

CO₂-ProTM Atmosphere

Features

- Measurement of pCO₂ in both air and surface water simultaneously
- Patented tubular interface provides unmatched biofouling resistance
- High accuracy, long-term stability
- Easy integration into buoy and shipboard systems
- Real-time data output; no post-processing
- Internal data logger and controller with 2GB flash memory

pCO₂ Sensor Applications

- Surface CO₂ flux studies
- Long-term ocean pCO₂ monitoring
- Open ocean studies
- Coastal zone CO₂ fluxes

CO₂-ProTM Atmosphere pCO₂ Sensor

The CO₂-ProTM Atmosphere instrument measures the partial pressure of CO₂ gas in both surface water and air. An internal zeroing feature provides drift correction for stable and accurate long-term measurements.

Designed for use on buoys, the rugged unit is comprised of a CO₂-ProTM that mounts under the buoy for water measurement connected to a NEMA box that is used to take in air from above the buoy. Alternating measurements of pCO₂ in air and water provide accurate data for reliable surface flux calculations. The instrument is well-suited for integration into shipboard flow-through systems.

Sensors are calibrated using WMO traceable standards. Measurement of gas pressure and humidity along with stabilized detector temperature provides accuracy unparalleled by small submersible pCO₂ sensors.

The CO₂-ProTM Atmosphere was chosen as the air-sea pCO₂ instrumentation for the Coastal and Global Scale Nodes component of the US OOI, Ocean Observatories Initiative.



Right:

The CO₂-ProTM Atmosphere mounted to a surface buoy tower constructed by RDSEA International. Signal integration was completed by Down East Instrumentation. Photo courtesy of Rick Cole, RDSEA.



CO₂-ProTM Atmosphere

Sensor Specifications

Sensor Performance

Accuracy	±0.5%
Resolution	0.01 ppm
Zero drift	automatic zero compensation
Equilibration time (t_{63})	water: 2.5 min air: 5 sec
Standard ranges (alternate ranges available)	0 - 600 ppm 0 - 1000 ppm 0 - 2000 ppm

Physical

CO₂-ProTM Submersible:

Length	33 cm (13 in)
Diameter	19 cm (7.5 in)
Weight	Air: 6.6 kg (14.5 lbs) Water: -0.5 kg (-1.1 lbs)
Housing	Acetal Plastic
Depth	5 m
Water Temperature	0° to 30° C (Standard) -2° to 20° C (Arctic) 15° to 40° C (Tropical)

Air-side NEMA Enclosure:

Size	30 x 30 x 10 cm
5 meters tubing for connection to water-side CO ₂ -Pro TM	

Electrical

Input voltage	10-18 VDC
Power consumption	4W (12W during warmup, includes SBE 3K pump)
Data output	RS-232, ASCII format 0-5 V or 4-20mA
Sample rate	1 second (user selectable with datalogger/controller)

Optional Accessories

Seabird water pump

Reduces biofouling and improves response rate

External battery pack

76, 134, or 268 Amp-hour capacity

Buoy mounting brackets



CO₂-ProTM Atmosphere
NEMA box.

