Product Catalogue

LICA United Technology Limited

理加联合

ES France - Département Bio-tests & Industries
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CONTENT

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PS-9000

Portable Soil Carbon Flux Automatic Measurement System

Unlock the potential of soil carbon monitoring with the PS-9000 and elevate your research to new heights!

Experience the power of precision with the PS-9000, a groundbreaking portable measurement system that revolutionizes the assessment of soil CO_2 flux through the dynamic chamber method. This innovative system seamlessly integrates control measurement, data storage, and processing capabilities, enabling you to effortlessly monitor changes in CO_2 concentration in the chamber. By leveraging additional measurements such as air temperature, barometric pressure, and soil temperature, the PS-9000 delivers accurate and insightful calculations of soil CO_2 flux.

Packed with user-centric features, the PS-9000 offers wireless operation via a handheld controller, presenting real-time data that empowers you to make informed decisions. Adjust settings with ease and access valuable information at your fingertips.

Key Benefits

- Gain confidence in your findings with reliable and verifiable flux measurements.
- With a simple, one-click interface, achieving results has never been easier.
- Its lightweight design allows for hassle-free transportation, making it the ideal companion for fieldwork.
- Low power requirements ensure you can conduct outdoor measurements all day without interruptions.
- Say goodbye to data post-processing—your results are displayed and stored instantly, saving you valuable time..

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Specifications

PS-9000 Control Unit

Measurement principle	Non-Dispersive Infrared Absorption Method(NDIR)
Measuring range	CO_2 : 0-6000 ppm H_2O : 0-60000 ppm
Accuracy	< 1% of the data reading
Repeatability / Precision	< 1 ppm
Operating temperature	- 20 ~ 60 ℃
Power requirements	< 40 W
Storage medium	SD card
Communication interface	WIFI, RS-232, SDI-12
Synchronous pump	12 V, < 0.5 A
Flow rate	3 L / min
Battery type	24 v- 8 AH lithium battery
Battery life	Not less than 5 hours(one battery)
Dimensions	37 x 30 x 16 cm
Weight	7.3 kg (including one battery)

SC-12 Soil Survey Chamber

Measuring Area	276.27 cm²
Volume of air chamber	3451.00 cm³
Cable Length	2 m
Power requirements	< 2.2 W
Dimensions	27.5 x 24.5 x 44.5 cm
Weight	3.85 kg

LI-520A Soil temperature and humidity sensor

Humidity measurement range	0-100%
Accuracy	±2%(0-50%), ±3%(51-100%)
Temperature measurement range	-30 ~ +70℃
Accuracy	±0.5℃
Communication mode	SDI-12
Cable Length	2 m

Shenyang Institute of Applied Ecology
Chinese Academy of Sciences

Ordering Information

PS-9000: Portable Control Unit (Including one soil temperature and humidity sensor, two lithium batteries, and chargers)

SC-12: Soil Survey Chamber

Support: Provide technical support and service for life

Manufacturer: LICA, China

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PS-9600

Portable Soil Greenhouse Gas Flux Measurement System

Main Features

- It can simultaneously measure CH_4, CO_2, and H_2O, with high precision.
- The analyzer utilizes CRDS laser spectroscopy technology with a ppb-level precision.
- No computer is required; the mobile phone APP can display and control the operation.
- Simple operation, one-click to obtain accurate measurement results.
- The results are directly displayed and stored, without the need for post-data processing.
- Lithium battery DC power supply, the device is lightweight and suitable for outdoor use.
- Humanized shoulder strap design, easy to carry and operate, reducing the burden.
- Provides continuous concentration and flux observation to meet research needs.
- Energy consumption is 35w.

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Introduction

Soil is an essential source of greenhouse gases. Accurately measuring soil greenhouse gas flux is a crucial technology for studying global atmospheric environment and ecosystem changes, and it is also a necessary means to achieve the "dual carbon" goal. The PS-9600 portable soil greenhouse gas flux measurement system can measure the flux of greenhouse gases such as soil CO_2 and CH4, helping to achieve the goal of carbon neutrality.

