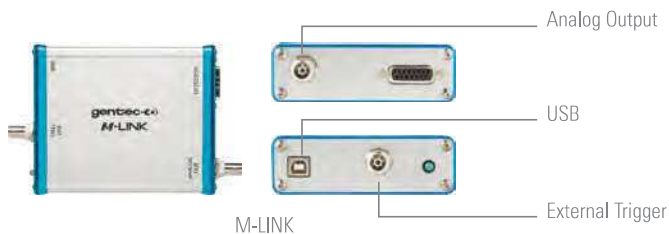


# M-LINK

Single Channel, PC-Based Universal Power and Energy Monitor



## AVAILABLE MODELS



## ACCESSORIES



USB Cable  
(Model Number: 202373)



Pelican Carrying Case

## FEATURES

- 1. THE UNIVERSAL PC-BASED METER**  
Reads ALL Heads:
  - Power: Thermopiles, Photo Detectors and Pyroelectrics
  - Energy: Thermopiles (in single shot mode), Photo Detectors and Pyroelectrics
- 2. MEASURE fJ ENERGY LEVELS**  
Thanks to a unique digital method for suppressing the noise on the lower ranges
- 3. EXTERNAL TRIGGER**  
Synchronize your M-LINK to your pulsed laser or digital chopper
- 4. DIGITAL (USB) OUTPUT**  
Connect the M-LINK module directly to your PC
- 5. POWERFUL LABVIEW SOFTWARE**  
Features include:
  - Complete instrument controls: Range, Trigger, Wavelength, etc.
  - Live display in J and J/cm<sup>2</sup> or W and W/cm<sup>2</sup>
  - Full Statistics: Min, Max, Mean, Standard Deviation, RMS Stability, Repetition Rate, etc.
  - Graphic Displays: Strip Chart, Histogram, Tuning Needle and more
  - Data File Collection and Analysis

## SEE ALSO

ENERGY DETECTORS	<b>38</b>
POWER DETECTORS	<b>58</b>
HIGH POWER DETECTORS	<b>94</b>
PHOTO DETECTORS	<b>108</b>
THZ DETECTORS	<b>120</b>
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Watch the Demo video available on our website at [www.gentec-eo.com](http://www.gentec-eo.com)

# M-LINK



\*Also traceable to NRC-CNRC

## SPECIFICATIONS

### M-LINK

**DETECTOR TYPES** ALL MODELS: Thermopiles, Pyroelectrics, Photo Detectors

**DISPLAY** PC-Based

#### POWER METER SPECIFICATIONS

Power Range 4 pW to 30 kW

Resolution (Digital) Current Scale/3000

Monitor Accuracy  $\pm 0.5\% \pm 2$  digits

Statistics Current Value, Max, Min, Average, Std Dev., RMS & PTP Stability, Time

#### ENERGY METER SPECIFICATIONS

Energy Range 30 fJ to 30 kJ

Resolution (Digital) Current Scale/3000

Monitor Accuracy  $1\% \pm 2$  digits (<1 kHz)

Software Trigger Level 0.1 to 99.9%, 0.1% resolution, default 2%

Repetition Rate<sup>a</sup> 1 000 Hz

Real Time Data Transfer 1 000 Hz with time stamp, no missing point

Statistics Current Value, Max, Min, Average, Std Dev., RMS & PTP Stability, Pulse #, Repetition Rate, Average Power

#### DETECTOR COMPATIBILITY

Thermopile Average Power & Single Shot Energy

Pyroelectric Pulse Energy & Average Power

Photo Detectors Average Power & Pulse Energy

#### GENERAL SPECIFICATIONS

Digital Display Computer Screen

Data Display Real Time, Scope, Averaging, Statistics and Digital Tuning Needle

Serial Commands and Data Transfer Via USB

Real Time Data Transfer Rate 1 000 Hz with time stamp, no missing point (for pyroelectrics only)

Analog Output 0-2 Volts, Full Scale,  $\pm 2\%$  (joulemeters)  $\pm 4\%$  (wattmeters)

Rising or Falling Edge External Trigger 4.5 to 10 V @ 20 mA, optically isolated

Dimensions 106W x 34H x 147D mm

Weight 0.424 kg

#### ORDERING INFORMATION

Product Name M-LINK

Product Number 201850

Specifications are subject to change without notice

a. Maximum repetition rate may vary with PC and detector speeds.

# M-LINK



## PC-BASED UNIVERSAL POWER/ENERGY MONITOR

This PC-Based monitor is compatible with ALL types of detectors - including thermopiles, pyroelectrics and photo detectors - for both power and energy measurements. The device is available as a single channel unit that directly interfaces with a computer using a USB2.0 connection. The LabView software is included and comes with all the necessary features. The M-LINK also presents a unique digital technique of suppressing the noise, thereby extending the measurement range all the way down to the fJ level.

