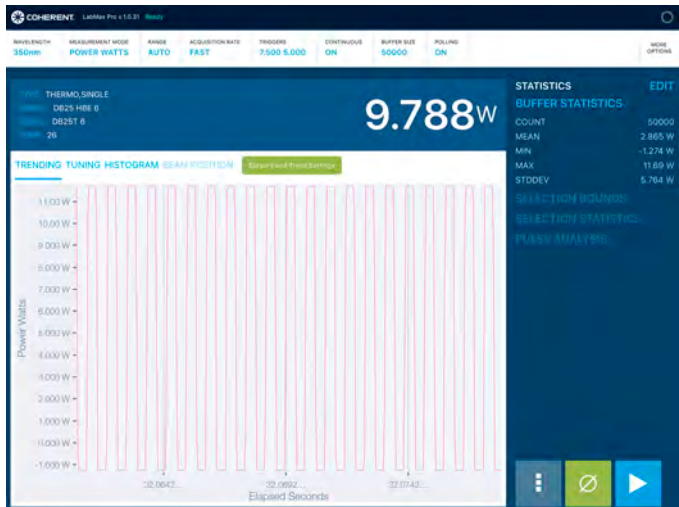


# *User Guide* *LabMax™-Pro Mobile* *for iOS*





*User Guide*  
*LabMax-Pro Mobile for iOS*



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Wilsonville, OR 97070

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#### **In the U.S.:**

Should you experience any difficulties with your meter or application, or need any technical information, please visit our website: [www.Coherent.com](http://www.Coherent.com). Should you need further assistance, please contact Coherent Technical Support via e-mail: [Product.Support@Coherent.com](mailto:Product.Support@Coherent.com) or telephone: 1-800-367-7890 (1-408-764-4557 outside the U.S.). Please be ready to provide the model and meter serial number as well as

the description of the problem and any corrective steps attempted, to the support engineer responding to your request.

Telephone coverage is available Monday through Friday (except U.S. holidays). Inquiries received outside normal office hours will be documented by our automatic answering system and promptly returned the next business day.

### **Outside the U.S.:**

If you are located outside the U.S., please visit [www.Coherent.com](http://www.Coherent.com) for technical assistance, or phone your local Service Representative. Service Representative phone numbers and addresses can be found on the Coherent website.

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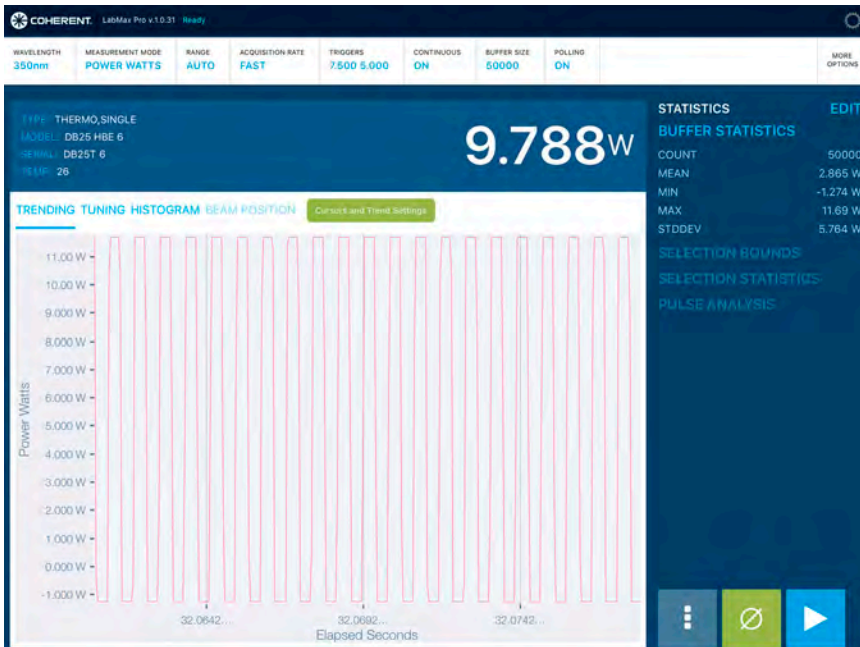
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## Preface

This guide explains how to:

- Install the *LabMax-Pro Mobile for iOS* software (p. 1).
- Connect the system components (p. 2).
- Use the software (p. 30).





## **U.S. Export Control Laws Compliance**

It is the policy of Coherent to comply strictly with U.S. export control laws.

Export and re-export of lasers manufactured by Coherent are subject to U.S. Export Administration Regulations, which are administered by the Commerce Department. In addition, shipments of certain components are regulated by the State Department under the International Traffic in Arms Regulations.

The applicable restrictions vary depending on the specific product involved and its destination. In some cases, U.S. law requires that U.S. Government approval be obtained prior to resale, export or re-export of certain articles. When there is uncertainty about the obligations imposed by U.S. law, clarification must be obtained from Coherent or an appropriate U.S. Government agency.

Products manufactured in the European Union, Singapore, Malaysia, Thailand: These commodities, technology, or software are subject to local export regulations and local laws. Diversion contrary to local law is prohibited. The use, sale, re-export, or re-transfer directly or indirectly in any prohibited activities are strictly prohibited.

## **Publication Updates**

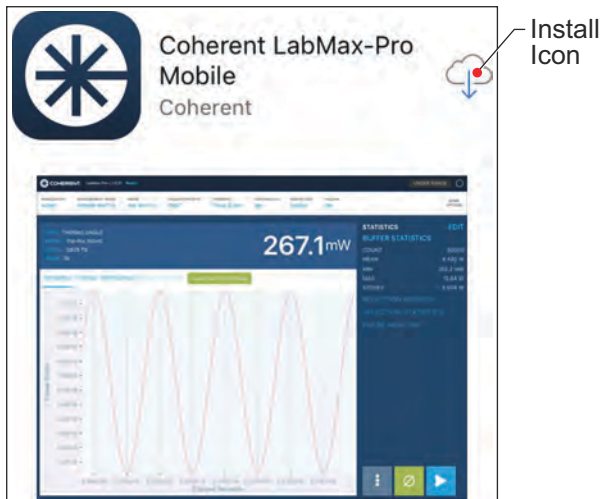
To view information that may have been added or changed since this publication went to print, connect to [www.Coherent.com](http://www.Coherent.com).



## INSTALLING THE SOFTWARE

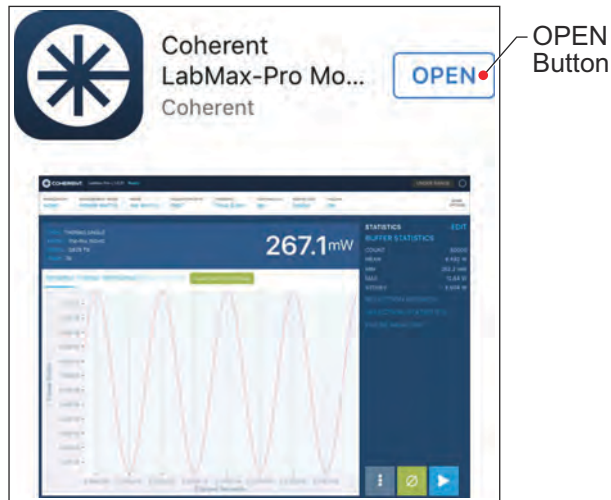
To install the *LabMax-Pro Mobile for iOS* software:

1. On the tablet, establish a WiFi connection to the Internet.
2. Connect to the App Store.
3. Search for *LabMax*.
4. Tap the **Install** icon.



