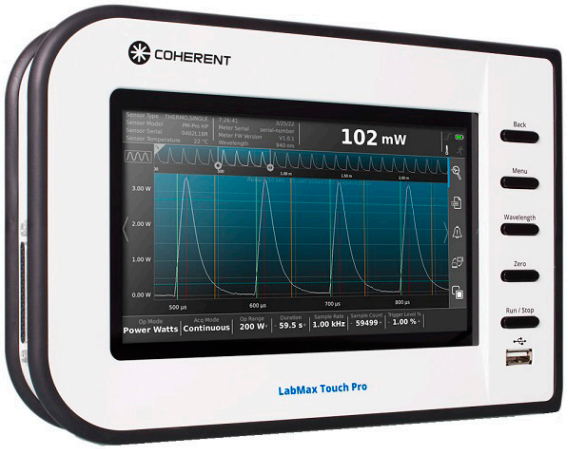
LabMax Touch Meter

Quick Start Guide



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1.0 ABOUT THIS GUIDE

This guide provides an introduction to the product, and includes the following sections:

- Safety information, including signal words and symbols to before you begin taking measurements.
- Overview of the LabMax Touch Meter interface and common functions.
- A Quick Start Tutorials section that provides tutorials so you can begin taking measurements within minutes.

- Installation instructions for the Coherent Meter Connection PC software and drivers, as well as how to connect the system components (sensor, meter, and PC).

For complete operating instructions, refer to the *LabMax Touch Meter User Manual* (P/N 2223756), available in Adobe® PDF format, available on www.Coherent.com. Also available are the Coherent Meter Connection PC application software and device drivers, and the *LabMax Touch Meter Installation & Quick Start Guide*.

1.1 Product Introduction

These meters provide full compatibility with Coherent's full catalog of laser power and energy sensors and can handle the full range of sampling rates provided by the sensors.

- The standard LabMax Touch Meter samples up to 25 kHz with pyroelectric energy sensors and 10 Hz with power sensors.
- The LabMax Touch Pro Meter model increases sample rate to 1,000,000/sec with PowerMax-Pro sensors and adds advanced analytics like integrated energy and laser pulse width.

The touchscreen interface and the Coherent Meter Connection software provide an easy-to-use interface between a PowerMax-Pro or thermopile meter and a PC.

The LabMax Touch Meter is used with various sensors and offers a wide range of analytical functions:

- High-speed sampling modes from 1kHz to 1MHz
- Trending with Time and Power cursors
- Energy integration
- Pulse analysis
- Tuning
- Data logging
- Statistics
- Histogram

LabMax Touch Pro Meter uses PowerMax-Pro technology to zoom in on detailed pulse shapes and pulse bursts, and perform individual pulse and pulse burst energy integration.

1.2 Signal Words and Symbols

Sections may contain specific hazards defined or special attention is drawn to specific conditions. These sections are have signal words in accordance with ANSI Z-535.6 and safety symbols (pictorial hazard alerts) in accordance with ANSI Z-535.3 and ISO 7010.

1.2.1 Signal Words

The following signal words are used in this documentation: **DANGER**, **WARNING**, **CAUTION** and ***NOTICE***.

These signal words designate the degree or level of hazard when there is the risk of injury, as described in the following table:

Signal Word	Description
DANGER	Indicates a hazardous situation that, if not avoided, WILL result in *death or serious injury*. This signal word is to be limited to the most extreme situations.
WARNING	Indicates a hazardous situation that, if not avoided, COULD result in *death or serious injury*.
CAUTION	Indicates a hazardous situation that, if not avoided, could result in *minor or moderate injury*.
NOTICE	Indicates information considered important, but not hazard-related. The signal word "***NOTICE***" is used when there is the risk of property damage.

Messages relating to hazards that could result in both personal injury and property damage are considered safety messages and not property damage messages.

1.2.2 Symbols

The signal words **DANGER**, **WARNING**, and **CAUTION** are always emphasized with a safety symbol that indicates a special hazard, regardless of the hazard level:

This symbol is intended to alert the operator to the presence of important operating and maintenance instructions.

This symbol is intended to alert the operator to the danger of exposure to hazardous visible and invisible laser radiation.

This symbol is intended to alert the operator to the danger of Electrostatic Discharge (ESD) susceptibility.

