



OceanPack™ Family

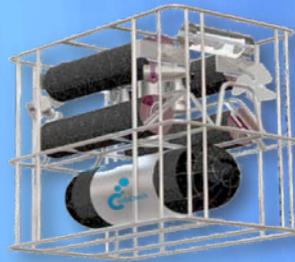
Mobile & modular
*p*CO₂ Analyzer & Underway Systems

for

Water Quality Measurements

Monitoring & Profiling

Inspection & Exploration



Made in
Germany



Water in,
↓
Measure,
↓
Water out,
THAT'S ALL



		PARAMETER	DESIGN
<p>OCEANPACK AUMS</p> <p>Autonomous Underway Measurement System for vessels and monitoring stations</p>		<p>$p\text{CO}_2$ and any type and number of internal or external sensors (examples see "Additional Devices")</p> <p>Nutrients (extra 19" rack)</p> <p>Water sampler</p> <p>Meteorology</p> <p>Air-CO_2, GPS (Top-Box)</p>	<p>Flow-through System</p> <p>Optionally:</p> <p>Racks for Nutrients or Sampler</p> <p>Top-Box for Meteorology and independent Air-CO_2 Analyzer</p> <p>Automatic cleaning</p> <p>Ship system integration</p> <p>Debubbler and sensor integration</p>
<p>OCEANPACK RACK</p> <p>Versatile measurement system for vessels and monitoring stations</p>		<p>$p\text{CO}_2$ and few internal or external sensors (examples see "Additional Devices")</p> <p>Meteorology</p> <p>Air-CO_2, GPS (Top-Box)</p>	<p>NEW "Underway" System</p> <p>19" Rack / Flow-through</p> <p>Optionally:</p> <p>Top-Box for Meteorology and independent Air-CO_2 Analyzer</p> <p>Ship system integration</p> <p>Debubbler and sensor integration</p>
<p>OCEANPACK AQUA</p> <p>AquaCulture and MariCulture monitoring and control system</p>		<p>Any parameter e.g. $p\text{CO}_2$, Nutrients, Oxygen, pH, Light, Flow, Turbidity, H_2S etc.</p>	<p>Industrial AquaCulture System</p> <p>High precision analysis for sensible products such as RAS, IMTS or contamination free fish breeding</p> <p>Flow-through or inline sensors</p>
<p>TOP-BOX MK3</p> <p>Air-CO_2 Analyzer with LI-7200x Analyzer for Air-Sea Exchange analysis</p>		<p>Air-CO_2 (MK3: LI-7200x)</p> <p>GPS</p> <p>external sensors on request e.g. Meteorology</p>	<p>High-end state-of-the-art Analyzer</p> <p>Stainless steel IP69 enclosure</p> <p>Complete remote data acquisition system</p> <p>Protected against waves</p>
<p>OCEANPACK MK2</p> <p>Mobile $p\text{CO}_2$ analyzer for extreme conditions</p>		<p>$p\text{CO}_2$ and few external sensors (examples see "Additional Devices")</p> <p>Air-CO_2, GPS (Top-Box)</p> <p>Optionally Water system with Debubbler</p>	<p>NEW Standard Analyzer</p> <p>Small footprint and extreme tough design</p> <p>Top-Box for Meteorology and independent Air-CO_2 Analyzer</p> <p>Ship system integration</p>
<p>OCEANPACK LAB</p> <p>Laboratory mobile analyzer</p>		<p>$p\text{CO}_2$</p> <p>Few external sensors can be customized connected (examples see "Additional Devices")</p>	<p>All-in-one Lab-Analyzer</p> <p>19" Unit 4HE with Touch-screen</p> <p>High precision, ultra-compact</p> <p>Top-Box for Meteorology and independent Air-CO_2 Analyzer</p>

<p>OCEANPACK BUOY</p> <p>Sea-Air Exchange Buoy Analyzer for surface monitoring</p>		<p>$p\text{CO}_2$ 4 external sensors (examples see "Additional Devices") Air-CO_2 sequentially</p> 	<p>Low-Power Buoy System POM / Titanium $\phi 200\text{mm} \times 500\text{mm}$ max. 50m operating depth High-precision LI-COR LI-840x Sea-Air Analysis No reference gas is required Li-Ion battery available</p>
<p>OCEANPACK SUB</p> <p>Subsea Analyzer for deep-sea monitoring ROV and AUV integration</p> <p>& INSPECTION ROV</p>		<p>$p\text{CO}_2$ External sensors (examples see "Additional Devices") Subsea Datalogger Leak Detection Condition Monitoring Pilot Assist System</p>	<p>First subsea LI-COR LI-840x Titanium $\phi 168\text{mm} \times 350\text{mm}$ 300, 1000 ...6000m operating depth Subsea Li-Ion battery available</p> 