5. If asked, enter the password of your App Store account. ***To install LabMax-Pro Mobile for iOS, you must have an account with the App Store.***

6. Once the installation is complete, tap the **OPEN** button to launch the software.



## CONNECTING THE SYSTEM COMPONENTS

There are two ways to connect system components:

1. Local WiFi (p. 3)
2. Corporate WiFi (p. 4)

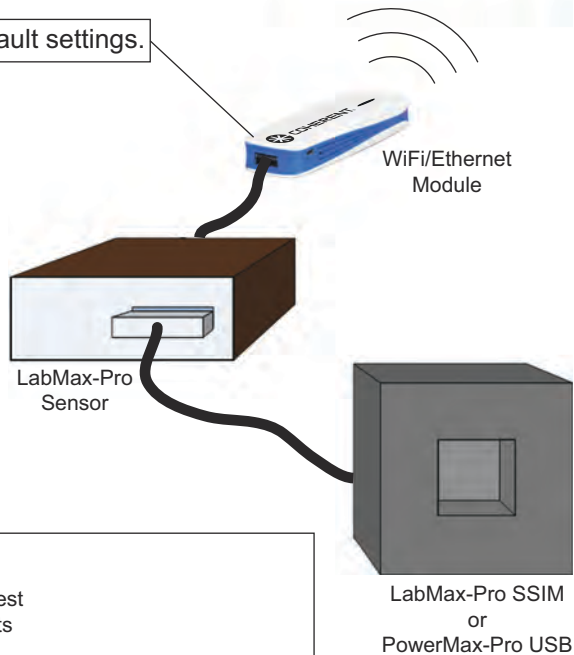
These are discussed, next.

## Connecting via Local WiFi

- Establish a WiFi connection to the WiFi/Ethernet module's WiFi network. Default WiFi network password: **12345678**
- Configure the application to use WiFi.
- Set the hostname to match the WiFi IP address. Default IP address: **192.168.10.1**



- Operate with default settings.



### Advantages:

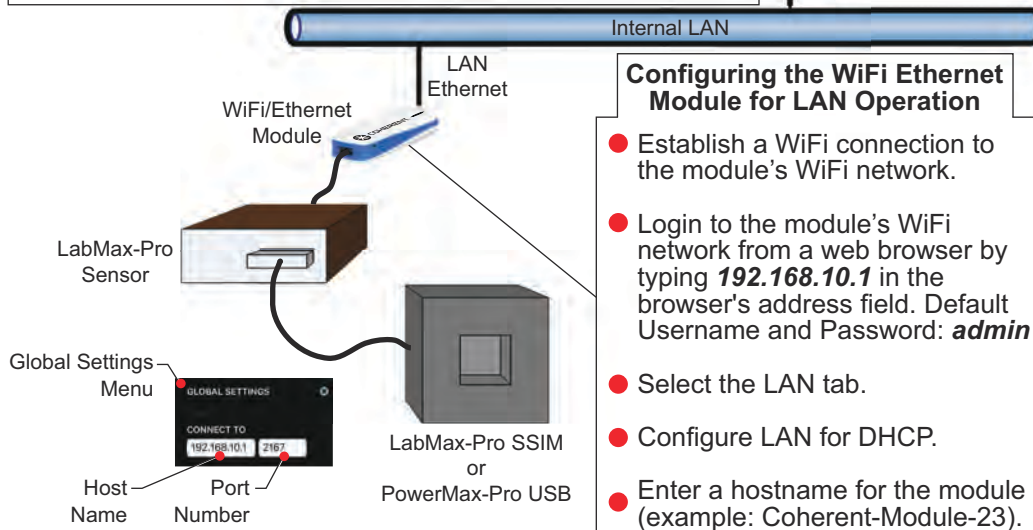
- Easy configuration
- Tablet can be charged while running a test
- Good for taking long-term measurements

### Disadvantages:

- Connection can be slowed down (missing samples) because of heavy surrounding WiFi/cellular traffic
- Distance between the meter and the tablet is limited by the transmission range of the WiFi/Ethernet module (~100 ft.)

## Connecting via Corporate WiFi

- Configure the WiFi/Ethernet module for LAN operation (see below).
- Establish a WiFi connection to the Corporate WiFi network.
- Configure the application to use WiFi.
- Type in the module's hostname for the WiFi network (example: Coherent-Module-23). *It must be the same name given to the module.*
- Type in the port number for the WiFi network . Default: **2167**
- Restart the application.



### Advantages:

- Tablet can be charged while running a test
- Good for taking long-term measurements
- No distance limit—available anywhere the corporate WiFi reaches

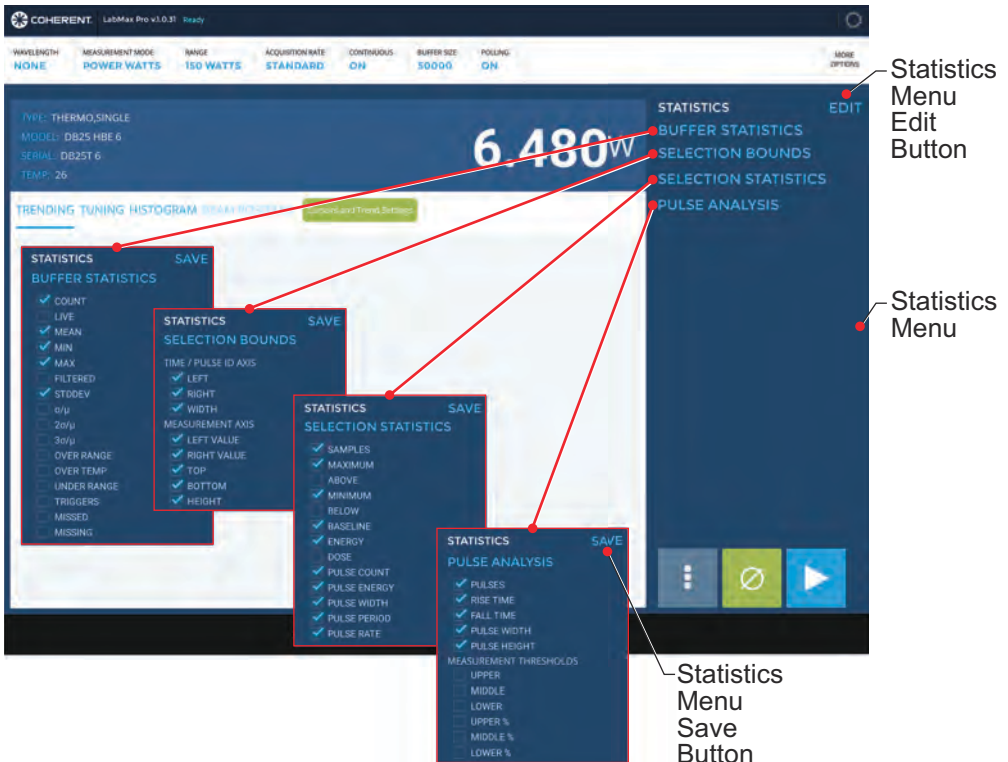
### Disadvantages:

- Connection can be slowed down (missing samples) because of heavy surrounding WiFi/cellular traffic
- Requires more elaborate configuration of the WiFi/Ethernet module and the tablet

