

LabMax Meters

Laser Power and Energy Meters



Features

- Measure power and energy
- Ergonomic design enhances user experience
- Directly compatible with PM Model and LM Model thermopiles
- Display beam position with LM Model thermopiles
- Log data to internal memory, directly onto USB flash drive, or to PC
- USB, RS-232, and GPIB PC interfaces
- Software:
 - LabMax PC applications software
 - LabVIEW instrument driver and ActiveX control

Models

- LabMax-TOP is compatible with thermopile, optical and pyroelectric (power & energy)
- LabMax-TOP w/GPIB adds IEEE-488 GPIB PC interface (cable included)
- LabMax-TO is compatible with thermopile and optical (power and long-pulse Joules)

LabMax is a versatile meter suitable for anyone who needs to analyze laser output. It analyzes and monitors laser output via onboard data logging. It also supports logging data directly to a USB flash drive, provides enhanced data analysis and statistics, as well as a form factor that allows flexible positioning and viewing angles so it can be used in areas with limited bench space. These meters provide direct compatibility with LM Model and PM Model sensors with no need for adapters.

Sensor Compatibility

LabMax displays beam position for quick and accurate setup, and is directly compatible with most Coherent thermal, pyroelectric and semiconductor sensors. These sensors offer wavelength coverage from 190 nm to 12 μm , measure from nW to kW, from nJ to J, and from single shot to 10 kHz.

Beam Positioning

The position of the laser beam on the sensor can be displayed by LabMax when using an LM Model thermopile sensor. This makes it easier to align the laser beam during setup, especially for infrared laser beams. There is also a trending feature to monitor the position of the beam over time, and the position data can be logged to a file. Beam position sensors are on pages 22-25.



LM-45 HTD sensor with beam position

Data Logging

Data logging of unlimited size can be performed directly to a USB flash drive, and additionally over 400,000 points can be retained onboard the meter itself in flash memory. The meter has a file management system that allows naming and renaming files, auto increments file names for repetitive logging events, folder creation and renaming, and transferring files and folders from the meter storage to a USB flash drive. Data can also be logged to a file with the LabMax PC applications software.



LabMax beam position display

LabMax Meters

Laser Power and Energy Meters

Ergonomic Design

LabMax features a large, backlit graphical display with an ergonomic interface with easily accessible buttons for all features and modes. The Measure, Tune, and Trend modes are directly accessible via front panel buttons.



Front panel buttons

Flexible Positioning

The LabMax display and meter can be positioned at many different angles within the limited bench space typically available in a laser lab, while still making the display easy to view.



Additional Inputs/Outputs

In addition to PC interfacing, LabMax also includes an analog output with user-selectable voltages of 0 to 1V, 2V, or 4V. Pyroelectric triggering can be achieved with an external trigger input or an internal trigger that is user-adjustable from 2% to 20% percent of full-scale range.

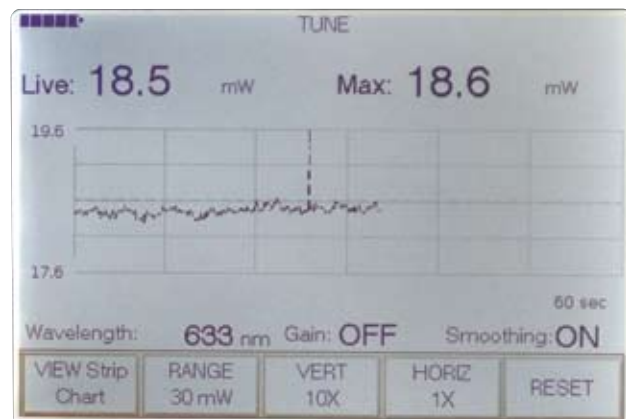
Measurement Analysis

LabMax meters contain several advanced analysis capabilities, including:

Onboard statistics – mean, minimum, maximum, standard deviation, range, three stability parameters, as well as missed pulses. Users can also select which statistical parameters to display, up to six at a time.

Trend charting – trend chart with statistical display and the ability to log data to a file.

