

# CONTROS HydroC™ CH<sub>4</sub>/CO<sub>2</sub> Combi



## SIMULTANEOUS METHANE AND CARBON DIOXIDE SENSING FOR SUBSEA MONITORING

*Integrated CH<sub>4</sub> and CO<sub>2</sub> measurement in a single compact sensor for long-term underwater deployment*

The CONTROS HydroC™ CH<sub>4</sub>/CO<sub>2</sub> Combi is the first combined subsea sensor to measure methane and carbon dioxide simultaneously in one compact housing. Designed for deep-sea deployment, it enables reliable, in-situ monitoring of two key greenhouse gases using a single, integrated sensing platform.

By combining CH<sub>4</sub> and CO<sub>2</sub> detection in one device, the HydroC™ CH<sub>4</sub>/CO<sub>2</sub> Combi reduces subsea hardware complexity while saving space, weight and energy. The result is dependable, high-quality data for scientific research and industrial monitoring applications; from long-term ocean observation to offshore integrity, leak detection and CCS monitoring.

Each sensor is individually calibrated under field-simulated conditions to ensure maximum accuracy and long-term stability. With a proven track record in international research programmes, the HydroC™ platform is a trusted solution for climate monitoring, environmental research and integration into advanced observing systems such as 4H-FerryBox installations or stationary subsea research stations.

### OPERATING PRINCIPLE

Water is pumped through the flow head of the sensor. Dissolved CH<sub>4</sub> and CO<sub>2</sub> molecules diffuse through a specially developed, highly stable TOUGH membrane into the internal gas circuit and detector chambers.

The partial pressure of CO<sub>2</sub> is determined using high-precision nondispersive infrared spectrometry (NDIR), while CH<sub>4</sub> is measured by tunable diode laser absorption spectroscopy (TDLAS), ensuring high sensitivity and selectivity. Concentration-dependent signals are converted into output data using calibration coefficients stored in the sensor firmware, supported by additional reference sensors within the gas circuit.

### OPTIONS

- Internal data logger
- External battery packs (HydroB series)
- External pumps (SBE-5T or SBE-5M)
- Anti-fouling head
- ROV and AUV installation packages
- Profiling, mooring / lander frames

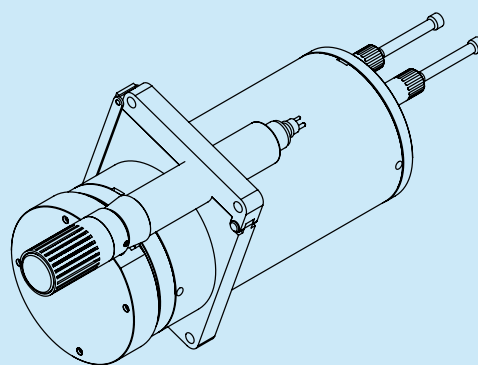
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## APPLICATIONS

- Climate studies and long-term environmental monitoring
- Ocean acidification and greenhouse gas research
- CCS-MMV projects (monitoring, measurement and verification)
- Offshore energy and subsea infrastructure monitoring
- Quantification of air-sea exchange
- Limnology and freshwater control
- Aquaculture monitoring

## FEATURES

- Robust TOUGH membrane for long-term stability
- Combined measurement of CH<sub>4</sub> and CO<sub>2</sub> in one compact system
- Deep-sea capability, water depths up to 6,000 m
- High accuracy and fast response time
- Low detection limit (CH<sub>4</sub> < 1 µatm) and precise CO<sub>2</sub> readings (±0.5 % of reading)
- Easy integration into ROVs, AUVs, moorings, observatories and lander systems
- User-friendly operation with CONTROS DETECT® software (real-time visualization, parameter configuration, data download)
- “Plug & Play” principle: all cables, connectors and software included



## TECHNICAL SPECIFICATIONS

<b>Detector</b>	Tunable Diode Laser Absorption Spectroscopy – TDLAS High-precision optical analysing – NDIR system	<b>Temp range</b>	-2°C to +30°C
<b>Depth rating</b>	up to 6,000 m	<b>Supply voltage</b>	11 – 30 V
<b>Measuring range</b>	0 – 40,000 µatm CH <sub>4</sub> / 100 – 6,000 µatm CO <sub>2</sub>	<b>Data interface</b>	RS-232 and RS-485/422 on request
<b>Detection limit CH<sub>4</sub></b>	< 1 µatm	<b>Data format</b>	ASCII and NMEA protocol
<b>Accuracy CH<sub>4</sub></b>	±2 µatm or ±3 %	<b>Mechanical construction</b>	Titanium housing
<b>Accuracy CO<sub>2</sub></b>	±0.5 % of reading	<b>Dimensions (diameter x length)</b>	140 x 315 mm (w/o connector) 140 x 340 mm (with connector)
		<b>Weight</b>	
		- in water	3.5 kg
		- in air	8.8 kg

Specifications subject to change without notice.

## CONTACT -4H-JENA

Get in touch to find out how CONTROS HydroFIA™ TA can secure your ability to measure and report dependable total alkalinity data as part of your workflow.

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## CONTACT YOUR LOCAL REPRESENTATIVE

The CONTROS HydroFIA™ TA enables climate researchers to contribute towards meeting the United Nations Sustainable Development Goals.