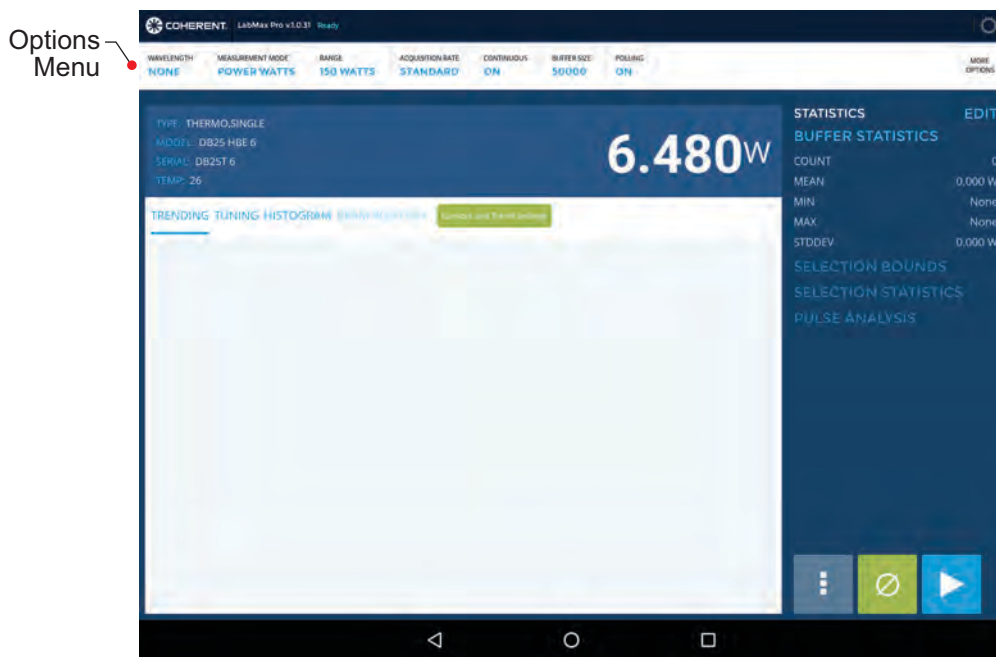
# SETTING SOFTWARE OPTIONS

## Statistics Menu

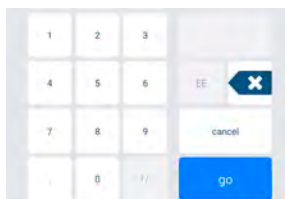
Tap the **Statistics Menu Edit** button to open a list of user-selectable parameters for Buffer Statistics, Selection Bounds, Selection Statistics, and Pulse Analysis. Make sure to tap the **Statistics Menu Save** button to save changes made to any of these parameters.



**Options Menu** Tap an option in the Options menu to open a list of parameters for that option.



**Wavelength:** Sensor measurements are adjusted based on the actual wavelength of the beam being measured. Add new wavelengths to the list by typing in the numeric value of the wavelength in whole-number nanometers. Disable wavelength correction by entering 0 (zero).



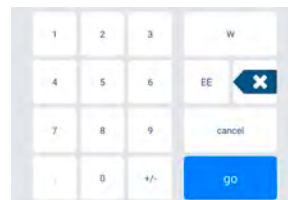


**Measurement Mode:** *Power Watts* - measure power in Watts. *Energy Joules* - measure energy in Joules.

**Range:** Select the full-scale operating range of the meter.

**Acquisition Rate:** *Standard* - approx. 10 samples per second. *Fast* - approx. 20K samples per second. *Snap-shot* - a special high-speed data acquisition mode which stores data in the instrument hardware SRAM. Some sensors can only operate at a single speed, in which case the control will be grayed out and the checkbox will indicate the allowed speed.

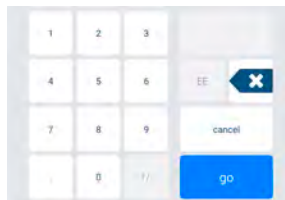
**Triggers:** *Trigger Level* specifies an absolute value (0 to 150) in the current measurement units (Watts or Joules). Changing the Trigger Level setting automatically makes the appropriate adjustment to the Trigger Level Percentage setting. *Trigger Level Percentage* sets the Trigger Level as a percentage (0 to 100 for Watts, 0 to 30 for Joules) of full range in the current measurement range. Changing the Trigger Level Percentage setting automatically makes the appropriate adjustment to the Trigger Level setting.



**Continuous:** *On* - the meter continues to fill the buffer (and discard the oldest samples) until you press the STOP button. *Off* - the meter collects samples until the buffer is full and then automatically stops data collection.

Pressing the START button again fills the buffer with new samples. When running in non-Continuous mode, press the STOP button to stop the buffer before it is full.

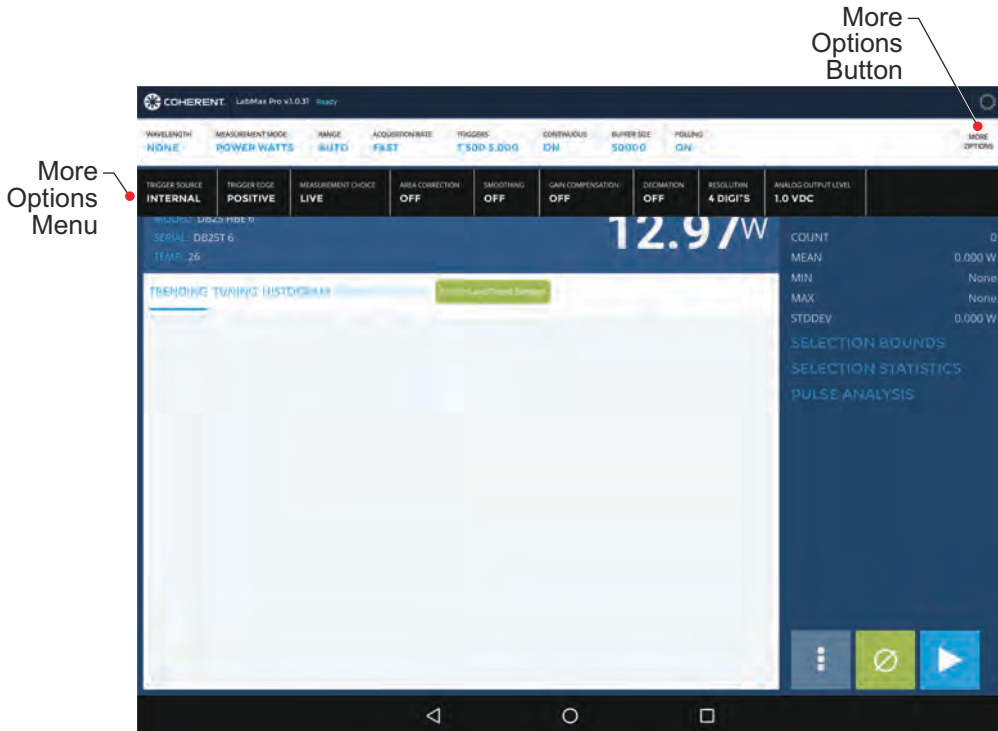
**Buffer Size:** Controls the overall size of the Capture buffer. Only the specified number of the most recent data samples are saved during data acquisition, though it is possible to stop acquisition before the entire buffer is filled. Change the size of the buffer by typing in the numeric value. Maximum value is 200000.



**Polling:** *On* - the application periodically queries the meter for status. *Off* - polling is disabled. The main purpose of polling is to detect sensors (and the meter itself) as they are connected or disconnected. Also, polling is necessary to support *Continuous Update* mode.

## More Options Menu

Tap the **More Options** button and then tap an option in the More Options menu to open a list of parameters for that option.



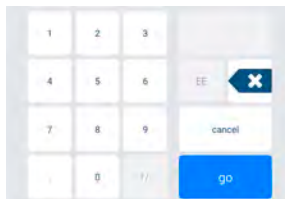
**Trigger Source:** *Internal* - trigger is based on an analysis of the measurement data itself by the measurement hardware. *External* - trigger is based on the electrical input via the trigger input connector.

**Trigger Edge:** Sets the Trigger Edge to either *Positive* (rising edge), or *Negative* (falling edge).

**Measurement Choice:** This combo box selects the source of the data shown in the main Measurement window. *Mean* - the arithmetic means of all samples. *Min* - smallest sample. *Max* - largest sample. *Live* - the

most recent sample from the instrument. *Filtered* - a simple filter applied to the most recent 32 samples. All choices are updated regularly when the meter is running but only *Live* readings will update when the meter is stopped.

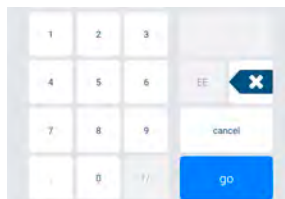
**Area Correction:** *Enable or disable Area Correction* - Area correction causes the power or energy measurement values to be divided by the area of the beam, resulting in Watts or Joules per  $\text{cm}^2$ . *Area Correction Dimension* - Determines whether the Area Correction Value is specified in terms of the beam's circular diameter (in cm), or in terms of its actual area (in  $\text{cm}^2$ ). Either specification ultimately results in an underlying area value (in  $\text{cm}^2$ ). The resulting area value is divided into the power or energy measurements, resulting in Watts or Joules per  $\text{cm}^2$ . Change the size of the correction by typing in the numeric value.