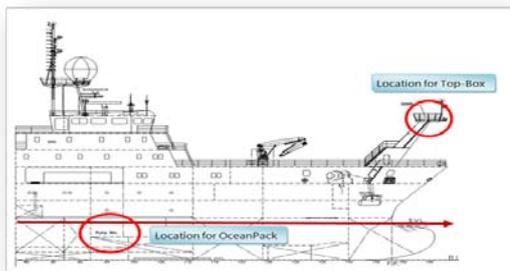
COMMON SPECIFICATION	
Sensor Principle	High-performance LI-COR [®] LI-840x (MK-2) or LI-7200x (MK-3) • exclusively produced by LI-COR [®] Biosciences for SubCtech • Dual-wavelength NDIR detector for CO_2 and H_2O
Equilibrator	Silicone flat membrane equilibrator • Lifetime >10 years • Fast response time • No sedimentation fouling • Fast exchange with membrane cassettes • Patent pending
Range	Standard 0...3000 ppm CO_2 • 0...80 ppt H_2O • up to 10% CO_2 • Selectable units
Resolution	0.01 ppm CO_2 • 0.001 ppt H_2O
Accuracy	Overall accuracy < 1% • Compensation for water vapour, pressure and temperature effects
Sample Rate	Configurable output types. 1Hz • Configurable data format
Calibration	Factory calibration with 15 traceable gases to WMO standards for CO_2 • NIST traceable LI-610 portable dew point generator for H_2O • User correction supported
Auto Calibration	Auto zeroing at programmed intervals • Zeroing reference included for >1 year operation time • Manual span and optional full auto-span gas calibration
Analogue Output	0...2.5/5V or 4...20mA • Range can be configured
Data Interface	Up to 36 RS-232 or RS-485 • Standard ASCII NMEA-0183 • Easy integration with existing systems • Optional usage of radio links, Ethernet, WLAN etc.
Additional Devices	Multitude of sensors and analyzer are supported: • SYSTEA nutrient analyzer • Water sampler • Direct geo-referencing using GPS • Sensors: Sea&Sun, Seapoint, TriOS, Turner, Franatech, bbe, RDI, Aanderaa AADI, WET Labs, Seabird, SMC, Nortek, Sonardyne, Gill etc. • Meteo. & external instrumentation via RS-485 bus
Datalogger	SmartDI [®] Touch-panel embedded industrial PC Datalogger • Multi-functional real-time kernel firmware • Reset and power failure proofed • Low-power • Automatic diagnostic messages • Watchdog • Precise real-time-clock • Redundant storage of data and configuration on 2GB CompactFlash card • Expandable via RS-485 modules for pumps, valves etc. • Optional alarms • Optional telemetry
Analogue Input	Optional 24 Bit data acquisition • 0/4...20mA, $\pm 10\text{mV}$... $\pm 10\text{V}$ • Expandable

- ➔ **Complete systems**
- ➔ **Low maintenance**
- ➔ **Harsh environments**
- ➔ **Long-term deployments for autonomous operation**
- ➔ **Fully integrated LI-COR® analyzer**
- ➔ **Automatic calibration requiring no gases**
- ➔ **Small and lightweight design**
- ➔ **Multitude of sensors supported**
- ➔ **Windows® 19" DataServer with OceanView4**

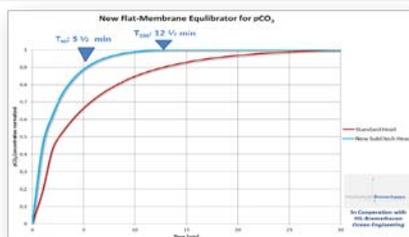
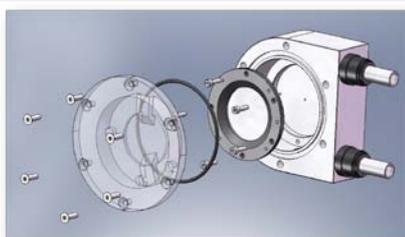
OceanoScientific® System



Air-Sea Exchange

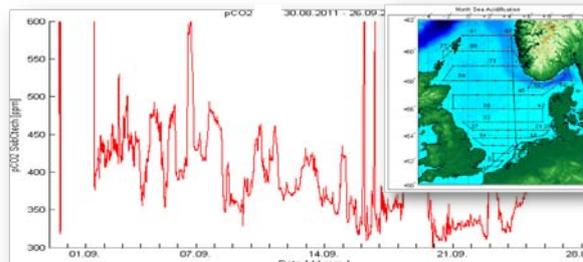


Flat-Membrane Equilibrator



Patent pending

Field Data



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