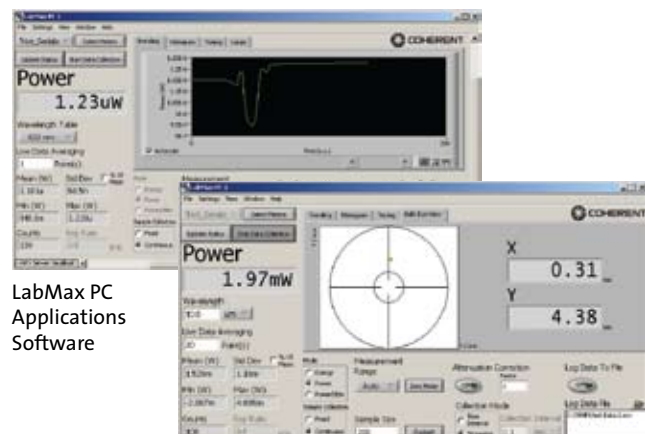
Digital tuning indicators – horizontal bar and trend chart formats with peak indicators.



LabMax Tune Chart

PC Interfacing and Applications Software

Data can also be analyzed directly on a PC through USB, RS-232, or GPIB connections, or by logging data to a USB flash drive attached directly to the meter. Installable applications software and LabVIEW drivers are provided to support PC interfacing.



LabMax PC Applications Software

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- Power & Energy Meters
- Power Sensors
- Energy Sensors
- Custom & OEM
- BEAM DIAGNOSTICS
- CALIBRATION & SERVICE
- INDICES
- Laser Cross-Reference Index
- Product Name Index

LabMax Meters

Laser Power and Energy Meters

Device Specifications	Model	LabMax-TOP w/GPIB	LabMax-TOP	LabMax-TO
POWER & ENERGY	Measurement Resolution	0.1 % of full-scale		
	Displayable Resolution	3 or 4 digits pyroelectric; 3, 4, or 5 digits thermopile and optical (user-selectable)		3, 4, or 5 digits (user-selectable)
Power & Energy Meters	Measurement Range	Sensor dependent (reference sensor specifications)		
	Accuracy	Digital Meter $\pm 1.0\% \pm 2\text{LSD}$ System Meter accuracy + sensor accuracy Analog Output (%) ± 1.0		
Power Sensors	Uncertainty (%)	± 1.0		
	Power Sampling Rate (Hz)	10		
Energy Sensors	Maximum Repetition Rate (Hz)	10,000 sampling (1000 Hz every pulse)		
	Minimum Positional Resolution (mm)	0.1		
Custom & OEM	Display	112 x 78 mm backlight graphic LCD, 480 x 320 pixels. Adjustable contrast and viewing angle		
	Measurement Analysis	Min., max., mean, range, std. dev., dose, stability; trending, tuning, beam position		
BEAM DIAGNOSTICS	Computer Interface	GPIB, USB and RS-232	USB and RS-232	
	Pulse Triggering	Internal and external (selectable)		–
CALIBRATION & SERVICE	Analog Output (VDC)	0 to 1, 2, or 4 VDC (selectable)		
	Analog Output Update Rate	Up to 1000 Hz for pyroelectric; 10 Hz for thermopile and optical		10 Hz
INDICES	Temperature	Operating Range 5 to 40°C (41 to 104°F) Storage Range -20 to 70°C (-68 to 158°F)		
	Instrument Power	90 to 260 VAC, 50/60 Hz		
Laser Cross-Reference Index	Instrument Batteries	4400 mAH Rechargeable Li-ion Pack		
	Compliance	CE, RoHS, WEEE		
Product Name Index	Dimensions (H x W x D)	152 x 229 x 53 mm (6.0 x 9.0 x 2.1 in.)		
	Weight	1.25 kg (2.8 lbs.)		
Laser Cross-Reference Index	Front Panel	PWR Turn meter on and off ZERO Reset ambient offset for thermal and optical sensors MEASURE Main measure mode including statistics TUNE View tuning features TREND Display measured values over a period of time and log data to file SETUP Setup meter parameters HELP Onboard context sensitive help - available from any screen BACKLIGHT Toggle backlight on and off KNOB Turn knob to change settings; press the knob to save settings		
	Left Side Panel	USB flash drive port USB PC interface port RS-232 PC interface port DB25 sensor port Power jack		
	Rear Panel	Analog output External trigger input – GPIB PC interface port –		
	Part Number*	1104620	1104622	1104619

