

CO₂ Ambient CO₂ Monitor



Features

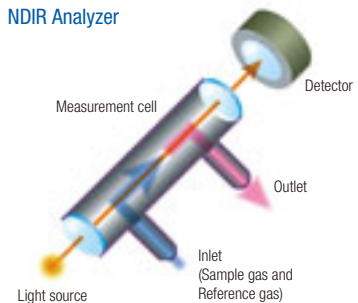
- The Ambient CO₂ Monitor continuously measures CO₂ and provides high precision and accuracy in long term measurement with exceptionally low drift by a combination of cross flow modulation, and infrared-absorption technology.
- Cross flow modulation and infrared absorption technology eliminates the need for adjustment by optical alignment.
- Use of AS type (AntiShock) interference-compensation detector and a purified reference gas eliminates interference from other elements resulting in high accuracy measurement.

Principle

Cross flow modulation, Infrared (NDIR) absorption technology

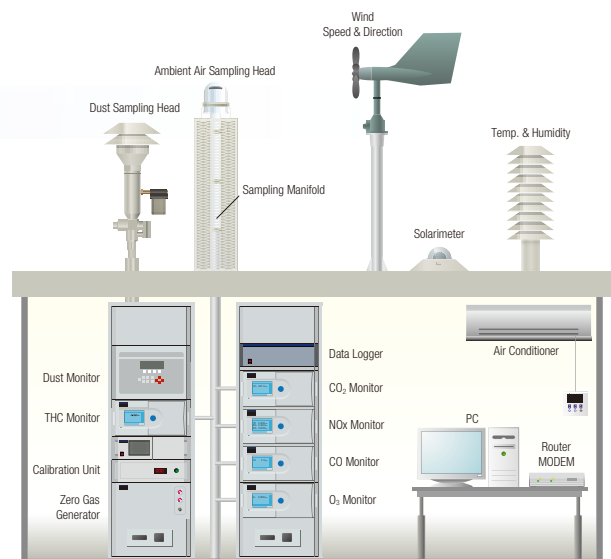
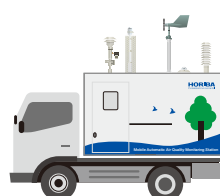
Conventional technology uses an optical chopper and dual cells to obtain modulation signals. Instead, the Ambient CO₂ Monitor uses cross flow modulation which simply consists of solenoid valve, an infrared beam, the cell and the detector. During measurement, a solenoid valve alternately directs the sample gas and the reference gas to the cell within the analyzer. The use of one cell and one light source for both sample and reference gas allows precise measurement without generation of zero-drift.

Cross-Flow Modulation NDIR Analyzer



Applications

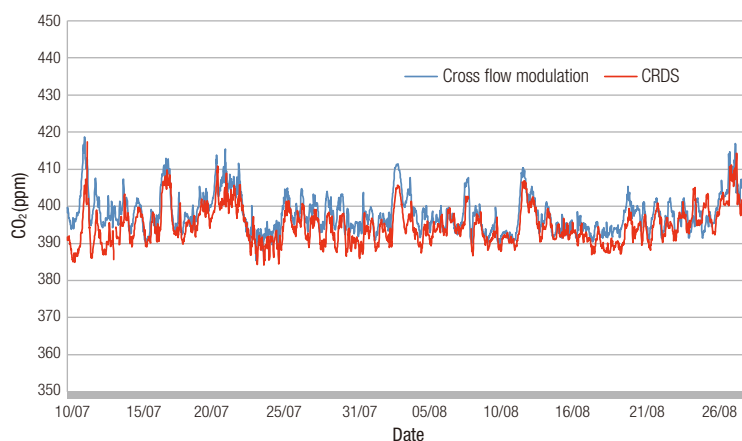
- Ambient air quality monitoring
- Greenhouse gas (GHG) research
- Vegetable factory
- Mobile and fixed monitoring stations



Example of Air Quality Monitoring Station (AQMS)

Comparison of technologies

Cross flow modulation NDIR technology is not affected by fluctuating ambient temperature and performs high sensitivity measurement in both laboratory conditions and in the field. Cavity Ring-Down Spectroscopy (CRDS) technology is easily influenced by ambient temperature fluctuations and requires well-prepared laboratory conditions. Cross flow modulation provides comparable results with CRDS and also provides consistent results under laboratory conditions as well as severe field conditions.



Cross flow modulation and CRDS correlation

Specifications

Model	Ambient CO ₂ Monitor
Measurement target	Carbon dioxide (CO ₂) in ambient air
Measuring principle	Cross modulation type non-dispersive infrared absorption method
Range	0 ppm to 500/1000 ppm
Minimum detection sensitivity	0.1 ppm (3σ)
Reproducibility (repeating accuracy)	±1.0% of the full scale
Linearity (readout error)	±1.0% of the full scale
Zero drift	±1.0% of the full scale/day or ±0.1 ppm/day (whichever is larger) ±2.0% of the full scale/week or ±0.2 ppm/week (whichever is larger) (ambient temperature change: within 5°C)
Span drift	±2.0% of the full scale/day ±3.0% of the full scale/week (ambient temperature change: within 5°C)
Response rate	60 sec or shorter (T ₉₀ from the inlet)
Sample collection rate	Approximately 1.5 L/min Flow rate of calibration gas: Approximately 2.5 L/min
Display	Measured value, alarm, time, alarm history, calibration history, etc.
Alarms	Zero calibration, Span calibration, etc.



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