replace the standard lamp with the test lamp being careful not to change the measurement geometry (including distance and angle) between the lamp and sensor.

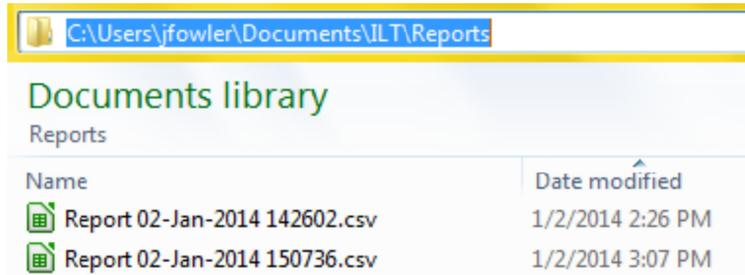
**4e. Data Display: Meter** comes up with the units of display set to Current. Clicking on the Data Display button will toggle through the available readout units: Current, Light Level, or % Transmission.

**4f. Record:** Click on the **Start** button to record readings to a file. During a recording sessions the record button will change to **Stop** as shown to the right.



When measurements are complete, click on the **Stop** button. The file will be saved and the button will return to the **Start** option.

**4f1.Recorded Files:** Record automatically creates a file named in the format “Report XX-MON-YEAR time and saves the file in the users local document folder. In the example to the right, see Report 02-Jan-2014 142602.csv created 2 Jan 2014.

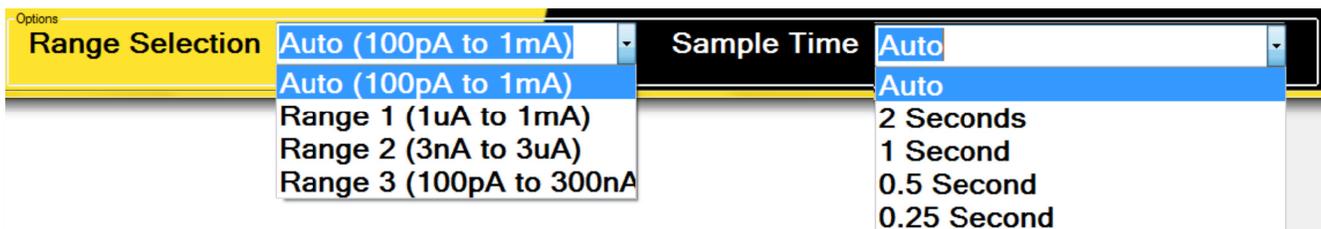


All reports are in CSV format(comma separated values) and can be opened in most spreadsheet programs as well as in Notepad and other text editing programs. In our example below we used a complimentary software called libreoffice.

Date/Time	Optical Density	% Transmission	Current(A)	Light level	Voltage(V)	Internal Chip Temp
25-Feb-2015 11:37:19	-500	-500	5.022E-010	0.3425	0.0005	99
25-Feb-2015 11:37:20	-500	-500	5.017E-010	0.3445	0.0005	99
25-Feb-2015 11:37:21	-500	-500	4.981E-010	0.3434	0.0005	99
25-Feb-2015 11:37:22	-500	-500	4.854E-010	0.2993	0.00049	99
25-Feb-2015 11:37:23	-500	-500	5.721E-010	0.3897	0.00052	99
25-Feb-2015 11:37:24	-500	-500	4.429E-010	0.3017	0.00028	99
25-Feb-2015 11:37:25	-500	-500	1.125E-009	0.7666	0.00075	99

- **Date/Time:** Records the time stamp for each measurements
- **Optical Density:** Records OD from 0-10, or indicates an error (-500) when not in use.
- **% Transmission:** Records percentage, or indicates an error (-500) when not in use.
- **Current:** Records the current generated by the detector
- **Light Level:** Records the calibrated reading based on the selected sensitivity factor
- **Voltage:** Records the Voltage based on the output of the feedback resistor in use and can be used to indicate range changes within the instrumentation.
- **Internal Chip Temp:** Records the instrumentations internal temperature. Most ILT sensor work best when used within the recommended temperature range of 0-40 deg C and experience small changes in current output with a 10 degree change in temperature. Chip temperature can be used to determine the impact of larger changes in temperature on the recorded data.

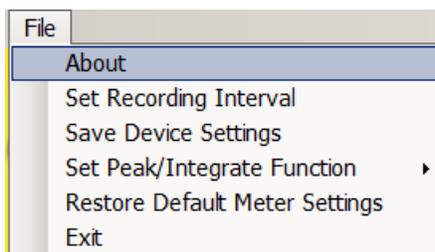
**5. Options:** Within the options box, the user can select the range of current and the display sample rate.



**5a. Range Selection:** ILT1000 and ILT5000 come pre-configured to auto range over a broad dynamic range (6-11 decades). The Range Selection control box allows the user to select a specific range of current. This will prevent the unit from auto ranging and force the meter to read out only readings that fall within the 3 decades of current selected. To determine the current range for a particular light level, use the formula  $\text{Current} = \text{Reading} * \text{Calibration Factor}$ , or  $\text{Current} / \text{Calibration Factor} = \text{Reading}$ .

**5b. Sample Time:** When using automatic, the software will evaluate the current/light level value and averaging settings to determine the best rate of time to change between readings. Using the Sample Time selection control box user may change the rate of data sampling to fixed ranges from 10 ms to 2 seconds. Options are fixed to available selections noted.