1.3 Laser Safety

The safety precautions shown here are to be read and obeyed by anyone that does work on or near the laser. At all times, make sure that all personnel are protected from accidental or exposure to laser radiation that is not necessary.

WARNING!

Exposure to laser radiation can be harmful. Direct eye contact with the output beam from a laser will cause serious eye injury and possible blindness. Avoid hazards to eyes and skin.

Because of its optical qualities, laser light has safety hazards not associated with light from usual light sources. Make sure that there is no direct exposure to the laser light, and follow these control measures:

- Always wear appropriate laser safety eyewear for protection against the specific wavelengths and laser energy that is that is made.
- Never look directly into the laser light source or at scattered laser light from any reflective surface, even when laser safety eyewear is worn.

2.0 Meter Setup and Installation

Complete the installation and set-up instructions before using any of the Quick Start tutorials in this guide. The LabMax Touch Meter can be used stand-alone with the touchscreen interface or with use of the Coherent Meter Connection software.

CAUTION!
Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.

2.1 Components

The LabMax Touch Meter comes with the cables and accessories shown here:

- USB A-to-USB B Mini cable (P/N 1108906)
- RS-232 cable (P/N 2237377)
- Trigger-Input cable (P/N 2237381)
- Multi-Output cable (P/N 2237382)

The Power Supply (P/N 1256370) is included with the LabMax Touch Meter.

Refer to ’Laser Safety’ on page 7 to learn about required safety precautions when using lasers.

The various connector labels are shown in the illustration below:

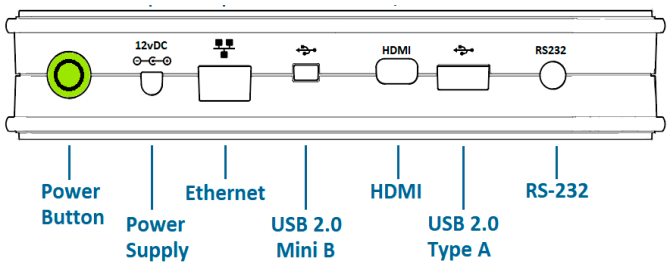

Figure 1. Connectors and Labels

NOTICE
Take precautions to avoid Electrostatic Discharge (ESD) when setting up equipment.

2.2 Set-Up

To set up the LabMax Touch Meter:

1. Attach a sensor to the LabMax Touch Meter at the DB-25 connector.

Figure 2. 25-pin connector

2. Attach the LabMax Touch Meter meter to the PC with a USB 2.0 high-speed port (*optional for use with Coherent Connection software or host software commands)*.
3. Connect the power supply to the LabMax Touch Meter, and set the power ON.

4. The switch displays in **green**.

Figure 3. Power Switch and Power Cable Connection

5. If the meter will be used with the Coherent Meter Connection software on a PC, refer to 'Coherent Meter Connection Software' on page 28.

3.0 Understand the Interface

3.1 Function Buttons

The physical function buttons on the front panel of the case for the LabMax Touch Meter are briefly described in Table 1.

Figure 4. Physical Function Buttons

Table 1. Functional Buttons on the Case

Button	Description
Back	Provides a quick way to cancel an operation, close a window and return to the previous view without accepting any changes.
Menu	Displays the top-level menu with icons for the different function windows on the touchscreen.
Wavelength	Displays the wavelength selection dialog.
Zero	Cancels out any measurement offset caused by stray light, temperature, or sensor variations.
Run/Stop	Press once to display captured data. Press again to stop displaying captured data.

3.2 Main Screen Overview

An example of the Main screen for the LabMax Touch Meter is shown in Figure 5:

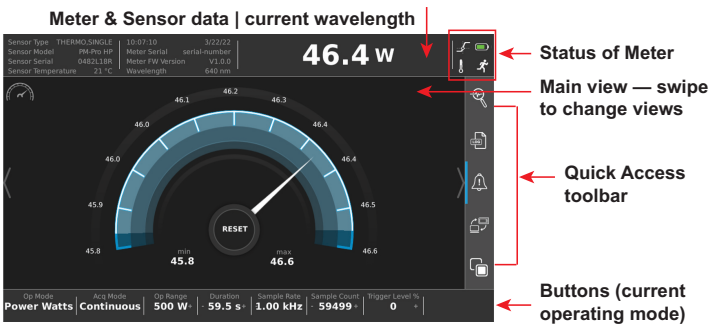

Figure 5. Main Screen Interface Description

The screen includes the these functional areas:

- *Information bar* - sensor data and current wavelength
- *Status indicators*
- *Main view* — swipe to switch between major views
- *Quick-access toolbar* — click to toggle on/off, or press and hold to pop up settings (refer to 'Quick Access Toolbar' on page 13)
- *Button bar* — for operating mode configuration — options relevant to the current operating mode — press to toggle on/off, use (+/-) to increase/decrease settings, or press and hold to pop up settings

To change the view, simply swipe the touchscreen to the left or to the right.

