

# Fv/Fm Meter



## A compact and affordable Fv/Fm meter for dark adapted measurements

Fv/Fm is a test that allows the measurement of the maximum potential quantum efficiency of Photosystem II if all capable reaction centres are open.



- Accurate and reliable performance
- Rapid measurement of large populations
- Lightweight, ergonomic design
- Lightweight dark adaption clips
- Graphic Fv/Fm trace display
- 2Gb of on-board memory
- USB output

### Compact, yet accurate

Weighing less than 0.5kg, the Fv/Fm meter is a lightweight, hand-held fluorometer for the rapid measurement of quantum efficiency of PSII. The Fv/Fm meter follows established and proven scientific principles to provide the user with accurate plant stress measurements.

The biggest advantage of Fv/Fm is that it allows comparison of samples that have been dark adapted to the same known state. This is particularly useful in areas where samples are subjected to a rapidly changing light environment, like understory plants, leaves lower down the canopy or on a windy day, when leaf angle to the sun may be changing.

For error free measurements, the modulated light intensity must be high enough for the instrument to detect the fluorescence from the leaf, initiated by the low modulated light intensity, but not high enough to drive photosynthesis. The Fv/Fm meter automatically optimises both the fluorescence intensity and the detector gain for best results.

### Rapid measurement

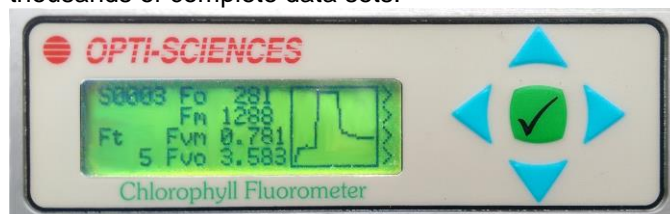
10 white, lightweight, UV stabilised, dark adaption clips are supplied with the system. The sample needs to be dark adapted prior to measurement. Dark adaption times will vary depending on light history, but 20-35 minutes is typically used.

Once dark adapted, the measurements of Fv/Fm can be made in under 2 seconds. For measuring large populations researchers will use hundreds of dark adaption clips to pre-darken their plants prior to measurement.

*For more information on dark adaption, ask for our application note.*

### Integral logging

The Fv/Fm meter is supplied with 2Gb of on-board flash memory. This memory is maintained if the battery is disconnected or runs 'flat'. The memory is capable of storing hundreds of thousands of complete data sets.



After measurement, the results are clearly displayed on the high resolution liquid crystal display. A graph of fluorescence vs time, as well as measured values for Fo, Fm, Fv/Fm, Fv/Fo, instantaneous fluorescence and sample number are displayed. The high contrast display is easily read, even in bright sunlight.



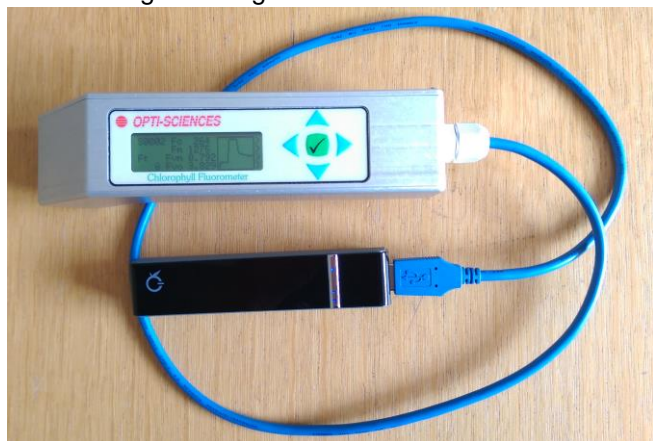


# Fv/Fm Meter



## Long battery life

The Fv/Fm meter is powered by the latest Lithium ion USB batteries. These batteries can power the Fv/Fm meter for over 8 hours on a single charge. The batteries can be recharged overnight using the supplied international USB charger. The meter can also be powered directly from the charger but the batteries will not be charged during use.



## USB

A USB plug is provided on the back of the Fv/Fm meter. When connected to a PC the Fv/Fm meter becomes a hard drive, allowing the transfer of data measuring files and software upgrades. No special software is required. Data files can simply be opened in Excel, or any other software that can receive comma delineated files.

## Carrying case



The Fv/Fm meter is supplied in a rigid, clam shell case which holds the meter, travel charger, battery, 10 dark adaption clips, charging lead and manual on a USB stick.

## Specification

**Fast measurements:** Fv/Fm, Fv/Fo, Fo, & Fm

**Lighting conditions:** Dark adapted conditions only

**Light sources:** Red LED Saturation flash array up to 6,000 umoles

**Red modulated light source:** Modulated frequency is set at the factory. The red LEDs peak at 660nm with a cut off filter at 690nm

**Sensors:** Pin Photodiode with a 700nm to 750nm band pass filter

**Storage Capacity:** 2 Gigabyte of non-volatile flash memory, supporting almost unlimited data sets

**Output:** USB comma delineated files may be opened in Excel

**User Interface:** Menu driven with arrows

**Display:** Graphic black and white display 132 x 32 pixels

**Power Supply:** 8 hour USB lithium ion battery is standard, but any USB battery can be used. Mains current may also be used. Mains plug is also supplied. Charger included

**Dimensions:** 23cm long with a USB cable that is 160cm long  
The case is 36 x 28 x 15cm – included

**Weight:**  
Fv/Fm meter w/battery & USB cable- 0.45 kg  
Complete w/case & accessories- 1.5 kg

**Operating temperature range:** 0°C to 50°C

**Tripod Thread Mount:** -¼ inch 20 thread  
(Standard 35mm camera mounts use the same thread)

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