



Soil Respiration Chamber

For LCi and LCpro series portable photosynthesis systems

Also suitable for grass and fruit photosynthesis



- Accurate soil flux measurements
- Minimised pressure gradients
- Easy to fit in the field
- Insensitive to wind
- Field robust

Field soil respiration measurements

Soil respiration, or soil CO₂ flux, can be defined as the net CO₂ production from soil, primarily as a result of soil microbial biomass decomposition.

Soil flux is the largest natural source of atmospheric CO₂ and is of growing interest across an expanding range of environmental research disciplines.

High quality soil chamber design

ADC BioScientific Ltd. has developed a new high quality soil respiration chamber for use with the ADC LCi (-SD) and LCpro (-SD) portable photosynthesis systems.

The chamber comprises a low, stainless steel collar and a detachable upper compartment which connects directly to the chamber handle of either system. Differential CO₂ flux measurements are made by the highly accurate, miniaturised CO₂ IRGA, located directly adjacent to the soil chamber in the handle of the LCi-SD or LCpro-SD system.

Easy to fit

The collar is easily inserted into the soil using the tool provided, prior to measurements being made. Optimal positioning of the chamber is therefore made possible, regardless of soil condition or type.

The chamber is specifically designed for **short-term, attended measurements. Additional, specialised collars (see overleaf) may be left in the ground, making longer-term study possible.**

Minimised pressure gradients

Pressure variations in some chamber designs can lead to an artificial suppressing or enhancing of CO₂ flux from the soil. The incorporation of a novel pressure release valve ensures that there is no difference between the chamber head space pressure and the outside ambient atmospheric pressure.

Insensitive to wind

There is no change in measured data when air flows over the chamber at varying speeds and in different directions.

A soil temperature sensor is supplied as standard with each chamber. The LCi or LCpro PAR sensor can be mounted on the top of the soil chamber.

Automatic configuration

Once connected to either the LCi or LCpro, the systems can be automatically configured to measure and display soil flux data rather than photosynthesis measurements.



Spatial Distribution Studies

The availability of additional soil collars allows multiple soil flux measurements to be performed, for example on a large field site, each collar defining a separate analysis area.

These stainless steel collars can be left in the soil enabling long-term comparative studies to be performed. Alternatively, adapters are available for standard size soil waste pipes to be used as collars.



Grass Photosynthesis

The robust, transparent upper compartment ensures that a true Net CO₂ Exchange Rate is measured, taking into account any plant material on the soil surface.

The chamber may also be used to measure ambient photosynthetic activity by small plants and grasses.



Multiple-Sample Flux Studies

Specially modified stainless steel collars are available with a sealed base.

These may be used to measure multiple soil samples in a laboratory, or for fruit photosynthesis study.

Soil or fruit is placed directly inside the sealed collar. Measurements are made by fitting the upper chamber, attached to the L*Ci* or L*Cpro* handle, as normal.



Specification

Chamber construction

Collar: Stainless steel

Upper chamber: Cast Acrylic

Chamber Volume: 1L

Diameter: 130mm

Height:

Collar: 75mm

Upper chamber: 70mm

Chamber weight:

Collar: 325g

Upper chamber: 320g

Direct soil temperature: Microchip thermistor.

Range: 5°C-50°C

Precision: 1.5%

Linearised to 0.5°C

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