**6. File Menu:**

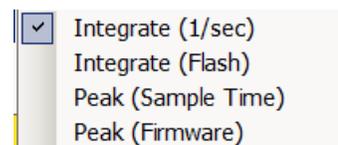


**6a. About:** Provides information about the software and firmware rev. being used.

**6b. Set Recording Interval:** Allows the customer to enter the seconds between recorded samples

**6c. Save Device Settings:** Records user selections so the ILT5000 opens up in the configuration programmed.

**6d. Set Peak/Integrate Function:** In section 4c. "INT" is used to toggle meter from D.C. to integrate (1/sec) which sums up all readings over time and converts readings such as lux to lux\*sec and W/m<sup>2</sup> to J/m<sup>2</sup>.



Set Peak / Integrate allows the INT button to implement 3 additional functions:

- **Integrate(flash).** Modifies the Int button to a Start Flash / Stop Flash toggle button. User should first set the zero. Then select Start Flash, expose the sensor to the light, then select Stop flash to obtain an integrated reading of the flash (ILT also offers the application "Flash" to obtain a profile of the rise and fall of the light intensities during a pulse or flash)
- **Peak (Sample time)** Changes the Int button to a Peak Sample button. This feature measures and compares the new value to the existing displayed value at the user defined sample time. The display will only change to a new value when a higher level is measured. Display will record the highest value measures until reset. Reset by pressing on the Peak Sample button once, each time a reset is needed.
- **Peak (Firmware- Fast)** Changes the Int button to a Peak Firmware button for rapid measurements of changes in intensity, or brief flashes. This functionality will sample and integrate the signal approximately every 100us. Peaks of less than 100uS can be captured due to the feedback capacitor that extends faster signals for sampling. This feature takes a measurement and compares the new value to the previous reading.

The display will only change to a new value when a higher level of exposure is measured. Display will record the highest value measured until reset. Reset by pressing on the Peak Firmware button once, each time a reset is needed. Note that firmware version 3.0.7.5 or later is recommended for using this feature with Auto-Ranging.

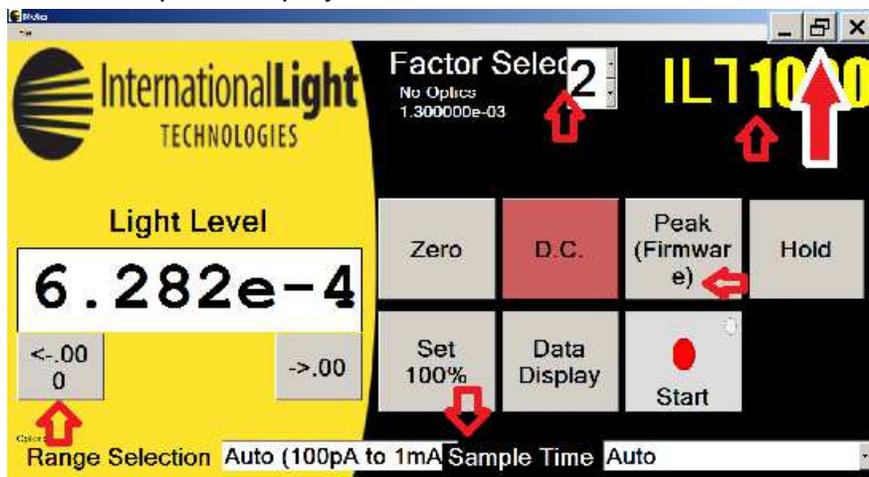
**NOTE: 4-20mA output is disabled during Integrate (Flash) and Peak (Firmware)**

**7. Restore Default Meter Setting:** With the multiple save and auto save settings, it is possible to inadvertently save a setting. Restore allows the user to return the meter back to factory default settings. When ever the meter is not responding properly, a factory restore is a good first step at trouble shooting the system.

**8. Contact Information:** If you need any assistance using the ILT Meter app. or an ILT light meter, please email [ilsales@intl-lighttech.com](mailto:ilsales@intl-lighttech.com) and we will respond within 24 hours. Or call us at 978 818 6180 x 216.

If you are outside of the USA please contact your local ILT sales representative:  
<http://www.intl-lighttech.com/company/representatives>

**9. Screen Settings:** Depending on the computer/display used, it may be necessary to re-size the app to accurately fit. If the text is cut off, wrapped or stretched after clicking the window expand button, you can re-click the button to reduce the size and manually increase the dimensions by clicking and dragging the sides and bottom until the applications display best fits the computer display.



## 9. Change Log:

2.4.3 December 2015:

- Meter: Removed confirmation delay for Set 100% and Zero functions. Also remove time delay warning on zero when not applicable.

2.4.1 December 2015:

- Meter: Automatically save all settings when File->Exit is used. Add "File->Restore Software Defaults" to restore the defaults after changes had been made and saved upon exit.

#### 2.4.0 October 2015:

Meter: Moved changing of cal factors, sample time, and changing of feedback resistors to temporary actions for FW 3.0.6.7 and greater where this is supported.

- Meter: Fix setsampletime 10ms
- Meter: When no cal factor is selected, Meter will show 0 (i.e., none in use)
- Meter: Added "Save Device Settings" menu to, effectively, save any changes to each Cal Factor in Use (note Meter always resets Sample Time / Averaging)
- Meter: Changed Int/Peak button to be defined within the file menu as either: Integrate (1/s), Integrate (Flash), Peak (Sample Time), Peak (Firmware).
- Meter: Fixed wireless bug that treated a -999 return as an error
- Meter: Fixed wireless bug where a UDP receive timeout
- Meter: Wireless improvement to clear UDP receive buffer prior to sending new commands. This clears any lingering data from previous commands/retries