

Electro-magnetic Current Meter for Deep Ocean

INFINITY-Deep

AEEMD-USB

VEL

COMP

INCL

T

P



Overview

INFINITY-Deep is an autonomously deployable data logger for current speed measurements in deep oceans. The currents in deep oceans are very weak.

It is very difficult to accurately measure the deep-water currents using some ADVs that detect the Doppler-effect by scatter with the suspended particles in the water, because the concentration is very low. INFINITY-Deep measures 2-D current data through a magnetic field according to Faraday's law.

Therefore, even if the suspended particles do not exist around the sensor, it can provide the accurate current data. The depth rating is 6,000m. Compared to INFINITY-EM, the instrument has a depth and a tilt sensor to monitor mooring status. Also, the battery capacity doubles for long-term current velocity measurements.

Sensor Specifications

Parameter	Velocity*	Orientation	Inclination	Pressure	Temperature
Sensor Type	2-axis Electromagnetic Induction	Hall Element	2-axis Type	Semiconductor Pressure	Thermistor
Range	0 to $\pm 100 \text{ cm s}^{-1}$	0 to 360°	0 to $\pm 30^\circ$	0 to 60 MPa	-3 to 45°C
Resolution	0.02 cm s^{-1}	0.01°	0.01°	0.002 MPa	0.001°C
Accuracy	$\pm 1 \text{ cm s}^{-1}$ or $\pm 2\%$ *	$\pm 2^\circ$	$\pm 1^\circ$	$\pm 0.3\%$ FS	$\pm 0.02^\circ\text{C}$ (0 to 35°C)

*Velocity calibration range is 0 to $\pm 60 \text{ cm s}^{-1}$.

Logger Specifications

Memory Type	microSD card (waterproof high-speed type)
Memory Capacity	1GB
Mode	Continuous Mode / Burst Mode
Interval	0.1 to 600 sec
Burst	1 to 1,440 min
Number of Samples	1 to 18,000
Battery	CR-V3 Lithium Battery / 3.3 Ah (UP to 4) AA Alkaline Battery (Up to 8) - Requires AA adapter kit AA Lithium Battery (Up to 8) - Requires AA adapter kit
Communication Method	USB communication (compliant with Ver. 2.0, equivalent to Ver. 1.1)
Housing Material	Titanium Alloy (Ti-6Al-4V)
Dimensions	$\phi 85 \text{ mm} \times 421 \text{ mm}$ (excluding sensor guard)
Weight	Approx. 4.1 kg in air / Approx. 2.4 kg in water
Pressure Resistance	Equivalent to 6,000 m depth

Drawing