* Meter supplied with 4400 mAH Li-ion battery, AC power adapter, power cord, 1.8-meter USB cable, RS-232 adapter, USB flash drive, RCA-to-BNC adapters, user manual, software and driver CD, soft carrying case, and certificate of calibration. LabMax-TOP w/GPIB also includes a GPIB cable.

FieldMaxII Meters

Laser Power and Energy Meters



FieldMaxII-TOP Power and Energy Meter



FieldMaxII-TO Power Meter

Features

- Measure energy of pulsed lasers up to 300 pps
- Large, backlight LCD display
- Compatible with thermopile, optical, and pyroelectric sensors
- Simulated analog-like movement for laser tuning
- USB interface with FieldMaxII PC applications software, LabVIEW instrument driver and ActiveX control
- Area function for density measurements (J/cm^2 or W/cm^2)

Models

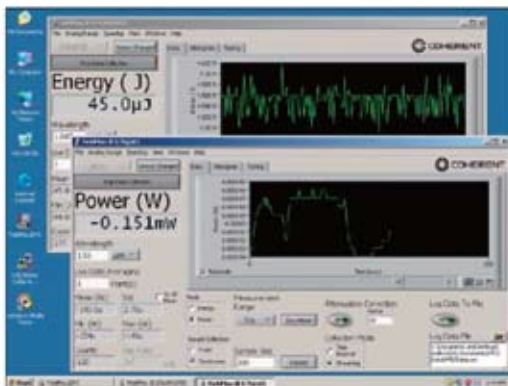
- FieldMaxII-TOP is compatible with thermopile, optical and pyroelectric sensors (power & energy)
- FieldMaxII-TO is compatible with thermopile and optical (power only)
- FieldMaxII-P is compatible with pyroelectric (energy only)

FieldMaxII is an affordable, versatile, easy-to-use digital power and energy meter platform designed for a variety of applications ranging from field service to production test applications.

FieldMaxII features a large, easy-to-read backlit LCD and an intuitive user interface offering button-driven control for simple operation. The meter supports onboard analysis of mean, min., max., and standard deviation statistics. It can measure power from nW to kW, and pulse energy from nJ to J at up to 300 pps. In addition, long-pulse Joules energy measurements can be made on the FieldMaxII-TOP model when using thermopiles.

The meter includes a USB PC interface as well as an analog output. The FieldMaxII PC applications software supports trend charting, tuning, statistics, and logging data to a file. A LabVIEW instrument driver with ActiveX control is provided to support custom software developments.

FieldMaxII PC Application



Features

- USB PC Interface
- FieldMaxII PC is completely open-source so that you can use it to help develop your own customized applications
- Multiple meters can be run on a single PC – useful for final test and burn-in applications
- Meters can be operated remotely via host interface and included drivers
- Software features:
 - Measure, Tune, Trend displays
 - Statistics
- LabVIEW instrument driver and ActiveX DLL server included

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- Power Sensors
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- Custom & OEM
- BEAM DIAGNOSTICS
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FieldMaxII Meters

