



Rapid Plant Stress Screening Device



- *Small handheld device*
- *Integral fibre optic probe*
- *Photochemical efficiency analysis (Fv/Fm)*
- *Integral data storage*
- *Cost effective*

Using Chlorophyll Fluorescence to analyse plant stress

Light radiation between 400nm and 700nm (PAR) is the primary energy requirement of photosynthesis. Most of the light received by a leaf is absorbed for the biochemical process. However, a small proportion of the light is re-emitted from the reaction centres at a longer wavelength. This re-emission is termed Chlorophyll Fluorescence.

Simple measurements can be made by the pre-darkening of the leaf sites followed by a short exposure to a saturating light intensity. Measuring the fluorescence intensities over time produces a Kautsky induction curve. The shape of this curve and the value of significant transient levels on the curve can be used as an indication of environmental stress damage on the photosynthetic apparatus. Classically, the most significant parameter is F_v / F_m , termed as Photochemical Efficiency. The OS30P is designed for the rapid screening of Photochemical Efficiency.

One hand operation

The battery operated OS30P, is the first chlorophyll fluorometer with a built in analysis probe, meaning that only one hand is required to operate the unit.

Lightweight leaf clips are provided for effective pre-darkening of the measurement site prior to the induction of fluorescence. These non-destructive clips are suitable for use on a wide range of plant species.

Measurements are made by introducing the analysis probe to the leaf clip. The leaf clip shutter is then withdrawn exposing the dark adapted site to a saturating excitation light source provided by a 660nm solid state source. Induced fluorescence is measured by a PIN photodiode at >700nm. Excitation intensity and experimental duration is user selectable.

A new optional detection system enables more accurate determination of F_0 and the fast kinetic region than ever before (fluorescence induction kinetics).



Rapid field screening

Designed for the rapid screening of dark adapted Fv / Fm ratios, the OS30P is the ideal choice for those researchers wanting to carry out fundamental plant stress analysis.

Standard fluorescence parameters are presented on the control unit's large liquid crystal display. Over 5,000 data sets and 32 experimental traces can be stored in the internal memory. Time and date is saved automatically. For rapid screening, measurements may be initiated and saved by a single trigger button on the underside of the unit.

The accuracy of the fluorescence data is ensured by the very high sampling rate (10 - 100,000 points per second).

Measured parameters include Fo, Fv, Fm and Fv/Fm.

Technical Specifications

Items supplied: OS30P unit with integral fluorescence probe, 10 dark adaption leaf clips, battery charger, serial cable, downloading software and instruction manual.

Measured parameters:	Fo, Fm, Fv , Fv/Fm.
Excitation source:	Solid state 660nm source. Adjustable intensity 0-4000 $\mu\text{mol m}^{-2}\text{s}^{-1}$
Detection system:	Related pulse excitation detection. Optional dual mode configuration: Pulse and continuous Hi-Rez (100KHz) - fluorescence induction kinetics.
Detectors and Filters:	A PIN photodiode with a 700 -750nm bandpass filter
Test duration:	Adjustable from 1 - 250 seconds.
Sampling rate:	Standard mode: variable from 10 to 1,000pps Hi-Rez mode: 10-100,000 pps
Digital output:	RS232 port.
Storage capacity:	Up to 5,460 data sets and 32 traces.
User interface:	Display: 128 x 64 dot LCD Keypad: Water resistant soft-touch keypad
Power supply:	Rechargeable NiMH Battery Pack
Battery life:	6-8 hours of continuous operation.
Leaf clips:	Dark adaption clip with sliding shutter.
Operating range:	5 to 45°C
Control unit dimensions:	18cm x 7cm x 6cm
Weight:	0.5 kg