Specification

Greenhouse Gas Analyzer

- Precision(1δ, 10 sec / 100 sec) :

CH_4	≤1.2ppb / 0.6ppb
CO_2	≤200ppb / 150ppb
H_2O	≤65ppm / 40ppm

- Measurement Range :

CH_4	0-100ppm Linearity: R^2≥0.9998
CO_2	0-10000ppm Linearity: R^2≥0.9999
H_2O	0-3% Linearity: R^2≥0.999

- Operation Condition :

Operation Temperature	-20℃-50℃

- Size and Weight :

Size	55.38x35.5x19 cm
Weight	8kg

PS-9600 Console

Data Storage	SD Card
Interface	RS-232 / SDI-12 / WIFI

SC-12 Portable Soil Flux Chamber

Size	27.5x24.5x44.5 cm
Measurement Area	276.27 （cm² ）
Cable Length	2m
Chamber Switching Speed	≤10 s
Air Temperature and Humidity Sensor	
Measurement Range:-25℃ - 85℃	
Measurement Precision:±0.2℃	
Weight	4.05 kg

Ordering Information

1. PS-9600: Console (Including power adapter, SD card, two lithium batteries, charger, etc. ）
2. SC-12: Portable Automatic Soil Flux Chamber

Support: Provide technical support and service for life

Manufacturer: LICA, China

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SF-9000

Multi-Channel Soil Carbon Flux Automatic Measurement System

Unlock the potential of soil carbon monitoring with the SF-9000 and elevate your research to new heights!

The SF-9000 Multi-Channel Soil Carbon Flux Automatic Measuring System, manufactured by LICA in China, is capable of measuring soil CO_2 flux at various locations, enabling continuous and long-term monitoring of soil carbon flux. The SF-9000 can operate with up to 18 soil chambers and is also suitable for studying CO_2 and water vapor profiles.

Main Features

- The control system supports the connection of up to 18 soil chambers, making it ideal for experimental designs that require multiple repetitions and processes.
- It allows for long-term field monitoring without the need for human supervision, facilitating continuous, high-precision, and automatic unattended monitoring.
- The system automatically calculates gas flux without the need for post-processing of data. Each chamber can be equipped with additional sensors, such as those for measuring soil temperature and moisture.
- The system is lightweight, energy-efficient, and built for durability.
- The storage medium utilized is an SD card.

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Specifications

SF-9000

Measurement principle	Non-Dispersive Infrared Absorption Method (NDIR)
Measuring range	CO_2 : 0-6000 ppm H_2O : 0-60000 ppm
Accuracy	< 1% of the data reading
Repeatability / Precision	< 1 ppm
Operating temperature	- 20 ~ 60 ℃
Number of chambers	9 or 18
Storage medium	SD card
Communication interface	RS-232 / RS-485 / SDI-12
Synchronous pump	4.2 L / min
Display	5-inch LCD touch screen
Operating Range	Temperature : - 20 ~ 60 ℃ Humidity : 0 ~ 95% RH (Non-condensing)
Dimensions	51 x 40 x 19 cm
Weight	14.1 kg

SC-22 Automatic Long-term Soil Chamber

Measuring area	276.27 (cm^2)
Volume of air chamber	3243.8 (cm^3)
Cable length	15 m
Operating temperature	- 20 ~ 60℃
Barometric pressure detection	Measurement range: 15 ~ 115 kPa Measurement accuracy: ± 1.5%
Temperature detection	Measurement range: - 25 ~ 85℃ Measurement accuracy: ± 0.5℃
Dimensions	55 x 28 x 32 cm
Weight	8.55 kg

LI-520A Soil Temperature and Humidity Sensor

Humidity measurement range	0-100%
Accuracy	±2%(0-50%) ±3%(51-100%)
Temperature measurement range	-30 ~ +70℃
Accuracy	±0.5℃
Communication mode	SDI-12
Cable Length	2 m