**Smoothing:** Applies a simple filter to the data samples to reduce the “jitter” of the measurements.

**Gain Compensation:** Applies an arbitrary gain factor to all measurements. For example, if the sensor is downstream from a splitter or other device that attenuates the actual laser beam, you can artificially inflate the measurements so that they reflect the actual output of the laser, rather than what the sensor measures. The gain factor must be  $> 0$ . A gain factor of 1.0 is the same as disabling the option.

**Decimation:** Enabling Decimation lowers the data rate from the meter to the application by discarding samples. The actual data transmission rate is the base sample rate divided by the Decimation Rate. For example, a decimation rate of **2** tells the meter to discard every other sample (a 50% reduction in data rate). **3** means the meter sends only every 3rd sample. A value of **1** is the same as disabling decimation.

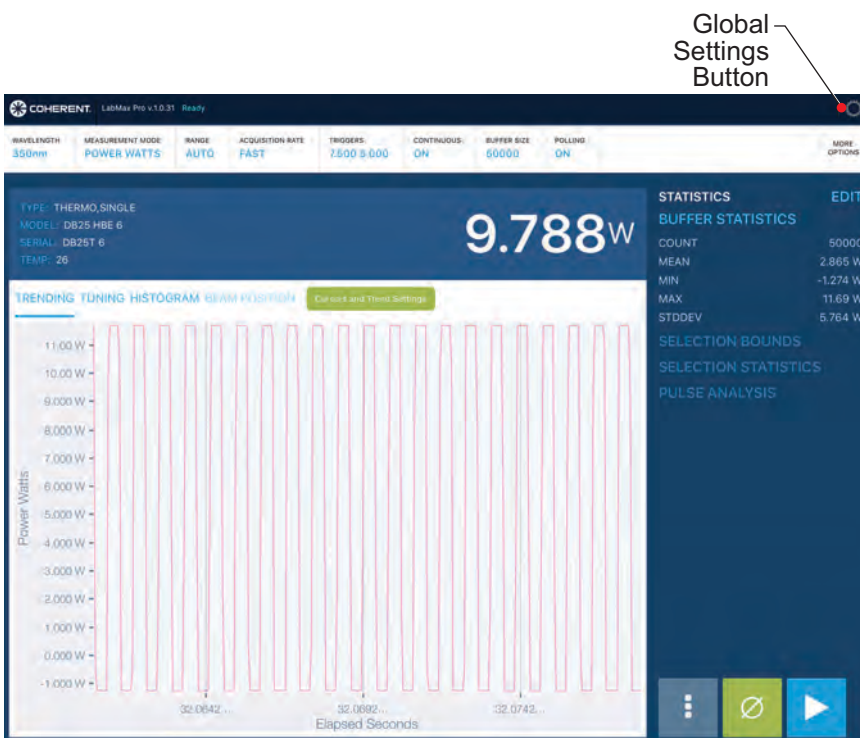


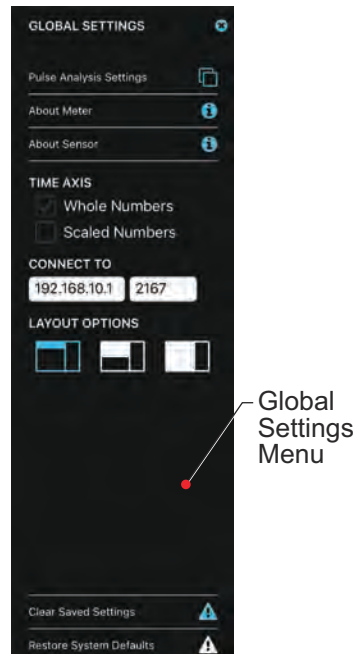
**Resolution:** Determines the resolution value. Number resolution controls the formatting of all measurement values. This setting determines the total number of significant figures displayed - NOT the number of digits to the right of the decimal point. The display of measurement values is further affected by the current Range setting. For example, a 300 mW range with 4 digits selected will show numbers like 102.4, 33.89, or 1.302.

**Analog Output Level:** The front panel of the LabMax-Pro SSIM has a connector labeled Analog Out. The hardware outputs an electrical voltage which is proportional to the measurements being read by the meter. This combo box selects the output voltage that corresponds to a full-scale measurement: 1, 2, or 4 volts. Analog output is only active when the meter is running. The signal is not available for Pyroelectric or PM-Pro sensors in Fast mode; however, the combo box is always enabled and any changes will take effect the next time Analog Out becomes active.

## Global Settings

Tap the **Global Settings** button and then tap an option in the Global Settings menu to open a list of parameters for that option.





**Pulse Analysis Settings:** Defines the reference levels for the pulse analytics (for example, rise time, fall time, and pulse width). Rise time is usually measured from 10 to 90%.

The screenshot shows the 'PULSE ANALYSIS SETTINGS' screen. It contains a table with three columns: 'Threshold', 'Percent', and 'Level'. The 'Percent' column has input fields with minus and plus buttons for 'Upper', 'Middle', and 'Lower' thresholds. At the bottom are 'CANCEL' and 'SAVE' buttons.

| Threshold | Percent                                                                                                 | Level   |
|-----------|---------------------------------------------------------------------------------------------------------|---------|
| Maximum   | 100.00 %                                                                                                | 0.000 W |
| Upper     | 90.00 % <input type="button" value="-"/> <input data-bbox="840 1144 960 1185" type="button" value="+"/> | 0.000 W |
| Middle    | 50.00 % <input type="button" value="-"/> <input data-bbox="840 1193 960 1234" type="button" value="+"/> | 0.000 W |
| Lower     | 10.00 % <input type="button" value="-"/> <input data-bbox="840 1242 960 1282" type="button" value="+"/> | 0.000 W |
| Minimum   | 0.00 %                                                                                                  | 0.000 W |

**About Meter:** Lists information about the meter, including all the options selected by the user.

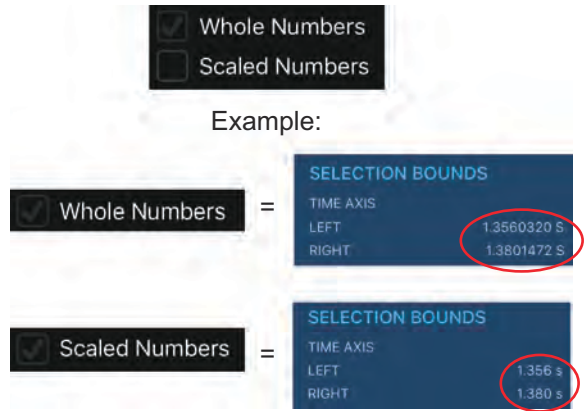
```
Identification: Coherent, Inc - LabMax-Pro  
SSIM - V03.00.19 - Apr 29 2015  
Port Name: [null]  
System Type: SSIM  
Model Name: "LabMax-PRO SSIM"  
Meter Type: TOP  
Part Number: "1268881"  
Serial Number: "REV_FB_1"  
Calibration Date: "4/30/2015"  
Pyro Support: True  
Manufacturing Date: "4/30/2015"
```

**About Sensor:** Lists information specific to the attached sensor.

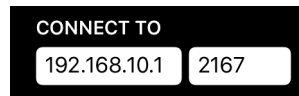
```
Sensor Type: THERMO.SINGLE  
Sensor Model: DB25 HBE 6  
Probe Serial Number: DB25T 6  
Calibration Date: Feb 5 2040  
Manufacturing Date: Feb 5 2040  
Head Temperature: 26 °C  
Responsivity: 0.011  
Detector Diameter: 0 mm  
Ranges Table:  
Range[ 0 ]: 150.0 W
```



**TIME AXIS:** Controls the formatting of the left and right Time Axis values in the Selection Bounds section of the Statistics pane.