Laser Power and Energy Meters

Device Specifications	Model	FieldMaxII-TOP	FieldMaxII-TO	FieldMaxII-P
Function		Power and energy	Power	Energy
Measurement Resolution		0.1% of full-scale		
Measurement Range		Sensor dependent - reference sensor specifications		
Accuracy				
Digital Meter System		±1.0% ±2LSD Meter accuracy + sensor accuracy		
Analog Output (%)		±1.0		
Uncertainty (%)		±1.0		
Power Sampling Rate (Hz)	10	10	10	–
Maximum Pulse Rep. Rate (Hz)	300	300	–	300
Display		58 x 73 mm, fixed-segment LCD with backlight		
Digital Tuning Indicator		100 msec time constant		
Statistics		Mean, max., min., standard deviation		
PC Interface		USB 1.1		
Analog Output		0 to 1, 2, or 5 VDC (selectable)		
Internal Trigger	2 to 20% of full-scale, selectable	–	–	2% to 20% of full-scale, selectable
Temperature				
Operating Range		5 to 40°C (41 to 104°F)		
Storage Range		-20 to 70°C (-68 to 158°F)		
Instrument Power		100 to 240 VAC, 50/60 Hz		
Instrument Batteries		Rechargeable NiMH battery pack		
Compliance		CE, RoHS, WEEE		
Dimensions (H x W x D)		200 x 100 x 40 mm, (7.87 x 3.94 x 1.57 in.)		
Weight		1.0 kg (2.2 lbs.)		
Front Panel		Toggle power switch and backlight		
PWR		Toggle power switch and backlight		
HZ	Display rep. rate	–	–	Display rep. rate
J/W	Select Joules or Watts mode	–	–	–
ZERO	Reset ambient offset for thermal and optical sensors	–	–	Zero stats
AUTO	Engage auto-ranging with power sensors	–	–	–
STAT		Display statistics: mean, max., min., standard deviation		
AVG		Engage display averaging		
λ		Enter wavelength and engage wavelength compensation		
ATTEN		Enter attenuation factor and engage attenuation		
AREA	J/cm ² (fluence) W/cm ² (power density)	W/cm ² (power density)	–	J/cm ² (fluence)
HOLD	–	Holds displayed values on screen		–
TRIG	Select trigger level with energy sensors	–	–	Select trigger level with energy sensors
SETUP / LOCAL		Set and enter button/Takes local control of meter back from PC		
ARROW KEYS		Manually control range; Select Stats parameter; Select and change numerical values		
Left Side Panels		Power jack		
		USB PC interface port		
		Analog output		
Right Side Panels		DB25 sensor port		
Part Number*		1098580	1098579	1098581

* Meter supplied with NiMH rechargeable battery pack, power cord, AC adapter, USB cable (1.8m), RCA-to-BNC analog output adapter, user manual, installation CD with FieldMaxII PC and drivers, soft carrying case, and certificate of calibration.

FieldMate

Laser Power Meter



Features

- Analog needle for tuning
- Large digital LCD display
- Compatible with thermopile and optical sensors
- Wavelength compensation
- Analog output
- Compact and portable
- AC and battery power
- Auto ranging

FieldMate combines a digital display and analog meter with sophisticated digital processing to enable rapid, sensitive laser adjustment. This meter also offers an economical way of measuring laser power when advanced data analysis is not necessary.

Device Specifications	Model	FieldMate
Power Resolution		0.1% of full-scale for all ranges in the 10s scale 0.3% of full-scale for all ranges in the 3s scale
Measurement Range		Sensor dependent (reference sensor specifications)
Accuracy		
Digital Meter System		±1.0% ±2LSD Meter accuracy + sensor accuracy
Analog Meter (%)		±3.0
Analog Output (%)		±1.0
Uncertainty (%)		±1.0
Power Sampling Rate		20 Hz (thermopile and optical)
Display		26 x 89 mm, custom fixed-segment LCD
Analog Needle		
Scale		0 to 10 (100 divisions), 0 to 3 (60 divisions)
Response		80 ms time constant
Analog Output		
Voltage		0 to 2 VDC
Update Rate		20 times/sec.
Temperature		
Operating Range		5 to 40°C (41 to 104°F)
Storage Range		-20 to 70°C (-68 to 158°F)
Instrument Power		100 to 240 VAC, 50/60 Hz
Instrument Batteries		Two 9V alkaline batteries
Compliance		CE, RoHS, WEEE
Dimensions (H x W x D)		193 x 117 x 46 mm, (7.6 x 4.6 x 1.8 in.)
Weight		0.8 kg (1.8 lbs.)
Front Panel		
PWR		Toggle power
ZERO		Ambient offset
AUTO		Engage auto-ranging
λ		Enter wavelength compensation
ARROW KEYS		Manually control range; select and change numerical values
Left Side Panel		
Power jack		
Analog output		
DB-25 sensor port		
Part Number*		1098297

* Meter supplied with two alkaline 9V batteries, power cord, AC power adapter, RCA-to-BNC analog output adapter, user manual, and certificate of calibration.