3.3 Quick Access Toolbar

The Quick Access tool bar on the right side of the main screen provides quick access to special meter functions.

- A blue bar displays next to the icon when the function is enabled. (No blue bar is shown when the backlight is turned off.)
- **Tap or click** an icon to toggle settings (generally ON or OFF).
- **Press and hold** the icon (instead of tapping the icon) to bring up configuration dialogs for these functions.
- Settings Menu

Pressing the physical MENU function button displays the Settings menu. This Settings screen displays several categories of settings (example shown in Figure 6) to configure the LabMax Touch Meter.

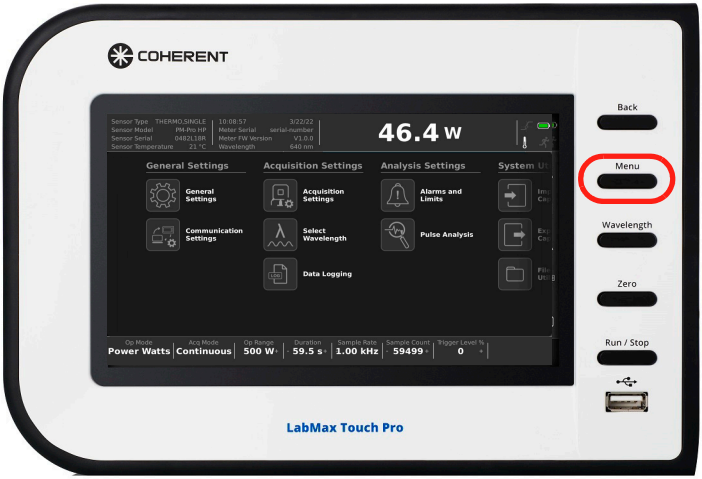

Figure 6. Settings Screen

Pressing the physical BACK button returns to the measurement screen.

3.4 Export Capture Data

To export and save the log file, that is currently in the trend buffer, to an external flash drive, do the following:

1. Insert a flash drive into one of the USB ports on the LabMax Touch Meter.
2. Press the MENU function button.
3. Press **Export Capture Data** in the **System Utilities** tab on the Settings menu.

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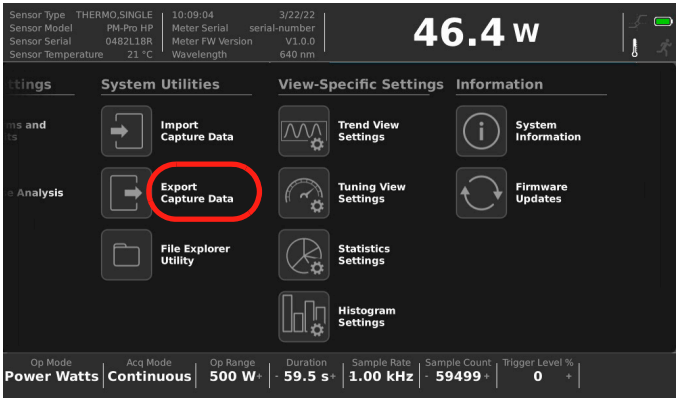

Figure 7. Configure System Utilities, View Settings

4. Select the flash drive location in the **Folder** field.

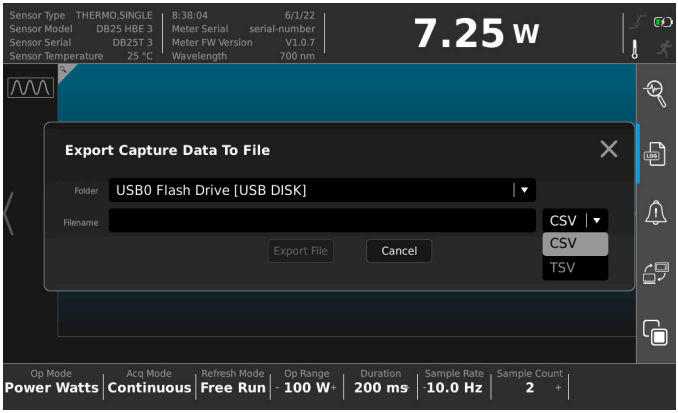

Figure 8. Save to File Settings

5. Select the file type (**CSV/TSV**) in the drop-down.
6. Press in the **Filename** field to type the name for the file and then press the Enter key on the touch keyboard.
7. Press the **Export File** button to save the file to the flash drive.