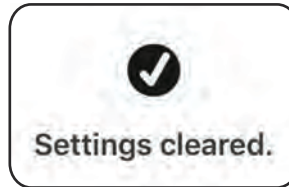
**CONNECT TO:** Displays the IP address and port number of the WiFi connection. To change either of these parameters, tap on the field and enter the revised numbers on the tablet keyboard.



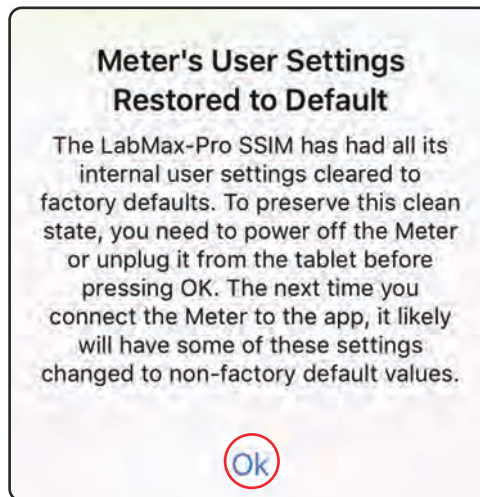
**LAYOUT OPTIONS:** Selects one of three available screen layouts.



**Clear Saved Setting:** Clears the Capture buffer of all previous data. Once the process is completed, the following screen appears.

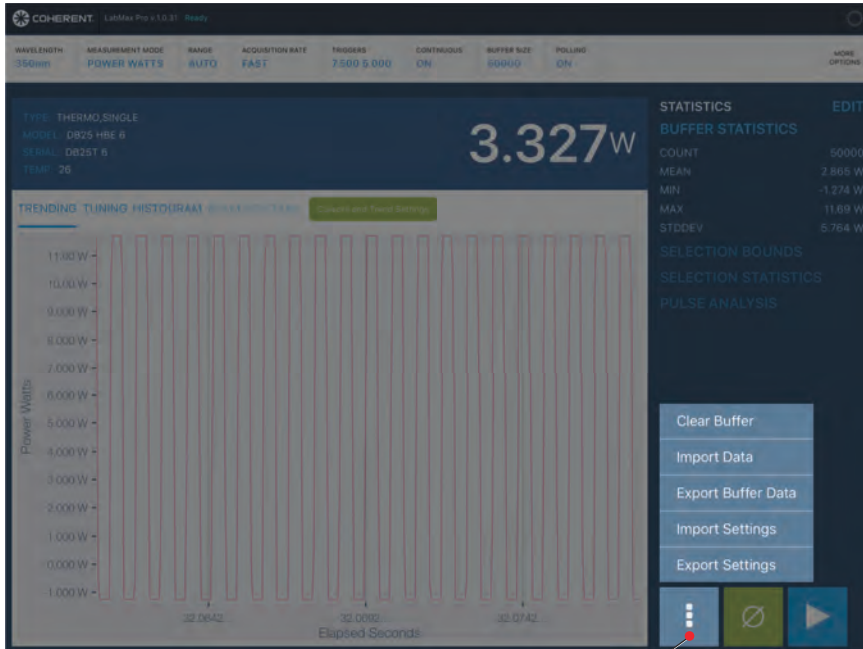


**Restore System Defaults:** Clears all internal user settings to factory defaults. Power off the meter or unplug it from the tablet before pressing the **Ok** button.



## Other Operations

Tap the **Other Operations** button and then tap an option in the Other Operations menu to open a list of options for that setting.



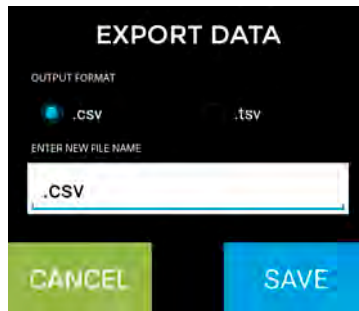
Other Operations  
Button

**Clear Buffer:** Discards all data in the data acquisition buffer.

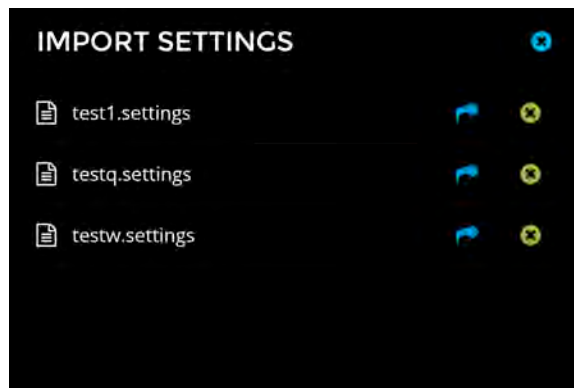
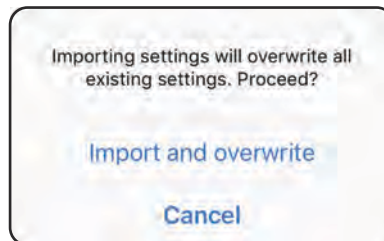
**Import Data:** Loads the acquisition from an external file.



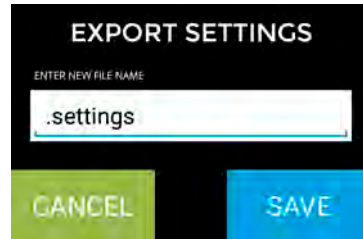
**Export Buffer Data:** Saves all data in the acquisition to an external file.



**Import Settings:** Restores application settings that were previously saved (exported) to an external file. Tap **Import and overwrite** on the following screen to continue to the Import Settings screen.

