CAMPBELL SCIENTIFIC®
WHEN MEASUREMENTS MATTER

eosFD
Soil CO2 Flux Sensor

Direct Flux Measurements

Requires only a minimal power source

Overview

The eosFD, manufactured by Eosense, uses the patented Forced Diffusion (FD) technology to measure soil CO_2 flux directly using an NDIR sensor and small internal diaphragm pump. It features onboard data logging capabilities that enable it to be a stand-alone sensor; however, it can also deliver analog or serial data to Campbell Scientific data loggers. This sensor compliments a Campbell Scientific eddy-covariance system. The included eosLink software enables you to connect, configure, and collect data directly from the sensor.

Benefits and Features

- Zero spatial constraints
- Truly portable
- High temporal resolution
- Weatherproof
- Onboard data logger
- Serial/analog data logger compatibility
- Low power
- No external moving parts
- Seamless integration with EasyFlux® DL
- Real-time data monitoring with EasyFlux® Web

Detailed Description

The eosFD is a stand-alone soil CO_2 flux sensor containing a single NDIR sensor, an internal data logger, and a small diaphragm pump. The eosFD uses Eosense's patented Forced Diffusion technology to measure soil CO_2 flux directly.

Traditionally, gas fluxes from the soil surface are measured using closed chambers systems, with these "accumulation chambers" trapping gas during the measurement period. Forced Diffusion is a membrane-based steady-state approach for measuring gas flux that establishes an equilibrium between gas flowing into the chamber and gas flowing out of the chamber through the membrane, without any external chamber movement.

By carefully characterizing the diffusive properties of the membrane used in the instruments, the eosFD chamber gas concentration can be correlated directly to the gas flux rate. Essentially, the amount by which this membrane limits the flow of gas out of the chamber is known, and thus, by comparing the internal concentration to that outside the instrument, the flux rate can be calculated. Unlike other automated chambers that lift and lower onto the soil surface,

the Forced Diffusion approach does not require external moving parts, allowing it to be deployed in the harshest climates for extended periods without intervention.

Specifications

Operating Temperature Range	-20° to +50°C (-4° to +122°F)
Operating Power	< 1.6 W (average)
Operating Voltage	12 Vdc
Analog Output	0 to 5 Vdc
Data Capacity	65,000 measurements
Measurement Rate	5 min to 1 day (user specified)
Flux Range	0 to 20 µmol//m^2/s
Flux Resolution	< 0.2 µmol/m^2/s
Dimensions	10.2 x 25 cm (4 x 9.8 in.)
Weight	1.6 kg (3.5 lb)

For comprehensive details, visit: www.campbellsci.com/eosfd

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