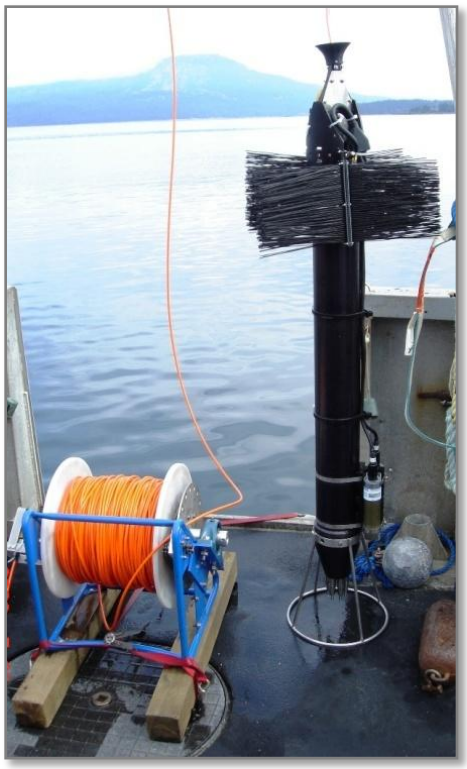
VMP 500

Coastal Vertical Microstructure Profiler

Description:
The VMP500 is a vertical microstructure turbulence profiler for the measurement of dissipation-scale turbulence in oceans and lakes up to 500 m depth. It is equipped with state-of-art microstructure velocity probes (shear probes), high-resolution temperature sensors (thermistors), and high-accuracy CTD sensors. Light and usable from small vessels and boats.



Features:

- Pressure case rated to 500 m depth
- Pressure sensor
- Three-axis, high-accuracy accelerometers
- SPM-38-1 shear probes
- FP07-38-1 fast thermistors
- SBE7-38 microstructure conductivity sensor*
- SBE-3F / SBE-4C temperature and conductivity sensors*
- Bottom landing guard
- Signal conditioning and telemetry electronics
- Deck unit for data communication
- ODAS4-RT real-time data acquisition software
- DISS 2.0 data processing library for Matlab*
- Training in Victoria, 2 days.

* optional

Specifications:

Sampling rate	up to 2048 Hz
Depth rating	0 – 500 m
Weight (in air)	19.5 kg (26.7 kg with SBE3/4 sensors)
Length overall	165 cm

Velocity shear

Range	$3 \times 10^{-10} – 10^{-4}$ W kg^{-1}
Accuracy	5%
Resolution	2.5×10^{-3} s^{-1}

Water temperature (SBE 3F)*

Range	-5 – 35 ^{o}C
Accuracy	1×10^{-3} ^{o}C (NIST traceable)
Resolution	1×10^{-4} ^{o}C
Time response	0.070 s ± 0.010

Micro Temperature (FP07)

Range	5 – 35 ^{o}C
Accuracy	N/A
Resolution	1×10^{-5} ^{o}C (using signal+derivative technique)
Time response	0.007 s ± 0.003

Conductivity (SBE 4C)*

Range	0 – 7 S/m
Accuracy	0.0003 S/m
Resolution	0.00004 S/m at 24 Hz
Time response	0.060 seconds (pumped)

Pressure (Keller)

Range	0 – 500 dbar
Accuracy	0.1 %
Resolution	0.0005 dbar (using signal + derivative technique)

Analog/Digital Converter

Number of channels	16
Resolution	16 bits (true)
Linearity	15 ppm

Accelerometers (IC Sensors)

Range	±2 g
Accuracy	0.5º
Resolution	3×10^{-5} g (1 – 20 Hz)
Stability/Linearity	±0.5º, ±0.01g
Frequency response	0 – 300 Hz

System components:

Sensors

Qty.	Description
2	IC-Sensors 3140: accelerometers mounted with axes along horizontal x- and y directions
1	PA-11: Keller Pressure Transducer 500 dBar full scale. Sensor calibrated with dead weight tester, 0.1%.
2	SPM-38-1: turbulence microstructure shear probes, with Teflon water protection, mounted on 3/8" diameter SS316 sting. Pressure rated to 1000 m.
1	FP07-38-1: Thermometric fast microstructure thermistor, mounted on 3/8" diameter SS316 sting. Pressure rated to 1000 m.
1	SBE7-38 micro-conductivity sensor, mounted (optional)
1	SBE-3F, Seabird temperature probe, including cables and mounting brackets (optional).
1	SBE-4C, Seabird conductivity probe, including cables and mounting brackets (optional).

Winch System (optional)

Qty.	Description
1	Light-duty hand winch with 4-conductor low-noise electrical slip rings, drum capacity 300m of 0.7 mm diameter tether cable
1	300m Kevlar reinforced 4-conductor tether cable, polyurethane jacket (orange), installed on winch.
1	Set of deck cables.