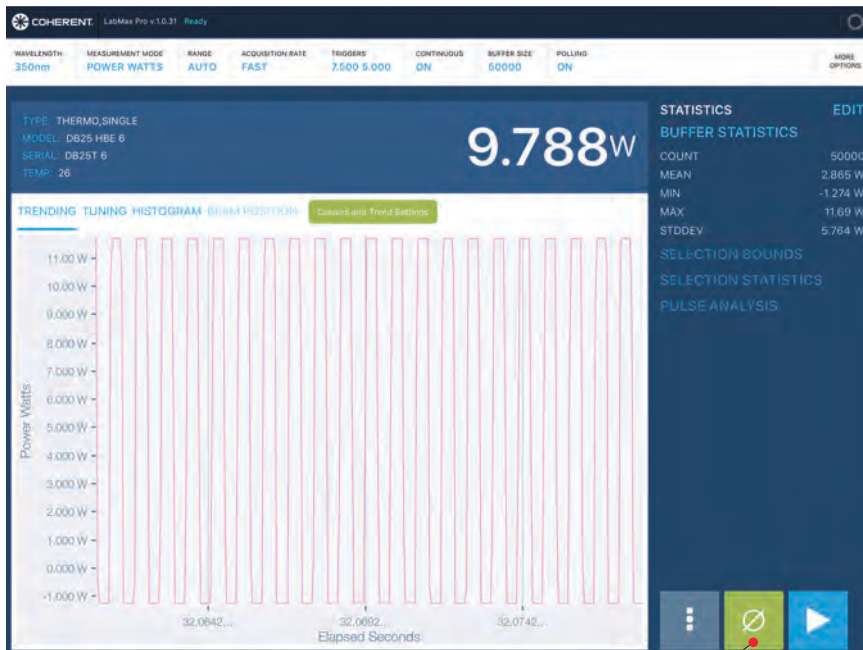


**Export Settings:** Saves the application settings to an external file.



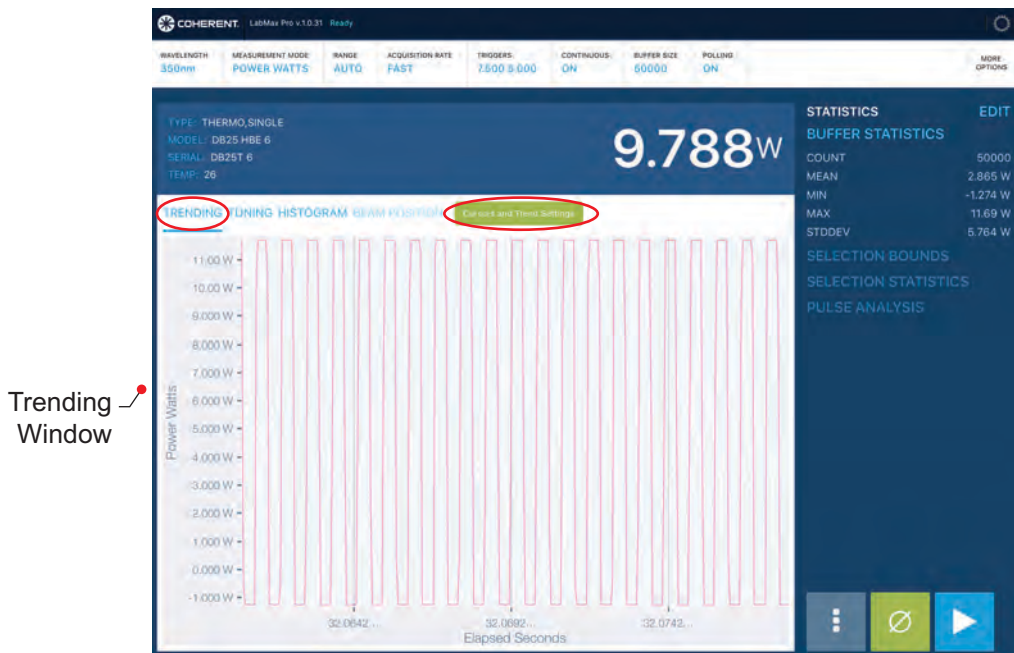
## Zeroing

Automatically calibrates all ranges for the current sensor. Changing sensors, changing modes, and switching between Fast mode and Standard mode, all require zeroing the instrument. Tapping the Zeroing button will zero both channels in a single operation if the sensor supports both Fast and Standard mode.



## Trending Window

Tap **Trending** and then tap the **Cursors and Trend Settings** button to access the Cursors Settings Scale screen.

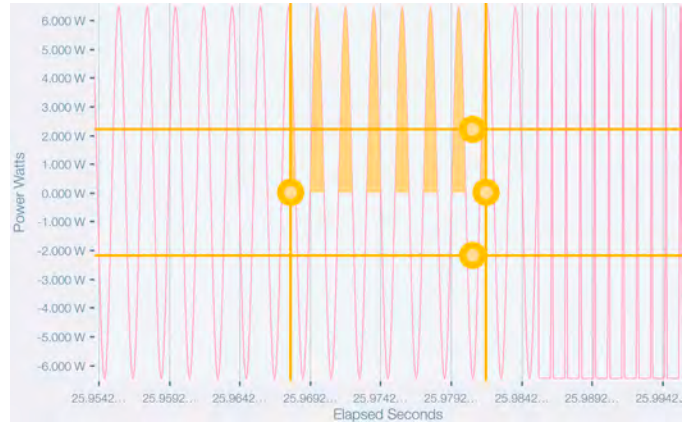


## Cursors

Tap **Cursors** in the Cursors Settings Scale screen to open a list of option.

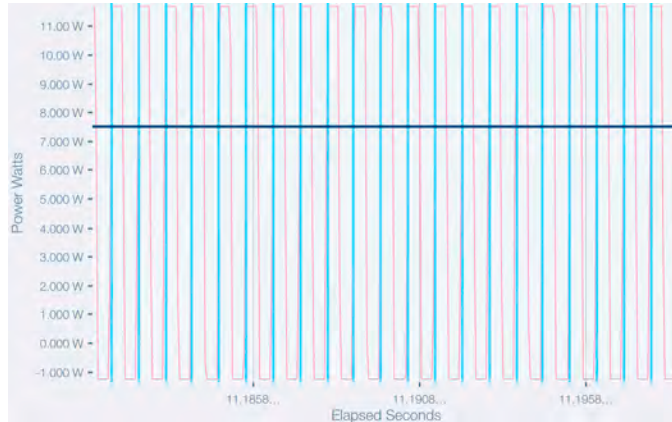


**Bounds Cursors:** Displays vertical lines (which mark sample time positions) and horizontal lines (which mark measurement levels on the Trend chart.

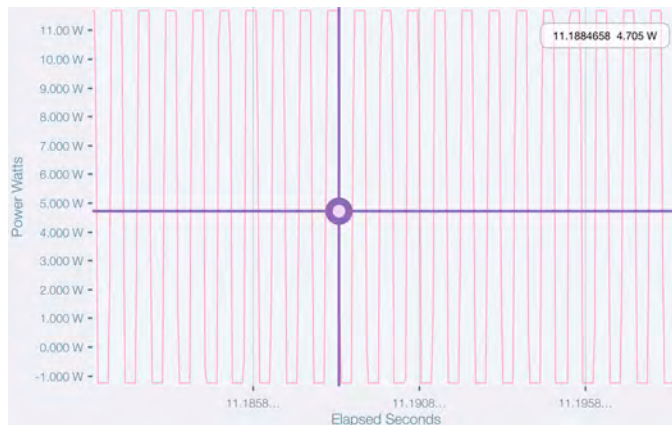


**Trigger Markers:** Trigger events become visible in the Trending display when the Trigger Markers dialogue is tapped. Vertical red lines display trigger events and the horizontal blue line indicates the trigger level setting. To maximize system performance, the number of trigger events shown are limited to the first 20 while measurements are being taken (Preview mode) or the first 2000 after measurements have been taken. The visual trigger markers are important for confirming good triggers are occurring before entering and gathering data in Snapshot

mode. After you confirm good triggering for a particular setup, system performance can be increased by turning off the visual trigger markers.

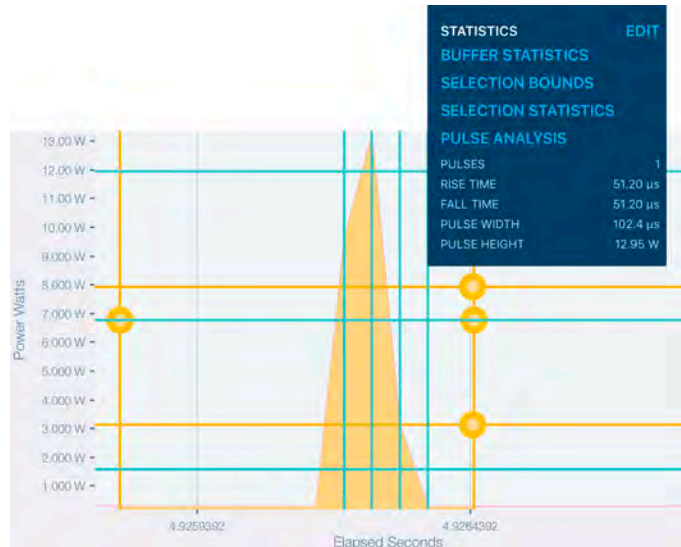


**Tracking Cursors:** Allows you to inspect captured data a single sample at a time by dragging the horizontal or vertical drag line.

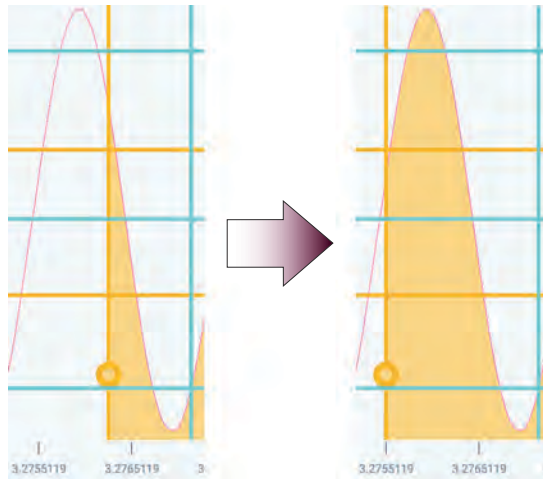




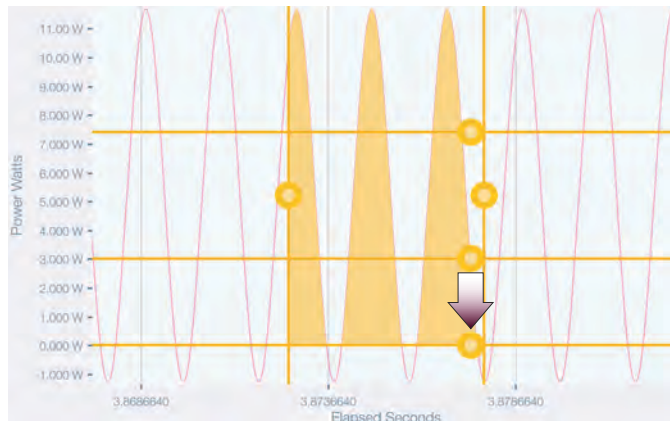
**Pulse Analysis:** Provides analytics on data gathered in Snapshot or High-Speed mode using PowerMax-Pro sensors. Cursors are moved to bound the area of data—such as a pulse or multiple pulses—that is to be analyzed. The software will perform a number of calculations including rise time, fall time, pulse width, and pulse energy, and display them within the Statistics pane.



