

PLC6 (U) Automatic Universal Leaf Cuvette

For Use With The CIRAS-1 & CIRAS-2 Portable
Photosynthesis System



- **Leaf Temperature Sensor**

Ensuring accurate control and non-contact measurement of leaf temperature, our PLC6 (U) Leaf Cuvette features an IR sensor fitted at the base of the cuvette.

- **PAR Sensors**

Two miniature light sensors are located within the cuvette at the leaf surface for accurate measurement of PAR (Photosynthetically Active Radiation) in the range of 0-3,000 $\mu\text{mol m}^{-2} \text{s}^{-1}$.

- **Unique Chamber Head Design**

Inserts allow the user to customize the chamber area to meet specific applications and leaf sizes. This helps to eliminate many of the problems associated with leaf area determination, especially with odd shaped leaves. The PLC6 (U) Automatic Universal Leaf Cuvette is supplied as standard with 3 sets of inserts with window areas of 25mm x 18mm, 25mm x 7mm and 18mm diameter. Custom inserts are available within the range of 25mm x 18mm as an option.

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- **Ergonomic Leaf Cuvette**

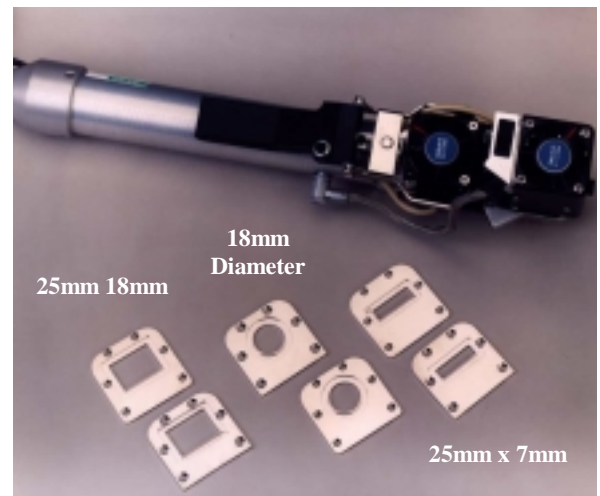
Our PLC6 (U) Leaf Cuvette is smaller and lighter, enhancing measurement. For leaf gas exchange measurements in the field, it is important to have a lightweight cuvette with easy leaf clamping mechanism.

- **Remote Record Switch**

Recording can be initiated by simply pressing the record button conveniently located on the cuvette handle. Alternatively, measurements may be recorded from the CIRAS-2 main console.

- **Ambient Measurements**

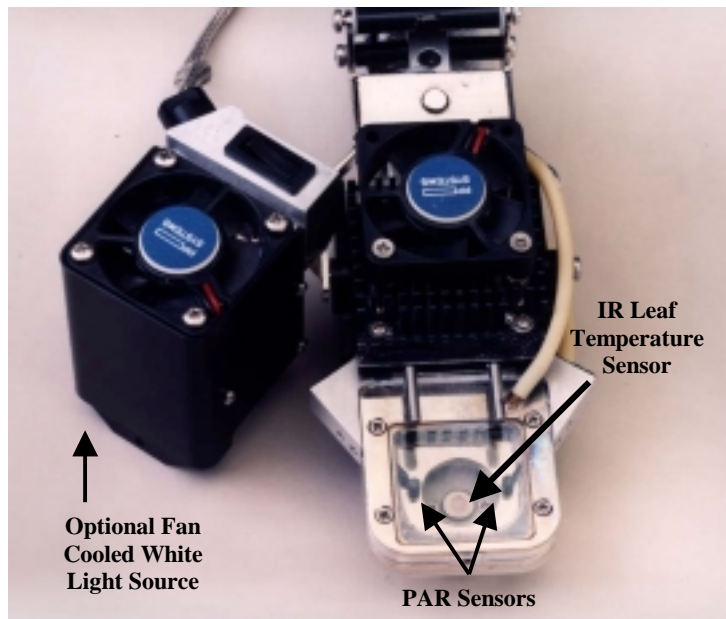
The PLC6 (U) can be easily used for ambient measurements if required. All cuvette materials are designed to couple close to ambient conditions. Temperature control can be disabled on request.



Inserts allow the user to tailor the cuvette area to meet different shaped/styles of leaves

E-Data Sheet

Independent, Automatic Control of Cuvette Temperature and Light



Automatic Temperature Control

Our leaf cuvettes offer a temperature control range that is greater than our closest competitors. Peltier elements are mounted to the cuvettes and fitted with a heat sink and fans for excellent temperature stability and control. The design of our cuvettes enable us to offer a temperature control range from approximately 10 °C below ambient up to 40 °C. A wider temperature control range allows for more data relating to leaf temperature and subsequent effects on photosynthesis.

Automatic Light Control

PP Systems offers two light sources for use with its range of leaf cuvettes featuring automatic control of light. Both light sources are typically used for generating automated light response curves in the lab or field.

Fan-Cooled White Halogen Light Source

Our optional fan-cooled, quartz halogen lamp offers excellent spectral distribution. The advantage of white light is that it offers excellent spectral distribution resulting in better estimations of leaf stomatal conductance. Our system comprises a series of filters and bulbs with automatic control of the light in the cuvette from 0-2,000 $\mu\text{mol m}^{-2} \text{s}^{-1}$. Full, automatic control is provided within the cuvette. An external power supply is required for use with this light source.

LED Light Source

An optional LED light source is also available for use with our leaf cuvettes featuring a series of red and blue LED's. LED light sources generate minimal heat and are very efficient. The CIRAS-2 can easily power the LED light source without the need for external batteries.

Technical Specification

Cuvette Materials

Components: Aluminium Alloy
Window: Glass IR interference filter or TPX
Leaf Seal: Closed cell foam gaskets.
Impeller: Stainless Steel

Window Size

PLC6 (Universal)
Insert 1: 25mm x 18mm
Insert 2: 25mm x 7mm
Insert 3: 18mm Diameter
Custom inserts are available within the 25mm x 18mm range.

Boundary Layer Resistance

0.15 - 0.32 $\text{m}^2 \text{s}^{-1} \text{mol}^{-1}$

Air Temperature Sensor

Precision Thermistor
Software linearization: +/- 0.10 °C from 0 °C - 60 °C
Accuracy: +/- 0.3 °C at 25 °C

PAR Sensor

Filtered Silicon Cell, fully cosine corrected
Response: 400 - 700 nm
Range: 0-3,000 $\mu\text{mol m}^{-2} \text{s}^{-1}$
Precision: 10 $\mu\text{mol m}^{-2} \text{s}^{-1}$

Leaf Temperature Sensor

Radiation Sensor for non-contact measurement.
Accuracy: +/- 0.3 °C at 25 °C

Temperature Control

Peltier elements are mounted to the cuvettes and fitted with a heat sink and fans.

Temperature Control Range:

10 °C below ambient up to 40 °C.

Light Control (Optional)

Fan cooled, quartz halogen light unit with excellent spectral distribution (using an external battery).

Range: 0-2,000 $\mu\text{mol m}^{-2} \text{s}^{-1}$

LED Based Light Unit (using internal CIRAS-2 batteries).

Range: 0-2,000 $\mu\text{mol m}^{-2} \text{s}^{-1}$

Cuvette Handle Dimensions (Excluding Head)

Approx. 30 mm D x 27 mm L

Typical Weight

0.750 kg.

The PLC6 (U) Can Be Adapted For Simultaneous Gas Exchange/Chlorophyll Fluorescence Measurements

