Vector

4000 m

Investigation des vitesses 3D dans les zones limites jusqu'à des profondeurs de 4000 m

The Vector is a high-accuracy single-point current meter that is capable of acquiring 3D velocity in a very small volume at rates up to 64 Hz. It is widely used for sediment transport applications, small-scale turbulence measurements and coastal engineering studies. It has an excellent track record of delivering outstanding data quality in a variety of applications. This titanium version of the Vector is suitable for investigating deep-water currents down to depths of 4000 m.

Highlights

- Small-scale turbulence
- Sampling up to 64 Hz
- Small sampling volume for measurements close to boundaries

Applications

- Studies of bottom boundary layers
- Studies of deep-water currents
- Ocean engineering projects
- Low flow measurements
- Flux measurements
- Deep ocean mining support

Technical specifications

Water velocity measurements	
Maximum profiling range	N/A
Distance from probe	0.15 m
Sampling volume diameter	15 mm
Sampling volume height (user-selectable)	5-20 mm
Cell size	N/A
Velocity range	±0.01, 0.1, 0.3,1, 2, 4, 7 m/s (software-selectable)
Adaptive ping interval	N/A
Accuracy	±0.5% of measured value ±1 mm/s
Velocity precision	typ. 1% of velocity range (at 16 Hz)
Sampling rate (output)	1-64 Hz
Internal sampling rate	100-250 Hz

Distance measurements	
Minimum range	N/A

Distance measurements	
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A

Echo intensity	
Acoustic frequency	6 MHz
Resolution	0.45 dB
Dynamic range	90 dB

Sensors	
Temperature:	Thermistor embedded in end bell
Temp. range	-4 to +40 °C
Temp. accuracy/resolution	0.1 °C/0.01 °C
Temp. time response	10 min
Compass:	Magnetometer
Accuracy/resolution	2º/0.1º for tilt < 20°
Tilt:	Liquid level
Accuracy/resolution	0.2°/0.1°
Maximum tilt	30°
Up or Down	Automatic detect
Pressure:	Piezoresistive
Range	0-4000 m
Accuracy/precision	0.5% FS / Better than 0.005% of full scale

Analog inputs	
No. of channels	2
Supply voltage to analog output devices	Three options selectable through firmware commands: 1) Battery voltage/500 mA, 2) +5 V/250 mA, 3) +12 V/100 mA

Data recording	
Capacity (standard):	16 GB
Data record (Standard)	24 bytes at sampling rate + 28 bytes/second
Data record (IMU)	72 bytes at sampling rate

Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks

Data communications	
I/O	RS-232 or RS-422
Communication baud rate	300-115 200 Bd
Recorder download baud rate	600/1200 kBd for both RS-232 and RS-422
User control	Handled via ”Vector” software, ActiveX® function calls, or direct commands.
Analog outputs	3 channels standard, one for each velocity component or two velocities and pressure.

Data communications

Output range	0–5 V, scaling is user-selectable.
Synchronization	TTL (5 V tolerant) sync in/sync out, start on sync, sample on sync

Connectors

Bulkhead	MCBH-8-FS
Cable	PMCIL-8-MP on 10 m polyurethane cable

Software

Functions	Deployment planning, instrument configuration, data retrieval and conversion (for Windows®).

Multi unit operation

Software	N/A
I/O	N/A

Power

DC input	9-15 V DC
Maximum peak current	3 A
Max. consumption	1.5 W at 64 Hz
Typical consumption, 4 Hz	0.6 - 1 W
Sleep consumption	< 100 µA
Transmit power	2 adjustable levels

Batteries

Battery capacity	50 Wh (alkaline or Li-ion),165 Wh (lithium), single or dual
New battery voltage	13.5 V DC (alkaline)
Data collection capacity	Refer to planning section in software

Environmental

Operating temperature	-4 to +40 °C
Storage temperature	-20 to +60 °C
Vibration	IEC 60068-1/IEC60068-2-64
Depth rating	4000 m

Materials

Standard model	Titanium housing. Titanium probe and fasteners

Dimensions

Maximum diameter	84 mm
Maximum length	485 mm (housing only), 246 mm (fixed stem) add 110 mm for double battery

Weight

Weight in air	8.3 kg
Weight in water	5.1 kg

Options

Probe mounted on fixed stem or on 2 m cable

Vertical or horizontal probes

Alkaline, lithium or Li-ion external batteries

IMU - Inertial Measurement Unit