



# PROVOR CTS4

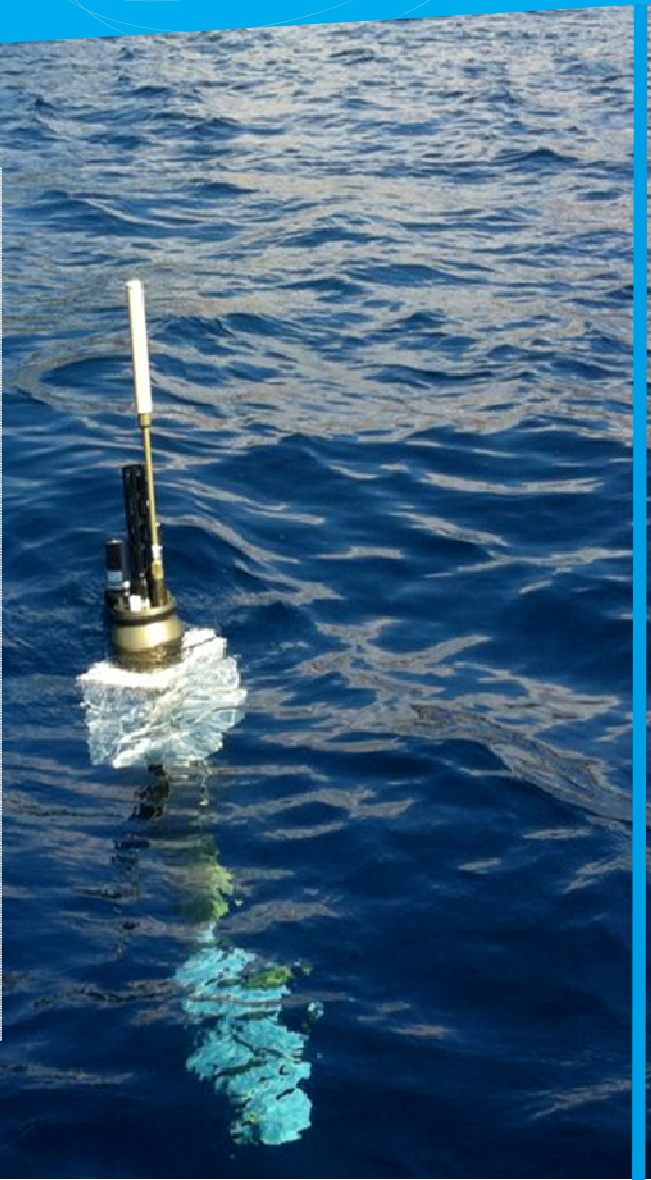
*Autonomous multisensors  
oceanographic ARGO profiling float*

**PROVOR CTS4** design was based on the PROVOR CTS3 ARGO float to embed additional sensors to the standard CTD. They are optical sensors by Satlantics, WetLabs, Chelsea or Aanderaa.

Developments by nke Instrumentation in collaboration with LOV (Villefranche Oceanographic Lab) and Ifremer, enable PROVOR CTS4 to provide increased features.

**Qualified ARGO technology:**

- Multisensors
- Possibility to set various types of missions
- Programmable surfacing time
- Iridium telemetry providing increased data transmission and remote control
- GPS positioning
- Increased autonomy \*
- Down to 2000 m depth
- Self-ballasted float with increased



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INSTRUMENTATION

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# PROVOR CTS4

Iridium transmission



## TECHNICAL SPECIFICATIONS TYPE PROVOR CTS4

### Seabird Electronics SBE 41 CP

- Salinity
  - Range 0 to 40 PSU
  - Initial accuracy  $\pm 0.003$  PSU
  - Observed drift  $< 0.01$  PSU / 5 years
- Temperature
  - Range  $-5^{\circ}$  C to  $+35^{\circ}$  C
  - Initial accuracy  $\pm 0.002^{\circ}$  C
  - Observed drift  $< 0.002^{\circ}$  C / 5 years
- Pressure
  - Range 0 dbar to 2100 dBar
  - Initial accuracy  $\pm 2.4$  dBar

### FLOAT DIMENSIONS

Overall Length 225 cm with antenna  
 Hull Length 170 cm  
 Hull  $\varnothing$  17.3 cm  
 Max.  $\varnothing$  35 cm (damping collar)  
 Weight 40 kg \*  
 (depending on configuration)

### FLOAT CONSTRUCTION

Hull anodized aluminum casing  
 Syntactic foam for additional flotation\*

### BUOYANCY MANAGEMENT

Principle Oil ballast with pump  
 Positioning accuracy  $\pm 30$ m (98.4 ft.)

