



OS-30p



Rapid Plant Stress Screening Device

A handheld device for photochemical efficiency and OJIP analysis



- ◆ Small handheld device
- ◆ Integral fibre optic probe
- ◆ Photochemical efficiency (F_v / F_m)
- ◆ OJIP analysis - **NEW**
- ◆ Graphic display
- ◆ 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 fluorescence 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.

F_v / F_m and OJIP

Classically, the most significant parameter is F_v / F_m , termed as Photochemical Efficiency. The OS-30p is designed for the rapid screening of Photochemical Efficiency.

The OS30p also provides researchers with the OJIP test transient steps. This data can be used for the detailed analysis of stress induced changes to the status and function of the photosynthesis apparatus.

Single hand operation

The battery operated OS-30p, 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 The leaf clip shutter is then withdrawn exposing the dark adapted site to a saturating excitation light source provided by a 660nm solid state source.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 $>700\text{nm}$. Excitation intensity and experimental duration is user selectable.

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



Rapid field screening

Designed for the rapid screening of dark adapted Fv / Fm ratios, the OS-30p 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, together with a graphical presentation of the Kautsky curve. 8,000 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 - 30,000 points per second). During the OJIP test sampling can be as fast as every 20µS.

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

Technical Specifications

Items supplied: OS-30p unit with integral fluorescence probe, 10 dark adaption leaf clips, battery charger, serial cable, downloading software and instruction manual.

Test Modes:	Fv / Fm, OJIP
Measured parameters:	Fo, Ft, Fm, Fv , Fv/Fm, O, J, I, P, Tm and Area over curve.
Excitation / Actinic source:	Solid state 660nm source. Saturating up to 3,000µE
Detection system:	Related pulse excitation detection with high resolution sampling mode for Kautsky induction curve recording.
Detectors and Filters:	A PIN photodiode with a 700 -750nm bandpass filter
Test duration:	Adjustable from 2 - 255 seconds.
Sampling rate:	Standard mode: variable from 10 to 30,000pps. Variable in OJIP test from 20µS
Digital output:	RS232 port.
Storage capacity:	Up to 8,000 data sets and 32 traces.
User interface:	Display: 128 x 64 dot LCD Keypad: 13 key dedicated function key pad.
Power supply:	Rechargeable NiMH Battery Pack
Battery life:	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



ADC BioScientific Ltd.
1st Floor Charles House
Furlong Way
Great Amwell
Herts. SG12 9TA
UK
Tel: +44 (0)1920 487901 Fax: +44 (0)1920 466289
sales@adc.co.uk www.adc.co.uk