4.0 Quick Start Tutorials

These tutorials include the following topics to help you to quickly begin to take measurements with the touchscreen interface:

- 'Basic Power Measurement' on page 18
- 'Variable High Speed Measurement' on page 21
- 'Pyroelectric Energy Measurement' on page 25

Before any of the tutorials described in this section are begun, read and observe all safety precautions.

WARNING!
Use of controls or adjustments or performance of procedures other than those specified may result in hazardous radiation exposure.

4.1 Sensor Compatibility

Table 2 lists the compatible sensors and sample rates:

Table 2. Compatible Sensors

Type	Compatibility	Sample Rates
Pyroelectric	EnergyMax DB-25 **pyroelectric** sensors	• Repetition Rate: Measure 25 kHz • Every pulse
Optical	LabMax and PowerMax **optical** sensor models (such as OP-2/LM-2)	• Sample Rate: 10 Hz
Thermopile	LabMax and PowerMax **thermopile** models (such as LabMax-10 and PowerMax-10)	• Supports quadrant beam position data when using LabMax-model thermopiles • Sample Rate: 10 Hz
Transverse Thermoelectric	PowerMax-Pro **DB-25** models	• Sample Rate: 10 Hz (LabMax Touch) • Variable 10 Hz to 1 MHz (LabMax Touch Pro Model Only)

Note that the meter will read the sensor electronics and default to wavelength and other settings. Most of these can be adjusted in the meter settings.

4.2 Basic Power Measurement

NOTE: For use with PowerMax-Pro, thermopile, optical power sensors.

1. Set up and power on the meter and sensor. Refer to ’Components’ on page 8.

Figure 9. Connect the Meter to a Sensor

2. Press the MENU function button,

Figure 10. Front Panel MENU Function Button

3. Press the **Acquisition Settings** button in the Settings menu.

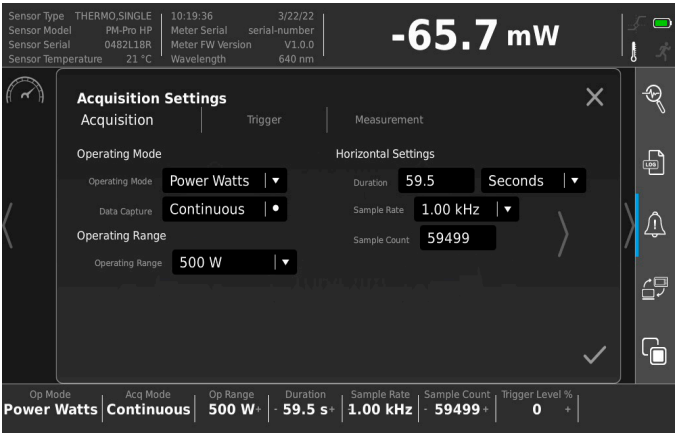

Figure 11. Acquisition Settings Menu

4. Make sure that **Operation Mode** is set to Power Watts measurement.
5. Select the **Operating Range** for the sensor.

   This value should be above the anticipated power measurement. The default range is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled.

6. Press the WAVELENGTH button, and then select the wavelength to be measured.

Figure 12. WAVELENGTH and ZERO Function Buttons

NOTICE

The default wavelength is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled

7. Press the ZERO button to zero the meter.
8. If desired, press the quick menu Log button to save the measurement data to a log file.

Figure 13. Quick Menu Log File Button

9. In Trend View or Data Measurement view, press the RUN/STOP button to start data recording, and then activate the laser.

10. When the measurement is complete, press the RUN/STOP button to stop measurement.

Figure 14. RUN/STOP Function Button

If data logging was selected, the measurement is now saved as a log file in the meter's memory. Refer to the LabMax Touch Meter Operator's Manual for more information on log files and file management.