**Snap to Triggers:** Aligns the vertical cursors with existing trigger events on the horizontal axis in the Capture buffer.



**Zero Lower:** Repositions the lower horizontal cursor from its current position to zero watts.

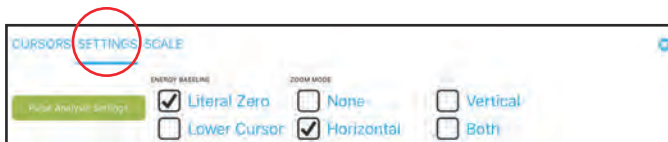


**Reposition Cursors:** Sets the cursors to specific locations in the current zoom/view: left at 1/3, right at 2/3 full width; lower/upper at 1/3 and 2/3 full scale.



### Settings

Tap **Settings** in the Cursors Settings Scale screen to display the following options.



**Literal Zero:** Sets the energy baseline to zero.

**Lower Cursor:** Sets the energy baseline to the lower cursor.

**None:** Locks the zoom at its current setting and does not allow further zooming in either the horizontal or vertical axis.

**Horizontal:** Allows zooming in the horizontal axis only.

**Vertical:** Allows zooming in the vertical axis only.

**Both:** Allows zooming in both the horizontal and the vertical axes.

### Scale

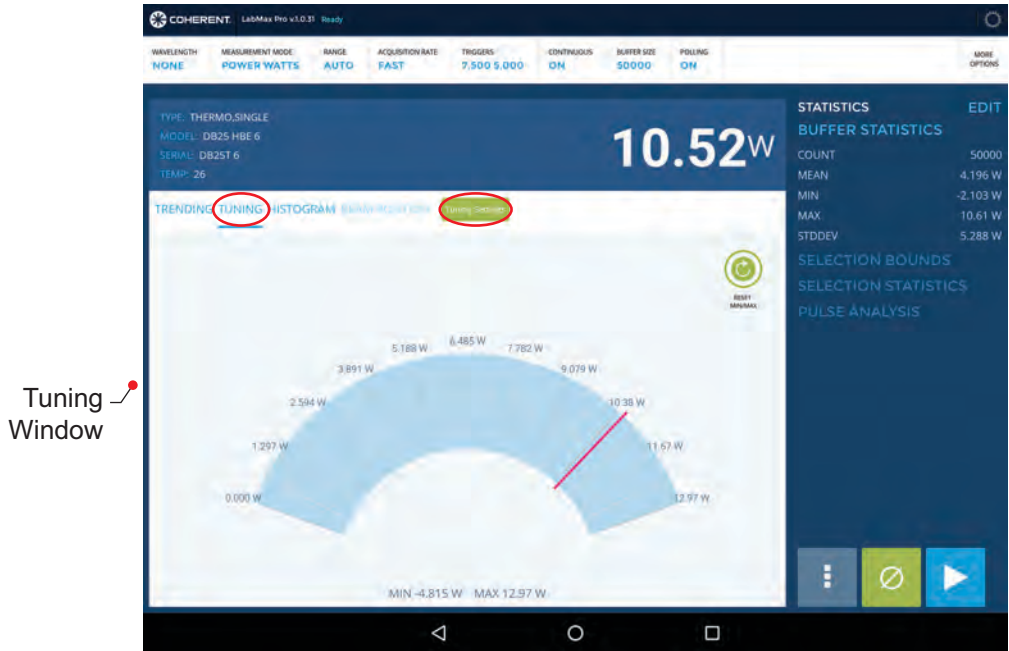
Tap **Scale** in the Cursors Settings Scale screen to display the following options.



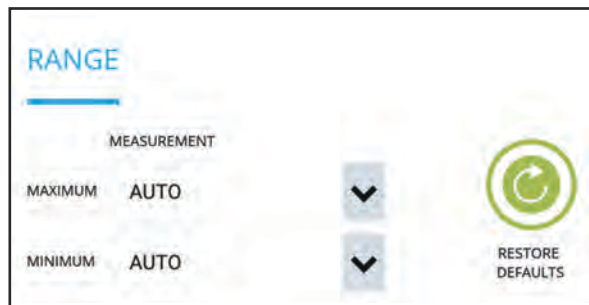
Use this screen to set the upper and lower limits for the horizontal and vertical extents of the trend view. Setting a value to *Auto* will scale the dimension to show all the available data. Entering a specific number will truncate and scale the data to that particular limit.

## Tuning Window

Tap **Tuning** and then tap the **Tuning Settings** button to access the Range screen.

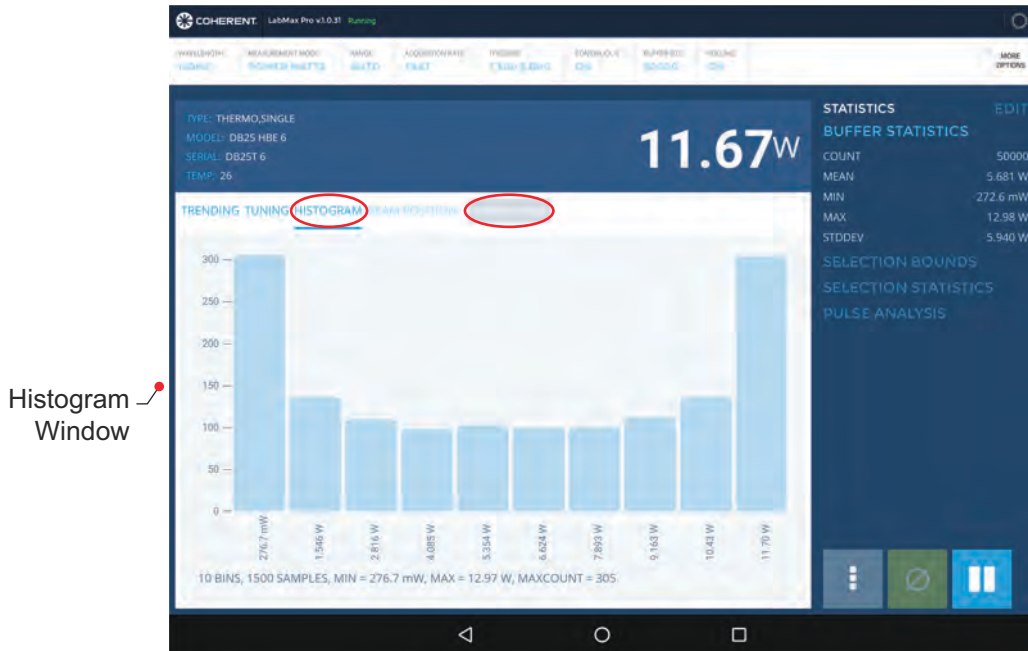


**Range:** Selects the Minimum and Maximum values of the current reading. Setting a value to *Auto* will scale the dimension to show all the available data. Entering a specific number will truncate and scale the data to that particular limit.



## Histogram Window

Tap **Histogram** and then tap the **Histogram Settings** button to access the Range Settings screen.



