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New

OS1p Chlorophyll Fluorometer

Pulse Modulated, field portable

*Great Science at
an Affordable Price*

*Affordable - chlorophyll fluorometer for
quantum photosynthetic **Yield** and
ETR measurements as well as for
Fv/Fm and Rapid Light Curves*

*Fast - measure plant stress in a few
seconds*

*High Precision - optional **PAR Clip** for
more reliable field measurements*

*Easy to use - menu driven with color
graphic screen.*

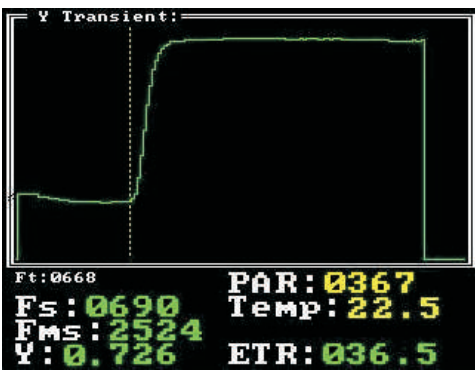
*Measurements are completed with a
PAR Clip that offers true single
handed operation.*

While Fv/Fm is probably the most often used fluorescent measurement, *photosynthetic yield and ETR are likely the most useful measurements*. These two parameters have successfully demonstrated the ability to measure more types of plant stress than Fv/Fm, and in some cases, detect stress earlier.

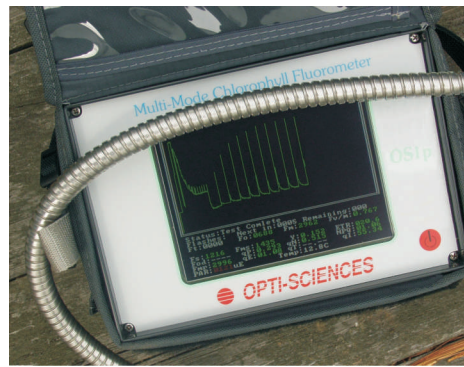
Replacing the popular OS1-FL, the OS1p represents the next generation. This research grade instrument offers a number of new enhancements including: A color graphic touch screen for simple operation, a USB port, MMC/SD data card for file transfer and storage, and additional measuring protocols for added flexibility.

In addition, OSI has developed an innovative PAR clip for use with the OS1p that exceeds previous industry designs. The OSI PAR Clip includes a cosine corrected PAR sensor that is located to provide measurement of ambient light irradiation or internal actinic LED irradiation. Calibrations are made for sensor location and light source type. It also includes a solid state thermistor for more sensitive and reliable leaf temperature readings.

The mechanical design of the PAR Clip is also unique. This PAR clip is designed for one handed operation and it will not open at inappropriate times.



Yield and ETR measuring screen
Y is Yield $\Delta F/F_m'$ and Fms is F_m'



OS1p showing touch screen



Optional - Standard PAR Clip mounted on articulating arm stand for lab work.

Chlorophyll fluorescence is the method of choice for measuring most types of plant stress and monitoring plant health. The reasons for this are simple. Fluorometers are truly field portable, stress measurements only take a couple of seconds, and instrumentation is very cost effective.

An up to date compilation of papers related to plant stress measurement is available from Opti-Sciences free of charge. The compilation lists the value and limitations of the technology.

Opti-Sciences line of Chlorophyll Fluorometers are superb for field work, lab work, and even teaching. Instruments are available to meet most needs and budgets.

Parameters Measured and Protocols included

- Y:** Photosynthetic Yield (or $\Delta F/F_m'$)
- ETR:** Electron transport rate (w/optional clip)
- PAR:** Photosynthetically Active Region value (with optional PAR clip)
- T:** Leaf temperature (with optional PAR clip)
- Fv/Fm:** Photochemical efficiency of PSII
- Fo:** Minimum fluorescence
- Fm:** Maximal fluorescence
- Fv:** Variable fluorescence
- Fms (or Fm')**: Maximal fluorescence with actinic illumination
- Fs (or F):** Fluorescence under steady state condition (prior to saturation pulse)

New Parameters & Protocols

Choose Kramer lake model or Hendickson - Klughammer lake model quenching parameters at time of purchase.

- qL:** Photochemical quenching lake model (Kramer)
- Y(NPQ):** Non-photochemical quenching related to photoprotection. (Kramer equations & Klughammer equations)
- Y(NO):** Non-photochemical quenching not related to photoprotection. (Kramer equations & Klughammer equations)
- Y(II):** (Kramer equations & Klughammer equations are the same)
- NPQ:** (Klughammer only)
- Multiflash:** This is a protocol for correcting quantum photosynthetic yield and ETR under high actinic lighting conditions. It has been found that under high actinic light, it is not possible to fully saturate all PSII reaction centers with saturation pulses.
- RLC:** Rapid light curves.

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Excitation Sources:

Saturation pulse New generation white light LED with 690 nm short pass filter.
0- 11,000 μE

Modulated light Red or blue (choice at purchase) 660 nm LED with 690 nm short pass filter, or blue 450nm diode.

Actinic light source: New generation white light LED to 0- 3000 μE . 32 adjustable steps

Detection method: Pulse modulation method.

Detector & Filters: A PIN photodiode with a 700 ~ 750 nm bandpass filter.

Sampling Rate: Auto-switching from 10 to 10,000 points per second, depending on phase of test.

Test Duration: Adjustable from 2 second to 16 hours.

Storage Capacity: 1 Gigabyte of non-volatile flash memory, supporting unlimited data sets and traces

Digital Output: USB, SD/MMC data card, and RS232.

User Interface:

Display: Graphic color touch screen
Menu driven touch screen.

Power Supply: Internal 12V, rechargeable nickel metal hydride battery.

Battery Life: Up to 8 hours of continuous operation.

Dimensions: 7 in x 5.5 in x 3.25 in. or 17.8 cm, x 14 cm, 8.3 cm.

Weight: with fiber optic probe - 3 lbs or 1.36 kgs.
with fiber optic probe and PAR Clip - 3.6 lbs or 1.62 kg

To receive a free **plant stress guide** that provides and overview of the value and limitations of chlorophyll fluorescence in stress measurement contact Opti-Sciences