PC Link

Detector-to-USB Interface for all Laser Measurements

Your Laptop or PC Converted Into a Power/Energy Meter

LaserPoint introduces the PC Link, a smart head to USB interface that converts any PC or laptop into a real, powerful laser power or energy meter. To make it work it is sufficient to install the software, connect the head to the interface unit and this latter to the USB port of a PC. No external power source is needed.

This sophisticated monitor is plug and play with all LaserPoint smart heads and has been designed for service and laboratory applications offering the convenience, flexibility and value of computer-based operations.

PC Links are supplied with LaserPoint's user-friendly communication software package.

## The Rich and Flexible Monitor

The very compact size and low weight of PC-Link, together with its advanced features make this monitor the ideal partner for service applications or laboratory use. The PC Link is also the candidate for use in laser machines, in particular when associated to LaserPoint's FIT detectors that work up to 6KW without the need of water cooling.

The use of PC Link is straightforward. The unit will recognize the power/energy head as soon as it is plugged-in; furthermore, the PC Link will use its anticipation circuitry to insure a fast response and will auto-calibrate by using the data stored in the intelligent connector (IIS) to provide the most accurate measurement .

Another feature is the access to the User's Own Calibration Factor (UCF) and a X10 gain for enhanced measurement flexibility (eg low power measurement to 20mW fs).

The software supplied with the PC Link allows to measure, analyze with full statistical functions (Min., max., mean, and standard deviation) and record power and energy from all LaserPoint heads without the need of a display. Data from each detector can be logged simultaneously to file.

## Measurements Modes: Power, Energy and FIT
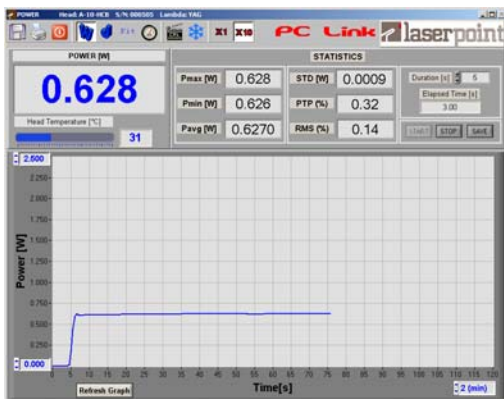
The *Power mode* permits measurements of laser powers with direct display of the actual value. The screen also shows the time evolution of power allowing stability measurements as long as several hours (up to 12 h depending on the PC).

The *FIT mode* can only provide values of laser power by an automatic measurements cycle of 4 seconds. These heads are used for accurate, yet once in a while, readings whenever power checks and not long term measurements are needed. In this configuration the operator only has to expose the head to the laser beam and, after the correct timing generated by the PC Link's internal firmware, the measurement is over. (There is no need to provide the time window to the laser shutter).

The *Energy mode* allows the measurement of single shot energy. This function is available on request on most of thermal heads manufactured by LaserPoint.

At the top of each window a toolbar is displayed. Each icon activates a particular software function, and a brief explanation pops up by simply putting the mouse cursor on the icon.
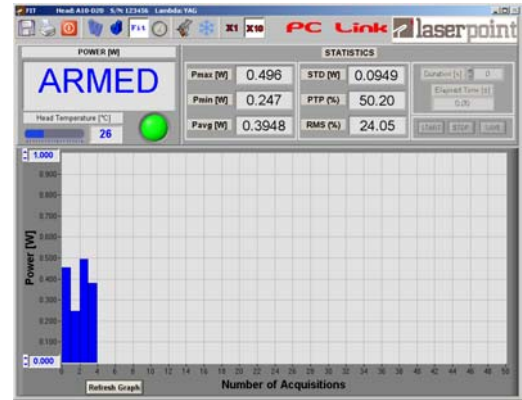
Saves acquired power data in a .txt file. The operator is simply requested to decide sampling time and file name. Acquisition data are continuously saved until the next click on the icon.

When the icon background is green, acquired data are being saved in the specified file.

Prints the current screen by a printer.

Quits the PC Link software.

Activates Power Meter measurement and display mode

Activates Energy Meter measurement and display mode

Activates FIT measurement and display mode

Activates Tuning display mode

Zeroes the instrument to remove any residual offset.

The freeze function stops the data acquisition and the statistic calculations in progress.

Sets the input gain to x1.

Signals coming from the head are amplified by a factor of 10: consequently the head full scale is 1/10 of the nominal full scale and the measurement resolution is increased by a factor of 10.

Statistics Functions

In the statistics section of the main window a series of statistical data are calculated and displayed. This function is available for the Power, Energy and FIT mode.
Every time the count up of the elapsed time reaches the set value, the following statistical data are calculated:

- *Pmax(W)*: Shows the max power value measured during the last acquisition interval
- *Pmin(W)*: Shows the min power value measured during the last acquisition interval
- *Pavg(W)*: Shows the average value of power measured during the last acquisition interval
- *PTP(%)*: Shows the Peak-to-Peak stability based on the formula $PTP = \dfrac{P\max - P\min}{P\max} \cdot 100$
- *STD(W)*: Shows the measurement Standard Deviation based on the formula

$$STD = \sqrt{\frac{\sum_{i=1}^{n}(Pi - Pavg)^2}{n-1}}$$

- *RMS(%)*: Shows the RMS stability based on the formula $RMS = \frac{STD}{Pavg} \cdot 100$

Saving Statistics Data on a File

Whenever measured data need to be saved on a file, this can be simply done by clicking on the "*SAVE*" button in the statistic section .