Ordering Information

SF-9000-09: Multi-Channel Soil Carbon Flux Automatic Measurement System
Including CO_2 and H_2O analyzer, 9 channels, LCD screen, 1 adapter, 1 DC cable.
SF-9000-18: Multi-Channel Soil Carbon Flux Automatic Measuring System
Including CO_2 and H_2O analyzer, 18 channels, LCD screen, 1 adapter, 1 DC cable.
SC-22: Automatic Long-term Soil Chamber

Support: Provide technical support and service for life
Manufacturer: LICA, China

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SF-3500

Series Multi-channel Soil Gas Flux Measurement System

To address the spatiotemporal variability of soil gas flux, LICA has developed a new multi-channel, automatic soil gas flux measurement system, the SF-3500. The SF-3500 can be connected to various greenhouse gas analyzers and stable isotope analyzers to measure the fluxes of multiple gases in soil. It can also enable the sequential switching of multiple flux chambers for measurement, allowing for long-term and continuous monitoring of multi-point soil gas flux.It can connect numerous analyzers to measure multi-parameter flux synchronously, thereby reducing the system error associated with multi-system measurements. In addition, an LCD touchscreen and an Android mobile phone app are added for control and display, eliminating the need for computer settings and a separate display. The SF-3500 remote control and data transmission functions make instrument maintenance easier and simpler, making it more suitable for long-term field measurements. After long-term testing and verification, the SF-3500 demonstrates improved accuracy and stability, making it an ideal choice for prolonged field use.

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Soil Flux Monitoring of Forest Ecosystem

Greater Khingan RangeNational Forest Ecological Soil Flux Measurement System

Dinghushan National Wild Ecological Station, Chinese Academy of Sciences, soil $CH_4/CO_2/N_2O$ Flux Monitoring

Changbai Mountain National Field Ecological Station Chinese Academy of Sciences Soil $CH_4/CO_2/N_2O$ Flux Monitoring

Banna Botanical Garden Chinese Academy of Science

Shenyang Applied Ecology Institute Soil NO_X Flux System

Soil Flux Monitoring of Grassland Ecosystem

Institute of Geographic Sciences and Natural Resources, Chinese Academy of Sciences, Hong-Yuan Field Ecological Station, $N_2O/CO_2/CH_4$ Soil Flux Monitoring

Ergun Ecological Station, Shenyang Institute of Ecology

ZoigeWetland Ecosystem by Wetland Research Institute Chinese Academy of Forestry $CH_4/CO_2/H_2O$ Soil Flux System

Chengdu Institute of Mountain Hazards and Environment, CAS Soil CO_2/CH_4 Flux System

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Main Features

- It can be used in conjunction with various gas analyzers. In addition to CO_2, it can also measure gas fluxes such as N_2O, CH_4, and NH_3, as well as isotope gas fluxes like $^{13}CO_2$,$^{12}C18O^{16}O$, and $^{15}N^{14}NO$.
- It can simultaneously connect multiple types of analyzers to perform multi-parameter flux synchronous measurements, thereby eliminating errors in multi-system measurement systems.
- LCD touch screen, Android mobile phone APP control and display, no computer required.
- Automatically calculate gas flux, no need for post-data processing.
- Remote control and data transmission functions make instrument maintenance easier and simpler, and more suitable for long-term field measurements.

Specification

SF-3500 Multiplexer

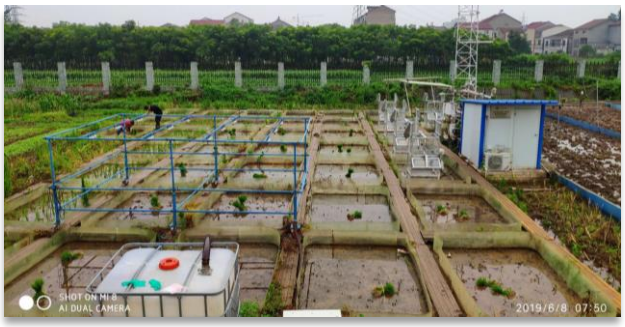
Number of Chamber Interfaces	9 or 18
Storage Media	SD Card
Communication Interface	Bluetooth, WIFI
Operation Condition	Temperature -20~45℃ Humidity: 0~95% RH (No condensation)

