

OceanXpert-Lab IR-CO₂

Precise, mobile flow-through pCO₂ Analyzer



LI-COR
Biosciences **inside**



Vendée Globe round the world: data processed by Max-Planck-Institute for Meteorology and GEOMAR

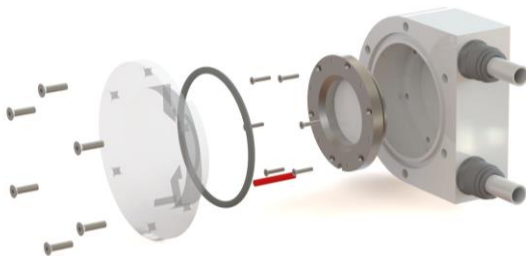
- ▶ High precision
- ▶ Auto calibration
- ▶ Low maintenance
- ▶ SOCAT database ready
- ▶ Premium LI-COR® analyzer
- ▶ Simple touch-screen operation
- ▶ Robust against sediments, fouling, shock & vibration
- ▶ Expandable with additional oceanographic or meteo sensors
- ▶ Optional Top-Box for atmospheric-CO₂ and GPS georeferencing
- ▶ Operates standalone or integrated in OceanPack™ underway system

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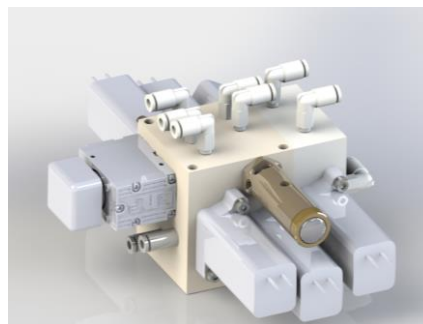


Features & Benefits:

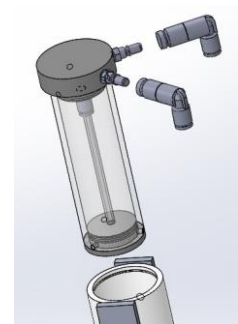
- It's a LI-COR® : highest accuracy due to automatic temperature, pressure and H₂O compensation
- Dual-wavelength NDIR detector
- Robust, versatile and compact 19" housing for Lab and Vessel applications
- Easy to operate and maintain with intuitive design. Just Plug & Play
- High stability with auto calibration, including standard offset zeroing; automatic or manual span gas calibration – low maintenance costs
- High quality data with only one external span gas: reduce size, weight and effort for operation and maintenance
- Patented robust flat-membrane-equilibrator cassette – lifetime 10+ years
- 7" touch-screen allows real-time data view, calibration support and easy configuration
- Real-time data interface NMEA-0183: simple ASCII protocol, configurable to your needs
- Data recording on internal SD card, standard ASCII NMEA-0183 data format (can be processed with any standard software); download data via USB port
- Internal data logger allows easy integration of additional sensors: CTD/TSG, Oxygen, Fluorometer, Turbidity, Nutrient Analysers, pH, etc.
- Analog output or serial interface (optically isolated) for simple integration into existing systems
- 12...32V DC or 100...240V AC power supply
- Expandable through external modules via RS-485 MODBUS, e.g. for meteorological sensors
- Optional GPS georeferencing for all data and position event control
- Optional online telemetry data transfer and alarm services



Flat-silicone-membrane equilibrator with cassette system (patent pending).



Highly optimized auto-calibration unit with special developed micro gas valves pump.



Internal Zero-filter, simple exchange with quick-lock fittings



Specifications	
Sensor Principle	High performance LI-COR® LI-850x analyzer – exclusively produced by LI-COR Biosciences for SubCtech • Dual-wavelength NDIR detector for CO ₂ and H ₂ O • Silicone flat membrane equilibrator
Range	Standard 0...3000 ppm CO ₂ • up to 20.000 ppm CO ₂ • 0...60 ppt H ₂ O • Units selectable
Resolution	0.1 ppm CO ₂ • 0.001 ppt H ₂ O
Accuracy	Correction for water vapour, pressure and temperature effects • Overall accuracy < 0.5 %
Sample Rate	Output rate typ. 1 Hz with optional averaging • User configurable • Storage rate configurable
Air CO2	Optional • Automatic analysis on programmed intervals
Factory Calibration	Internally stored coefficients • CO ₂ factory calibration with 15 traceable gases to WMO standards • H ₂ O calibration with NIST traceable LI-610 portable dew point generator
User Calibration	Automatic offset correction on programmed intervals • Zeroing reference included for >1 year operation time • Manual or automatic span gas calibration
Temperature	Operating temperature range 0 to +40°C • Optional heater for -20 to +40°C
Analogue Output	Optional • 0...5V / 0...2.5V or 4...20mA • CO ₂ and H ₂ O • Range can be adjusted
Data Interface	RS-232 (RS-485 optional) • simple ASCII NMEA-0183 • Easy integration into existing systems
Data Storage	Internal 8GB SD card • Storage capacity approx. 5 years (depending on sample rate)
External Sensors	GPS • CTD • Meteorological instrumentation • Oceanographic sensors
Analogue Input	Optional 16 Bit data acquisition 0/4-20 mA, ±10V etc.
Housing	19" industrial rack housing • Splash protected • Size 445 x 135 x 400 mm W x H x D • Weight 10 kg
Power	12...32 VDC or 100...240 VAC, 50/60Hz • Typ. 20W operating • Max. 50W warming up
Water Supply	Flow rate typ. 3-15 l/min • Max. water pressure 3 Bar
Accessories	External datalogger • External sensors or analyzers • Intake for air CO ₂ • Debubbler • Self-cleaning unit
Service	Recalibration & Service recommended every 12 months • Membrane lifetime up to 10 years • Operating time for 24/7 usage typ. 1 year before service (internal micro pump, zero filter)



Accessories



Optional Extender to connect up to 6 external gases. Each input consists of SWAGELOK connector, manual flow regulator and stainless steel tube to the analyser.

Examples



OceanPack™ RACK $p\text{CO}_2$ underway system with additional sensors, debubbler, automatic cleaning and the nutrient analysing system in a second rack.



Additional "Top-Box" with independent Air- CO_2 analyzer, GPS and interfaces to meteo sensors. Simple data interface to the OceanPack™ system.



OceanPack CUBE® (left) for small vessels and mobile applications; additional air-intake box. OceanPack RACE® (right) for sailing yachts. Additional sensors such as CTD, DO etc. can be built into the debubbler. GPS georeferencing and data transmission are available. Even with the small systems, CO_2 is automatically calibrated according to SOCAT standards with reference gases.