## VERSATILE SOFTWARE FOR THE UNIVERSAL M-LINK

What makes the M-LINK so universal is its compatibility with every detector type and model we make, and our smart software that recognizes the type of detector attached, and configures itself accordingly. Some of the basic software features include:

- Live Digital Reading
- Full Statistics
- Strip Chart
- Histogram
- Analog Tuning
- Data Logging



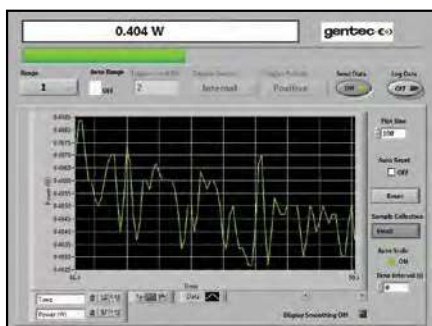
## MEASURE POWER WITH A PHOTO DETECTOR

If you need to measure low power levels, from pW to mW, then we recommend one of our PH or PH-B detectors. In the software screen shown on the left, we have taken a data set working in the **"STATS"** display mode. We have set the batch size to 100 data points in the manual reset mode. You can see the live power (138 nW) and full complement of statistics: mean, max, min, RMS and PTP stability. In the bottom left hand corner you will note that a wavelength of 300 nm is displayed. This is where you will enter the wavelength of your laser and engage the wavelength correction factor.



## MEASURE POWER WITH A THERMOPILE DETECTOR

You can select any of our Thermal Detectors to measure your laser power from a few  $\mu$ W up to 30 kW. We used one of our most sensitive thermopile detectors, model XLP12-3S-H2, to generate the software screen shown on the left. We have selected the **"SCOPE"** mode, where you can view the live power reading (0.404 W), a bar graph and a strip chart while monitoring the power. This high level screen also provides access to range, trigger, auto scale, and many other monitor functions.



## M-LINK

CE NIST\*  
Traceable



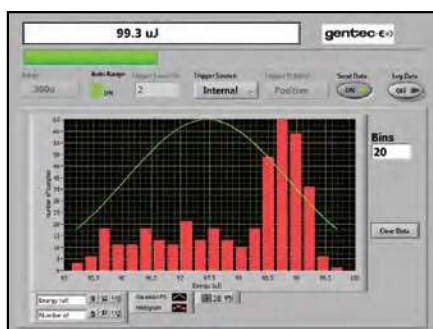
\*Also traceable to NRC-CNRC

## MEASURE POWER WITH A PYROELECTRIC DETECTOR



Need to measure the Radiant Flux (Watts) or Irradiance ( $W/cm^2$ ) of a broadband source like the sun, a lamp, a temperature controlled black body and/or a mid or far-IR laser? Our broadband pyroelectric detectors of the UM-B Series would be a great choice. To make the measurement that is displayed on the left, we set up our UM9B-BL detector with M-LINK, an SDC-500 Chopper running 10 Hz and our 725 °C Black Body Source. The M-LINK recognizes the UM9B-BL detector, sets the wavelength to 633 nm where it is calibrated and prepares it to measure the voltage square wave it generates. We have engaged the area correction as the 9 mm detector is over filled with radiation. We are therefore measuring Irradiance in  $W/cm^2$ .

## MEASURE ENERGY WITH A PYROELECTRIC DETECTOR



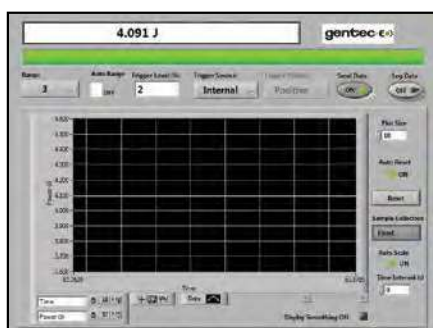
You can select one of our many large area Pyroelectric Detectors of the QE Series for energy measurements ranging from 50 nJ to 250 J and from DUV to Far IR. To demonstrate this capability, we have selected our QE8SP-B-BL and the M-LINK. We are looking at the **"HISTOGRAM"** screen, where you can continue to view the live measurement and a histogram that shows the energy distribution of your data set, along with a best-fit Gaussian curve. Note that you still have access to the instrument controls, like range, trigger, wavelength, etc.

## MEASURE AT THE fJ LEVEL WITH A PE-B DETECTOR



For measurements in the fJ to  $\mu J$  range, and from UV to Near-IR we suggest our PE3B-Si detector. It represents the state-of-the-art in low-end energy detector technology. Take advantage of our proprietary pulse averaging, noise reduction techniques available with M-LINK. In the example shown at the right, we have captured a data set while running in the **"AVERAGING"** mode. The bars represent minimum (white) and maximum (blue) energy values. The strip chart is based on the average energy value. You get to select the number of "BINS" represented here. "Pulse Averaging" is available in the Statistics screen.

## MEASURE A HIGH ENERGY PULSE WITH A UP DETECTOR



If you are trying to measure a relatively high energy (Joules) single pulse (up to 300 msec long), you will select one of our Thermopile Power detectors (like the UP50-W9), have it calibrated in single shot mode and use the M-LINK to make the measurement. In the screen at the right, we have captured a long pulse that had a duration of a few hundred milliseconds and are displaying the energy in the **"SCOPE"** screen. Using a variety of our thermopile detectors, you can measure from 12  $\mu J$  to 500 J in a single pulse.