### NUMBER OF PROFILES CAPABILITIES

Depends on sensor consumption

### OPERATING CONDITIONS

Max operating depth 2000 dbar  
 Operating temperature  $-2^{\circ}$ C to  $35^{\circ}$ C  
 Operating life 4.5 years at sea  
 Power supply Lithium cells\*

### USER INTERFACE

- a - Using Bluetooth
  - Mission programming, float checking...
  - Terminal Personal Computer
- b- Fan tail ready
  - Activation by magnetic switch
  - Remove magnet launches float
  - Audible informations for selftest results

### TELEMETRY

Data Transmission Iridium (SBD or Rudics)  
 Helicoidal antenna  
 Duration on surface time optimized  
 Positioning GPS

### STORAGE CONDITIONS

Temperature  $-20^{\circ}$  C to  $+50^{\circ}$  C ( $-4^{\circ}$  F to  $+122^{\circ}$  F)  
 Maximum storage time before use: 1 year  
 Real time clock saved by separate battery

## Example of embedded sensors

### Bio & Geochemical CROver + ECOTriplet + OCR504

Manufactured by Satlantics, Wetlabs, Andraa  
 Refer to manufacturer data sheet for specifications

### Backscattering, Chlorophyll, CDOM integrated in ECO3 set

#### Backscattering

Range  $\approx 0.0024 - 5 \text{ m}^{-1}$   
 Sensitivity @470nm  $1.2 \times 10^{-5} \text{ m}^{-1} \text{ sr}^{-1}$   
 Sensitivity @532nm  $7.7 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$   
 Sensitivity @660nm  $3.8 \times 10^{-6} \text{ m}^{-1} \text{ sr}^{-1}$

#### Chlorophyll

Range 0.01-50  $\mu\text{g/l}$   
 Sensitivity 0.01  $\mu\text{g/l}$

#### CDOM

Range 0.18 - 375 ppb  
 Sensitivity 0.18 ppb

#### Transmittance Sensor

Range 0 to 100% (0 - 50.000)  
 Accuracy 0.1% FS  
 Resolution 1/50000

#### Irradiance

Range -30 to 300; 0-300  $\text{uW.cm}^{-2} \text{ nm}^{-1}$   
 Accuracy 0.0025; 0-300  $\text{uW.cm}^{-2} \text{ nm}^{-1}$   
 Resolution 0.01  $\text{uW.cm}^{-2} \text{ nm}^{-1}$

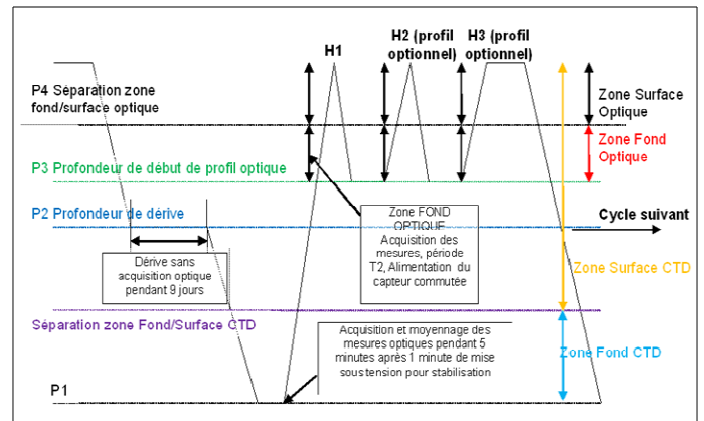
#### Dissolved oxygen Optode 4330 manufactured by AANDERAA

Range 0  $\mu\text{M/l}$  to 500  $\mu\text{M/l}$   
 Accuracy 8  $\mu\text{M/l}$  or  $\pm 5\%$

#### Nutriments SUNA

Detection range 0.007 to 28  $\text{mg/l-N}$  (0.5 to 2000  $\mu\text{M}$ )  
 Accuracy  $\pm 0.028 \text{ mg/l}$  ( $\pm 2 \mu\text{M}$ ) or  $\pm 10\%$  of reading

\*According added payload, additional flotation and battery can be adapted



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\* Depending on configuration