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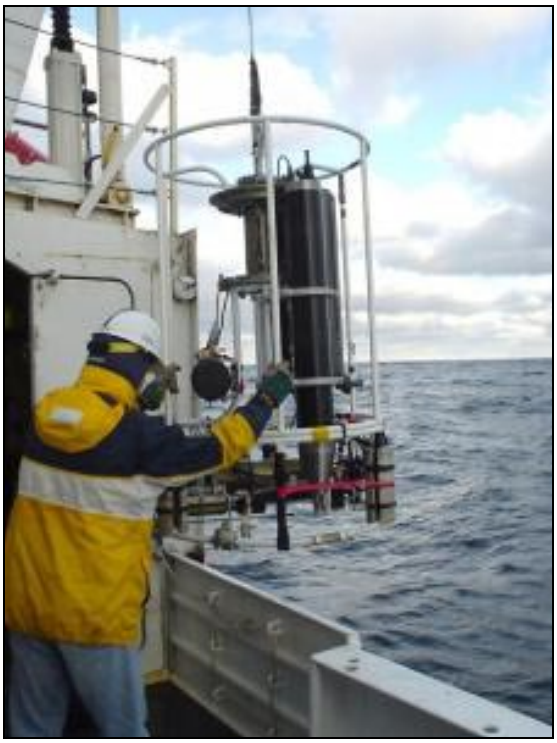
ROCKLAND SCIENTIFIC INTERNATIONAL

RMS
Recording Microstructure System

Description:

The RMS is a self-contained instrument designed to measure scalar turbulence microstructure. Temperature and conductivity are sampled rapidly with, respectively, two FP07 fast-response thermistors and one SBE7 two-needle electrode conductivity sensor. The RMS can be mounted, e.g., on a CTD rosette frame. The micro sensors are oriented down and are located near the bottom of the frame, so that the flow to the sensors is not affected by the frame structure. The RMS samples the micro sensors and a high-resolution pressure transducer at 512 samples per second. The main pressure case contains 3 accelerometers, and 1 pressure transducer as well as the electronics for signal conditioning, A/D conversion and data logging. The data logging is performed by a PC104 computer system with a 378 MB solid-state disk drive (no moving parts). The rapid sample rate plus the fast-response design of the sensors allows the RMS to measure temperature and conductivity on very small vertical scales.
The RMS can be connected to the external power supplies or to an independent alkaline battery pack, which provides 120 h of operation time.


RMS deployment

Specifications

Mechanical

Length overall	1440 mm
Diameter	178 mm
Weight in air	45 kg
Pressure rating	5500 m

Electrical

Power	10 to 16 VDC, 0.7 A
Power Connector	Impulse XSG-2-BLC-HP-SS

Pressure

Transducer Keller
Range 0 – 5500 dbar
Accuracy 0.1%
Resolution 0.005 dbar (using signal+derivative technique)

Micro Temperature:

Sensor: FP07
Range: -5 – 35 ^{o}C
Accuracy: N / A

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Resolution: 1 x 10^{-5} °C (using signal+derivative technique)
Stability: N/A
Time response: 0.007 s ± 0.003

Micro Conductivity
Sensor: SBE7-38
Range: 0 – 6 S/m
Noise: 2 x 10^{-7} (S/m)/(Hz^2)
Spatial Resolution: -3db at 100 cpm
Stability: N/A

Velocity shear (if applicable)
Sensor: SPM-38-5 shear probe
Range: 10^{-10} to 10^{-4} W $kg^{-}1$
Accuracy: 5%
Resolution: 2.5 x 10^{-3} s^{-1} rms (1 – 10 Hz)

Accelerometers (IC Sensors):
Model: IC Sensors
Range: ±2 g
Accuracy: 0.5º
Resolution: 3 x 10^{-5} g (1 – 20 Hz)
Noise: 1 x 10^{-8} $(ms^{-2})^2$ Hz^{-1}
Stability / Linearity: ±0.5º, ±0.01g
Frequency response: 0 – 300 Hz

Analog/Digital Converter:
Number of channels: 16
Resolution: 16 bits (true)
Linearity: 15 part per million