



LabMax Laser Power and Energy Meters

Unique Benefits and Performance White Paper



LabMax is appropriate for anyone who needs to analyze and monitor laser output. Data analysis can be achieved via statistical and trend analysis and stored in onboard flash memory for future retrieval with the File Manager tool. Data can also be analyzed directly on a PC through USB and RS232 serial connections, or by logging data to a USB flash drive attached directly to the meter. Installable applications software and LabVIEW® and ActiveX® drivers are provided to support PC interfacing. The LabMax LCD and meter can be positioned at many different angles so customers can place it within the limited

bench space typically available in a laser lab and still easily view the display. LabMax is directly compatible with most Coherent thermal, pyroelectric and semiconductor sensors and displays beam position for quick and accurate setup. These sensors offer wavelength coverage from 190 nm to 12 μm , measure from nW to kW, nJ to J, and from single shot to 10 kHz.

LabMax provides a new level of measurement performance as detailed below.

Thermopile Sensor Channel -- Input range of 20 μV to 2 V covers entire thermopile range with a single gain stage which offers you the highest level of linearity and resolution of any Coherent meter:

- 5 digits of measurement resolution provides the highest performance of any Coherent meter (FieldMaxII is has 4 digits and FieldMate has 3 digits).
- +/-1% measurement accuracy
- Zero chance of non-linearity from gain stages because they have been eliminated – 5 decades of dynamic range without a change in gain!
- Monitor beam position in a bulls eye or strip chart format, or log the beam position to file, when using LM-model position sensing thermopiles. This is very useful when working with non-visible laser beams.



Optical Sensor Channel – Input range of 1 nA to 20 mA with a bandwidth of 159 Hz with only two gain stages also provides the highest level of linearity and resolution of any Coherent meter:

- 5 digits of measurement resolution
- +/-1% measurement accuracy
- Non-linearity due to gain stages is highly minimized due to use of only a single change across 7 decades of dynamic range.

Pyroelectric Sensor Channel – Input range of 1 mV to 16V with a bandwidth of 400 kHz and effective sampling rate of 1.5 MHz offers a minimum resolution of 0.0076% of full scale range

- 4 digits of measurement resolution
- +/-1% measurement accuracy
- Measure pulse energy to 10 kHz sampling (1 kHz every single pulse)
- Digital noise filtering during sampling of baseline and peak of pyroelectric pulse provides greatest potential signal-to-noise ratio of any Coherent meter
- Wide dynamic range due to ability to measure such low input voltages

Data Analysis – We know that many of our customers need to analyze and store their laser measurement data. You will find that LabMax is a pleasure to use and supports this in many ways, some of which are described below.

- Save over 200,000 data points directly to the meter's internal flash
- Or save data directly to a USB flash drive (A Coherent USB flash drive is included!). The quantity is only limited by the size of your flash drive.
- Or save nearly unlimited data directly to a PC with our convenient applications software or with your own software developed using our LabVIEW® or ActiveX® drivers.
- Use the convenient File Manager tool to create folders and file names on these drives, auto-sequence and date stamp the log files, rename files and folders, and copy or delete them at will.
- Install multiple meters in a lifetime test or burn-in station using just one computer and simultaneously log the data.
- Trend chart laser stability over time or peak the laser using two different tuning options directly onboard the meter.
- Monitor for missing pulses when using an external trigger to help troubleshoot laser problems.
- Analyze dose accumulation for processes in microelectronics and semiconductor applications.

Interfacing Options – LabMax incorporates numerous ways to interface the meter for maximum flexibility in laser labs or in the field.

- USB to PC
- USB to Flash Drive
- RS232 to PC
- Analog output
- External trigger input (for pyroelectric energy measurement)



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