SC-22 Automated Soil Flux ChamberSize

Measurement Area	298.5 （cm^2）
Fixed volume of air chamber	3341 （cm^3）
Cable length	1.5m
Pump	3.5L/min
Operation temperature	-20~45℃
Air pressure	Measurement range: 15~115kPa Measurement accuracy: ±1.5%
Temperature	Measurement range: -25~85℃ Measurement accuracy: ±0.5℃
Dimensions	245 mm (L) x 245 mm (W) x 590 mm (H)

Soil flux monitoring in farmland ecosystems

Experimental Site of Nanjing Agricultural University CO_2, CH_4, N_2O Assimilation Chamber Flux System



Hubei Experiment Site of Peking University CO_2、CH_4、N_2O Assimilation Chamber Flux System

Ordering Information

SF-3500

Support: Provide technical support and service for life

Manufacturer: LICA, China

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LI-2100

Automatic vacuum condensation extraction system

LI-2100 is a fully automatic vacuum condensation extraction system independently developed by LICA and has passed CE certification. It fundamentally solves the problem of water extraction from plants and soil, overcoming the complexity of traditional liquid nitrogen cooling. Not only does it prevent isotope fractionation, but it is also safe and efficient, and will not damage plants and soil. It can be used in conjunction with a water isotope analyzer and a mass spectrometer.

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Question

Hydrogen and oxygen stable isotopes in different water bodies can be used to study the sources of plant water use, water vapor transport, soil water migration and recharge mechanisms, recharge sources and groundwater dynamics, water evaporation, the distinction between plant transpiration and soil evaporation, runoff formation and convergence, and the reconstruction of paleoclimate. Therefore, it has attracted widespread attention from hydrologists, ecologists, and climatologists. But the question is: How to extract the water in the plant xylem and soil without fractionation before conducting water stable isotope testing?

Features

- Using the traditional classic vacuum distillation freezing method, the data is reliable.
- No liquid nitrogen required: compressor refrigeration improves safety.
- Fast and efficient: 14 samples can be extracted at the same time.
- Fully automatic extraction: unattended operation throughout the process.
- Safe and convenient: self-power off and self-protection functions.
- Quality control: fault prompt and automatic alarm.
- Patented technology.
- Hydrogen and oxygen stable isotope pretreatment.

Specification

Extraction speed	>110 samples/day
Number of samples that can be extracted simultaneously	14
System vacuum	<1000 Pa
System leakage rate	<1 Pa/s
Extraction rate	>98%
Recovery rate	99%-101%
Vacuum pump	5 L/min, 24 V, maximum pressure 5mbar
Refrigeration	No liquid nitrogen required with a cold trap, the lowest temperature is 95℃
Heating	Electromagnetic heating, the highest heating temperature can reach 130℃
Display and operation	TFT LCD (7 inches) touch-type
High Temperature Automatic Protection	
Automatic alarm	Refrigeration system fault prompt alarm, and vacuum leakage fault alarm
Dimensions	90 cm (H)×74 cm (W)×110 cm (D)
Weight	120 Kg

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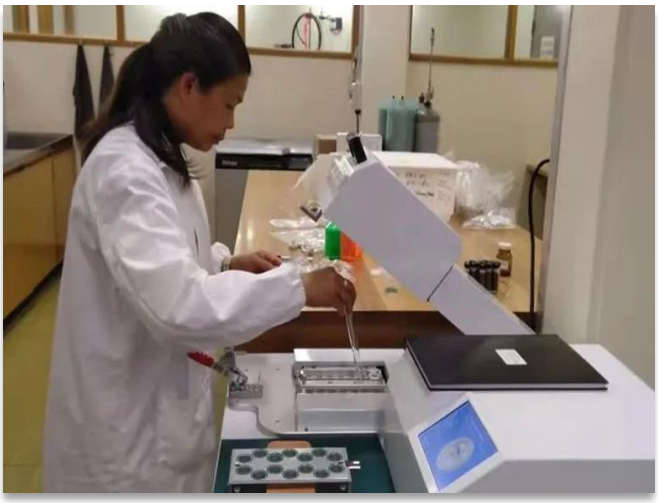
LI-2100