4.3 Variable High Speed Measurement

NOTE: Only for Coherent PowerMax Pro sensors.

1. Set up and power on the LabMax Touch Meter and PowerMax Pro sensor. Refer to 'Components' on page 8.

2. Press the MENU button, and then click the **Acquisition Settings** button.

Figure 15. MENU button and Acquisition Settings Menu

3. Make sure that **Operation Mode** is set to Power Watts measurement.
4. Select the **Operating Range** for the sensor.

   This value should be *above* the anticipated power measurement. The default range is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled.
5. Make sure to select the needed acquisition **Sample Rate**, up to 1MHz.

NOTICE

In order to set the sample rate above 10 Hz, the Measurement Source needs to be changed to Fast Channel in the Measurement sub-tab.

6. Press WAVELENGTH button, and then select the wavelength to be measured.

NOTICE

The default wavelength is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled.

Figure 16. WAVELENGTH and ZERO Function Buttons

7. Press the **Trigger** sub-tab in the Acquisition Settings menu.

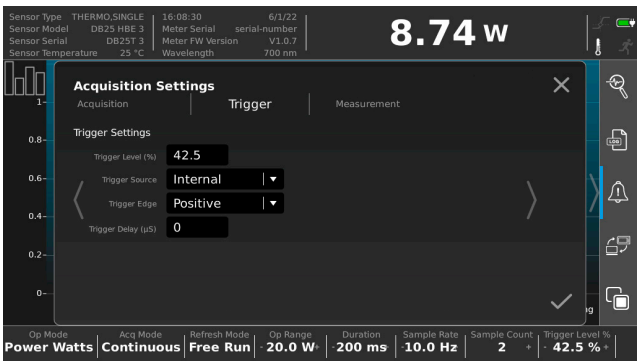

Figure 17. Acquisition Settings - Trigger

8. Make sure that the **Trigger Source** is set to internal and the **Trigger Edge** is set to positive. Refer to the LabMax Touch Operator's Manual for more details on trigger options.
9. Set the **Trigger Level %** to a percentage of the Operating Range that is *below* the expected pulse energy to be measured.
10. Press the ZERO button to zero the meter.
11. If desired, press the quick menu Log button to save the measurement data to a log file.

Figure 18. Quick Menu Save Log File Button

12. In Trend View or Data Measurement View, press RUN/STOP to start measurement, and then activate the laser.

Figure 19. RUN/STOP Function Button

13. When the measurement is complete, press the RUN/STOP button to stop measurement.

If data logging was selected, the measurement is now saved as a log file in the meter's memory. Refer to the LabMax Touch Meter Operator's Manual for more information on log files and file management.

For more information on advanced functionality of the PowerMax Pro sensor such as energy/pulse analysis, refer to the LabMax Touch Operator's Manual.

4.4 Pyroelectric Energy Measurement

NOTE: Only for Coherent Pyroelectric sensors.

1. Set up and power on the LabMax Touch Meter and pyroelectric sensor. Refer to 'Components' on page 8.
2. Press the MENU button and then press the Acquisition Settings button.

Figure 20. MENU button and Acquisition Settings Menu

3. Set the **Operating Mode** to Joules energy measurement.
4. Select the **Operating Range** for the sensor.
5. This value should be *above* the anticipated power measurement. The default range is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled.

6. Press the Trigger sub-tab in the Acquisition Settings menu.

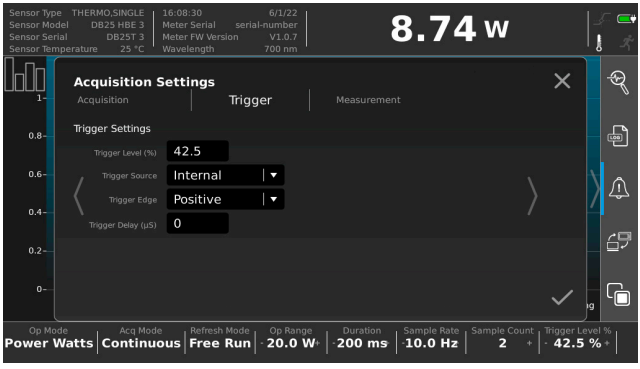

Figure 21. Acquisition Settings - Trigger

7. Make sure that the **Trigger Source** is set to Internal and the **Trigger Edge** is set to Positive. Refer to the LabMax Touch Operator's Manual for more details on trigger options.
8. Set the **Trigger Level %** to a percentage of the Operating Range that is *below* the expected pulse energy to be measured.
9. Press the WAVELENGTH button, and then select the wavelength to be measured.

