

FES-C (XCO₂ Measurement System)



Outline

FES-C is a compact system designed to measure the atmospheric column-averaged volume mixing ratio of carbon dioxide (XCO₂) using the near-infrared region interferometer. Direct sunlight that contains spectral information on the XCO₂ is collected by a small fiber collimator installed on the portable sun tracker and then transmitted through a small optical fiber to the narrow-band near infrared interferometer and finally to the data acquisition system. The interferometer accurately measures the absorption of CO₂ in the near infrared region, enabling the calculation of atmospheric XCO₂.

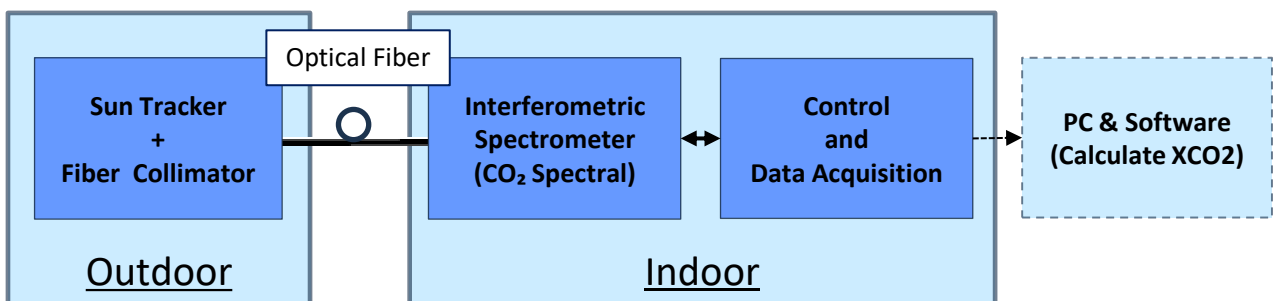
Features

- Low cost
- Observation during slightly sunny condition
- All-weather outdoor automation
- Easy installation
- Stable operation during zenith passage
- Compact and portable for easy transport

Applications

- Data Source for simulation model of CO₂ transfer
- Reference system for GHG monitoring satellite
- CO₂ Monitoring equipment for GAW (Global Atmosphere Watch) / WMO

Block Diagram



Functions

- ◆ By utilizing direct sunlight spectroscopic observation technology, optical fiber technology, and narrow-band interference filters, the greenhouse gas XCO₂ can be observed at low cost and in a short time, enabling measurements to be taken during a slightly sunny condition even in cloudy tropical regions. (Another cloud-based software is required to calculate XCO₂ from CO₂ absorption.)
- ◆ The equatorial mount's structure enables continuous and stable sun tracking even where the sun passes through the zenith. Its waterproof, all-weather outdoor design allows for autonomous, unmanned operation and continuous monitoring. No special enclosures are required, even in rainy weather, making it safe for use in tropical (equatorial) regions.
- ◆ Its compact size, which fits into a carry case, makes it easy to transport to the site. No special construction or complicated installation is required. With a built-in GPS receiver and 2D sun sensor, the sun tracker can be easily installed by roughly aligning the horizontal and azimuth axes.

Specification

Interferometer Wavelength	Near-infrared, 1550 nm band
Beam Divergence Angle	Below 0.05°
Motor Control Step Angle	0.0072°
Interface	Ethernet
Power Supply Voltage	88–132 VAC / 176–264 VAC, 47–63 Hz
Other	Built-in GPS sensor

CAUTION

- For safe and correct usage, please read the "Operation Manual" prior to the use of the products.
- The specifications and appearances might be changed without prior notice, which please understand.
- The specifications shown in the catalog are of our standard products. We are pleased to customize it to meet customer's requirements. For the details, please contact us.
- Please understand in advance that our company cannot assume the responsibility of any claims made by the third party about any monetary damages or any loss of profits arising out from the use of our products.
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