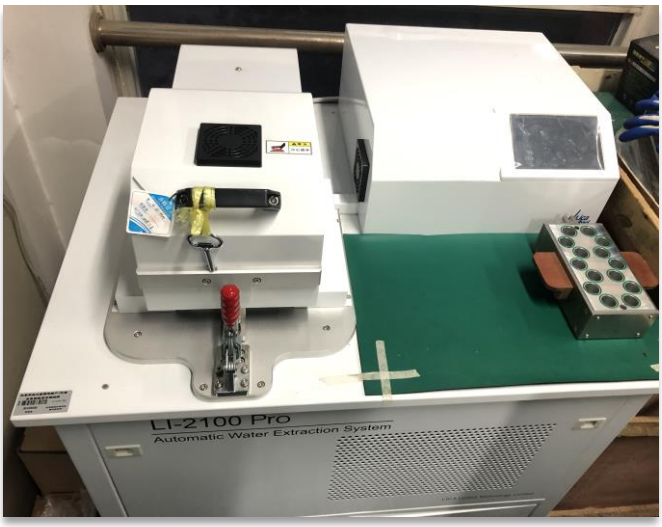
The equipment adopts the principle of ultra-low-pressure vacuum distillation and freezing. The water in the sample is heated and distilled in an ultra-low-pressure environment, and condensed and collected in a low-temperature environment, thereby realizing the extraction of water without fractionation. The system is mainly composed of an ultra-low-pressure system, a heating system, a freezing system, and a control system. The entire process is automatically completed under the control system's monitoring.

Since its development and production, LI-2100 has sold nearly 200 units in China. Domestic scientific researchers have published many papers using this instrument, which has received many favorable comments from users. With the widespread application of the LI-2100 in China and the publication of numerous papers, some foreign scientists have also begun to pay attention to the LI-2100, developed and produced by LICA. This has actively promoted the product overseas, paving the way for the LI-2100 to gain international recognition.

Brazil Space Academy



Flinders University, Australia



Beijing Forestry University

Institute of Forest Ecology, Environment and Protection, Chinese Academy of Forestry

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LI-2100

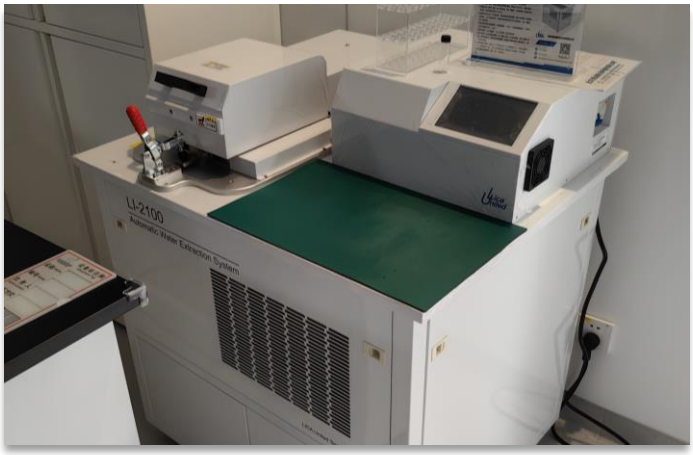
Harbin Normal University

Xinjiang University

Shenyang Meteorological Bureau
Panjin Wetland Ecological Station

Guangxi Botanical Park

College of Resources and Environmental Engineering,
Guizhou University



The Hong Kong University of Science and
Technology (Guangzhou)

Ordering Information

LI-2100

Support: Provide technical support and service for life

Manufacturer: LICA, China

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