POWER & ENERGY

Power & Energy Meters

Power Sensors

Energy Sensors

Custom & OEM

BEAM DIAGNOSTICS

CALIBRATION & SERVICE

INDICES

Laser Cross-Reference Index

Product Name Index

EPM2000

Dual-Channel Power and Energy Meter



Features

- Measures power and energy
- Repetition rate to 1000 pps
- Dual-channel with ratio measurement
- External trigger input
- RS-232 and GPIB computer interfaces
- Analog output
- LabVIEW driver

Part Number	Description
0011-5140	EPM2000

Ultima LabMaster 2-Channel

Dual-Channel Power and Energy Meter



Features

- Measures power and energy
- Dual-channel with ratio measurement
- Displays beam position with LM Model thermopiles
- Trend charting
- RS-232 and GPIB PC interfaces
- Analog output
- RMS noise measurement with LM-2 sensors

Part Number	Description
33-0613-000	Ultima LabMaster

LaserPAD

Laser Power Meter



Features

- PC-based power meter system
- Displays beam position with LM Model thermopiles
- LaserPAD PC applications software included
- RS-232 and USB PC interface
- Compatible with LM Model thermopiles and optical sensors
- OEM software tools CD for embedded applications
- LabVIEW drivers

Part Number	Description
1008557	LaserPAD

POWER & ENERGY

Power & Energy Meters

Power Sensors

Energy Sensors

Custom & OEM

BEAM DIAGNOSTICS

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LaserCheck

Laser Power Meter

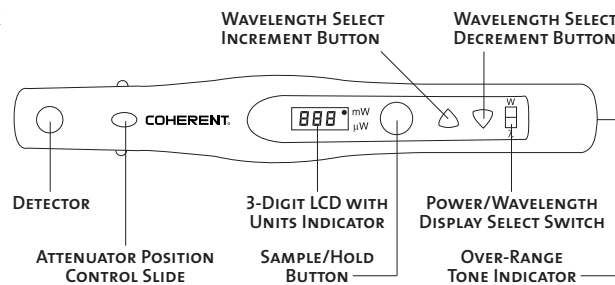


Features

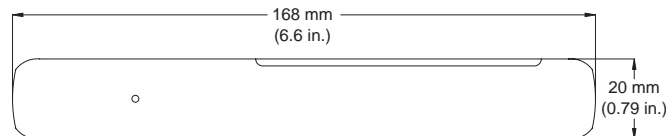
- Hand-held laser power meter
- Measurement range: 0.5 μW to 1W
- Wavelength range: 400 to 1064 nm
- User-selectable spectral compensation
- Auto-ranging with peak sample and hold

Device Specifications	Model	LaserCheck
Active Area Diameter (mm)		8
Spectral Range (nm)		400 to 1064
Accuracy (%)		± 5
Measurement Range		
without Attenuator		0.5 μW to 10 mW
with Attenuator		10 mW to 1W
Display Power Ranges		9.99 μW to 999 mW
Minimum Power Resolution (μW)		0.01
Maximum Power Density		
without Attenuator		0.5 W/cm ²
with Attenuator		30 W/cm ²
Display		3-digit LCD display with power unit indicator
Compliance		CE, WEEE, RoHS
Dimensions (H x W x D)		168 x 24 x 20 mm (6.6 x 0.9 x 0.7 in.)
Weight		44 g (0.09 lbs.)
Part Number (RoHS)		1098293

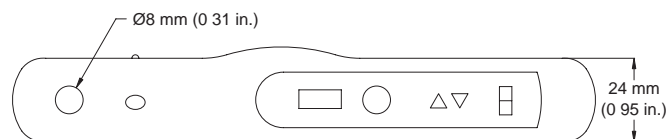
LaserCheck



Side View



Front View



POWER & ENERGY

Power & Energy Meters

Power Sensors

Energy Sensors

Custom & OEM

BEAM DIAGNOSTICS

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