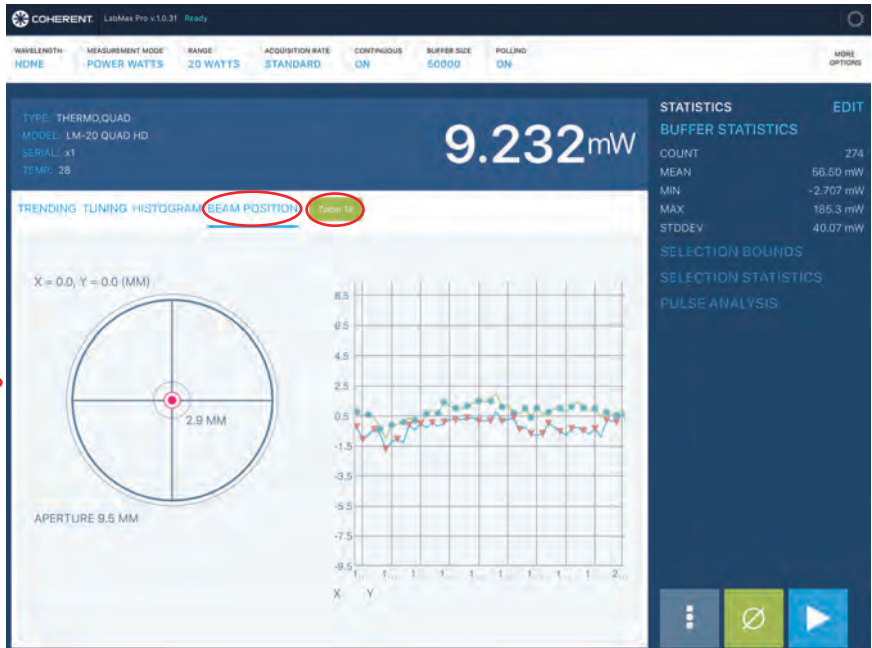
**Range Settings:** Selects the range that is displayed in the Histogram window.



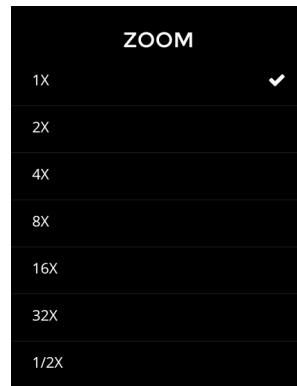
## Beam Position Window

Tap **Beam Position** and then tap the **Zoom** button to access the Zoom screen. *This window is only available when used with position-sensing LM model thermopiles.* Shows current beam position in real time. Charts x, y offsets as a function of time.

Beam  
Position  
Window

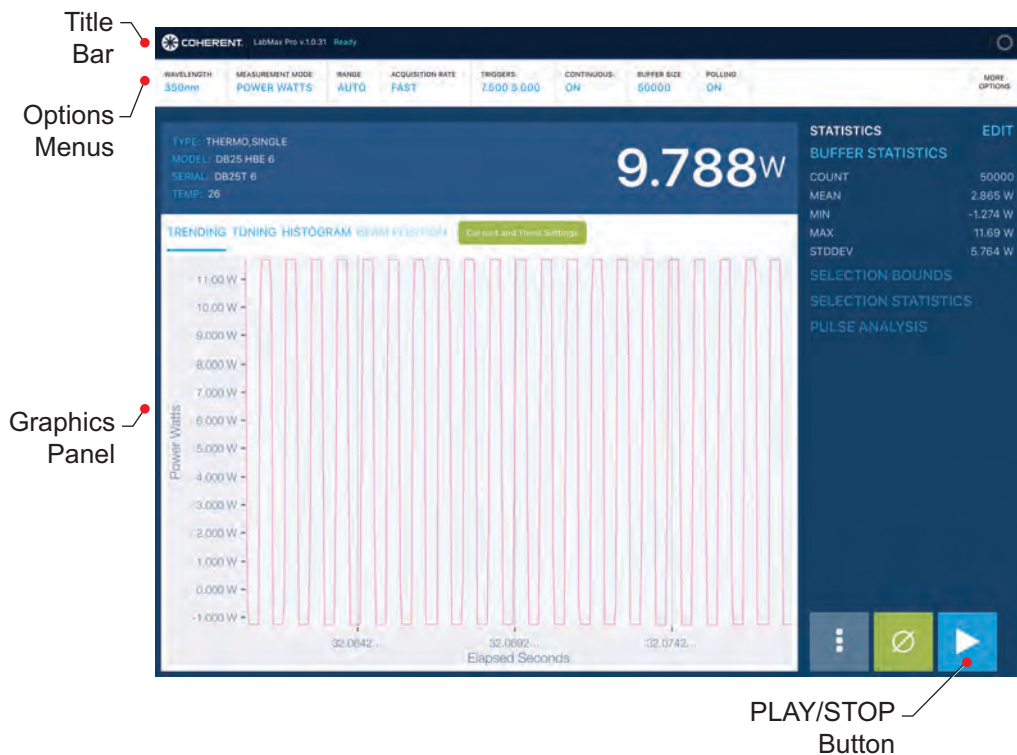


**Zoom:** Selects the zoom level.



## USING THE APPLICATION - EXAMPLE

This section presents an example of how to use the software application to take a reading.

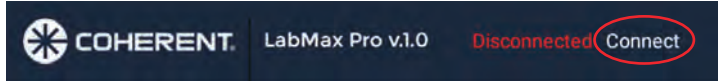


1. Connect the system components using one of the three techniques previously discussed.
2. Tap the *LabMax-Pro Mobile* icon on the tablet desktop to launch the application and find the attached meter.





If the application does not automatically find the attached meter, tap the **Connect** button in the Title bar:

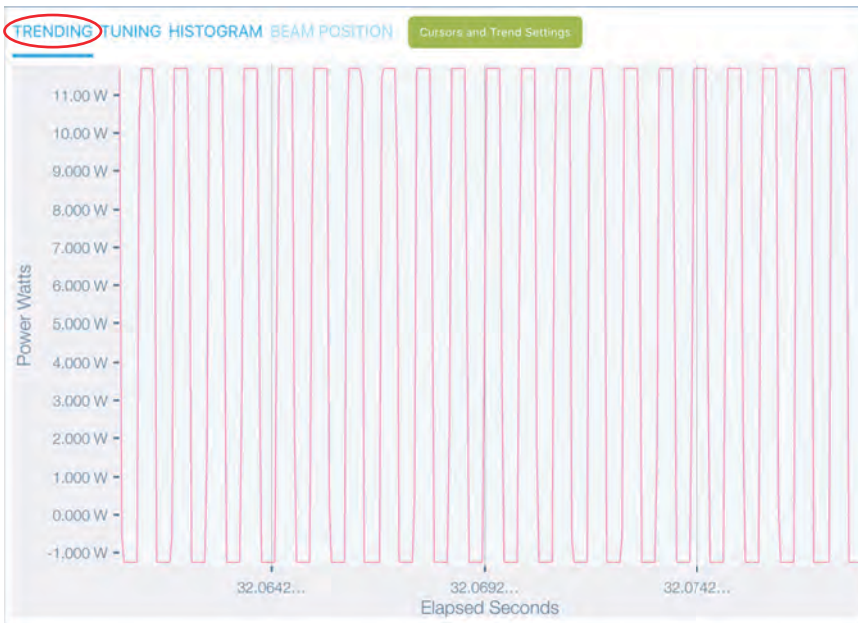


If the attached meter is still not identified, with the power ON, unplug and then plug in the USB connector.

3. Set/verify the options listed below by tapping the title of each option in the Options menu and then selecting the setting:
  - Measurement Mode
  - Range
  - Acquisition Rate
  - Triggers
  - Continuous
  - Buffer Size
  - Polling
4. Tap the **PLAY** button.



5. Observe data being displayed in the Trending window of the Graphics panel:



6. Tap the **STOP** button.



7. Pinch or reverse pinch the data graph to expand or contract the range of information appearing in the Trending window. Swipe the data horizontally to pan the information.