The structure of saved file (* .txt), as shown in the picture, is:
-headline, reporting the head model, the calibration wavelength, the head serial number, the date and the time of saving action.
-twelve columns reporting date, time, calculated values of statistical measurements, temperature of sensor, sampling interval duration, alarms (cool, overflow) and active gain value are updated at each acquisition. Data of each saved file can be imported into a spreadsheet (e.g.Excel).

Laser Tuning

Laser Tuning is only allowed in Power Mode and is used to achieve a high resolution tweaking of your laser. On top of the tuning window a toolbar is displayed. Each icon activates a particular software function.
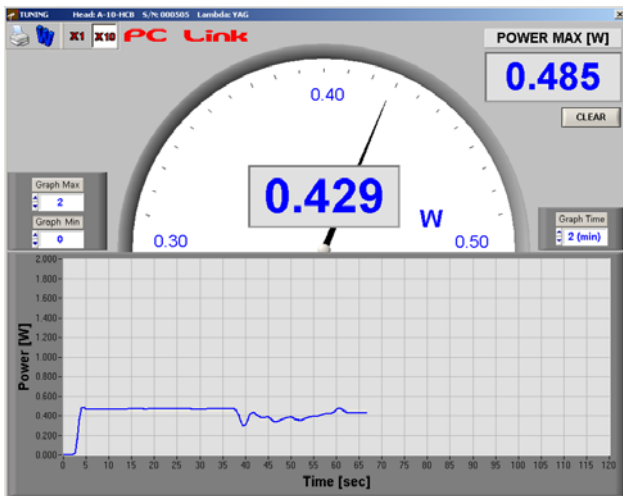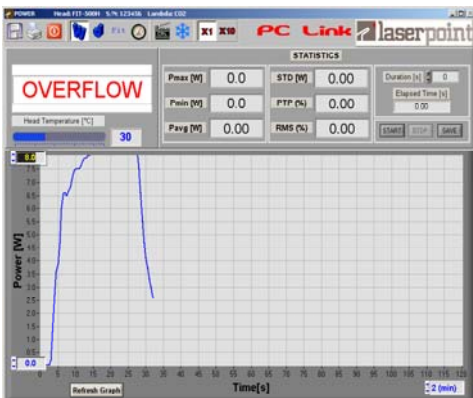

Prints the current screen .

Returns to the Power Meter mode

Sets the input gain to x1.

Sets the input gain to x10.
An analog needle shows the direction of tuning. In the centre of the tuning monitor the actual power is displayed, while the maximum power value reached during the tuning procedure is indicated at the upper right corner of the window.

Warning Messages

Every time the laser power or energy exceeds the head full scale an OVERFLOW alarm is displayed as shown in the picture .
Should the measurement head reach its limit temperature (overheating of a head may be due to problems to the cooling circuit as low water pressure, lack of fluid, obstructions, etc, or poor heat exchange in air cooled heads), a COOL message will be displayed on the main window and the data

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displayed in the graph are pinned to the last power value acquired before the alarm .
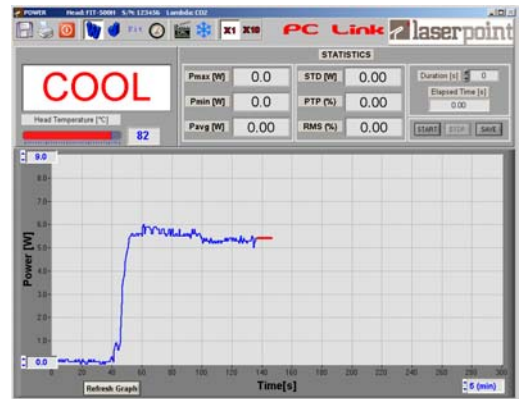
PC-Link: Technical Specifications

Power Meter Mode
Power Ranges: *1mW to 10kW*
Resolution: *0.5‰ for any Full Scale*
Response Time   *<1-5sec.(depends on specific head)*

Energy Meter Mode
Power Range: *1mJ to 300J*
Resolution: *0.5‰ for any Full Scale*
Response Time*:*   *<1-5 sec (depends on specific head)*

FIT Mode
Power Ranges: *1mW to 10kW*
Resolution: *0.5‰ for any Full Scale*
Response Time*:*   *4 sec (final value)*

Tuning
-Displays a Digital Bargraph for Tuning Direction
-Displays Actual Power Value
-Displays Variations (as %) form Tuning Initial Value

Selections:
Wavelengths
EXC : UV and excimer laser (250-350nm)
VIS: Visible (400-700nm)
LD: Laser Diodes (800-900nm)
Yag: Nd-Yag (1064 nm)
Erb: Erbium (2943 nm)
CO2 : CO2 (10600nm)
UCF:
User's Own Re-Calibration Factor

GENERAL SPECIFICATIONS
Software: Full Window application software
Communication: Full Speed USB 1.1 Communication between Host Computer and PC-LINK
Display: Computer Screen
Data Storage: Limited by PC capacity
Data Displays: Real time, Histogram, Statistics
Additional Input Gain: 10X
Dimensions 113 (L) x 56 (W) x 35 (H) mm
Weight 0.106 kg
External Power Supply Not required
Operating environment:
°Storage Temperature:*-10 to 60 °C*
° Range of Use :*5 to 45 °C*
°Reference Conditions : *21 ± 4 °C ;RH 20-80%*

CE