Figure 22. Select Wavelength

NOTICE

The default wavelength is specific to each sensor's electronics. It should be set each time a sensor is replaced or the meter is power-cycled

10. If desired, press the quick menu **Log** button to save the measurement data to a log file

Figure 23. Quick Menu Save Log File Button

11. In Trend View or Data Measurement view, press the RUN/STOP button to start measurement, and then activate the laser.
12. Once the measurement is complete, press the RUN/STOP button to stop measurement.

    If data logging was selected, the measurement is now saved as a log file in the meter's memory. Refer to the LabMax Touch Meter

Operator's Manual for more information on log files and file management.

5.0 Coherent Meter Connection Software

The LabMax Touch Meter can be used standalone with the touchscreen user interface, or with the Coherent Meter Connection software.

To enable use of the software with the device, enable remote communications on the touch screen quick access toolbar.

For more information and for operation instructions for use with the software, refer to the LabMax Touch Operator's Manual or to the Coherent Meter Connection Software User Manual.

5.1 Software System Requirements

Coherent Meter Connection system requirements for this release include:

- 2.5 GHz or faster processor
- Windows v10 (32- or 64-bit)
- 4 GB of RAM
- 100 MB of available hard disk space
- USB 2.0 high-speed port
- 1024x768 screen resolution
- Microsoft .NET Framework 4.0 or higher. If no version (or an older version) is found on the workstation, then the installation program installs a version of Microsoft .NET Framework.

5.2 Install and Start Software

To install the Coherent Meter Connection software and drivers:

1. Download the software from the Coherent website:
   Coherent product information and related software is available in one easily accessible location on the Coherent website:
   https://www.Coherent.com/resources
2. Close all programs.
   Start the set-up file, where the last two digits represent the current software build:
   Coherent Meter Connection v1.1.x.x Release Setup.exe
3. Follow the on-screen instructions to complete the installation
4. A shortcut is placed on the desktop that displays the following icon:

5. The software and hardware are now ready to use.

When installation is complete, the Release Notes display. Read the notes to learn about new features and bug fixes.

A splash screen, like the following, displays:

This is immediately followed by the application's Graphical User Interface (GUI). The GUI includes the following toolbar and tabs:

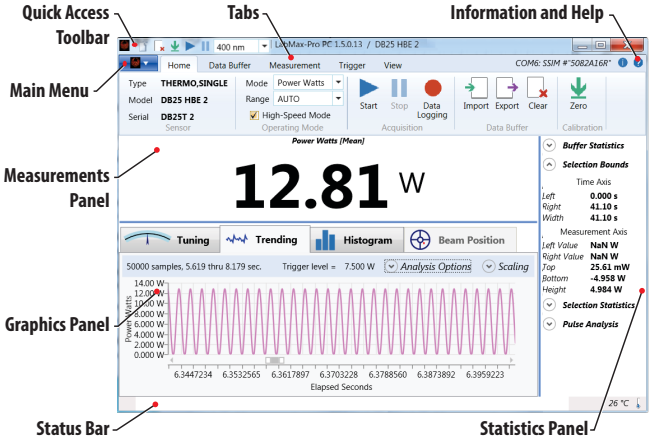

Figure 24. Software User Interface Description

Set-up is now complete.

The options displayed may vary, depending on the mode used to capture power measurements, as well as the type and model of sensor connected to the LabMax Touch Meter.

Each of these areas are described both in the on-line HELP files for Coherent Meter Connection software and in the tutorials in the LabMax Touch Meter Operator's Manual.

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部件名称 Part Name	产品中有害物质的名称及含量 有害物质 Hazardous Substances 铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组装 Printed Circuit Board Assembly	X	O	O	O	O	O
电源 Power Supply	X	O	O	O	O	O
电源线 Power Cord	X	O	O	O	O	O

本表格依据 SJ/T 11364 的规定编制
O: 表示该有害物质在该部件所有均质材料中的含量均在 GB/T 26572 规定的限量要求以下。
X: 表示该有害物质至少在该部件的某一均质材料中的含量超出 GB/T 26572 规定的限量要求。

Download software and manuals at: https://www.Coherent.com/resources

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