Vector - 4000 m



12/21/2024



Investigate 3D velocity in the bottom boundary layer down to depths of 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
- \checkmark Studies of deep-water currents
- ✓ Low flow measurements

Technical specifications

ightarrow 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	$\pm 0.5\%$ 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
Maximum range	N/A
Cell size	N/A
Accuracy	N/A
Sampling rate	N/A
\rightarrow Echo intensity	
→ Echo intensity Acoustic frequency	6 MHz
	6 MHz 0.45 dB
Acoustic frequency	
Acoustic frequency Resolution	0.45 dB
Acoustic frequency Resolution Dynamic range	0.45 dB
Acoustic frequency Resolution Dynamic range → Sensors	0.45 dB 90 dB
Acoustic frequency Resolution Dynamic range → Sensors Temperature:	0.45 dB 90 dB Thermistor embedded in end bell
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 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2º/0.1º for tilt < 20°
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2º/0.1º for tilt < 20°
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2º/0.1º for tilt < 20° Liquid level 0.2°/0.1°
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Maximum tilt 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 0.1 °C/0.01 °C 10 min Magnetometer 2º/0.1° for tilt < 20° Liquid level 0.2°/0.1°
 Acoustic frequency Resolution Dynamic range → Sensors Temperature: Temp. range Temp. accuracy/resolution Temp. time response Compass: Accuracy/resolution Tilt: Accuracy/resolution Uit: Maximum tilt Up or Down 	0.45 dB 90 dB Thermistor embedded in end bell -4 to +40 °C 0.1 °C/0.01 °C 10 min Magnetometer 2º/0.1º for tilt < 20° Liquid level 0.2°/0.1°

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
\rightarrow 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
\rightarrow Real-time clock	
Accuracy	±1 min/year
Backup in absence of power	4 weeks
ightarrow 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 ${\ensuremath{\mathbb S}}$ function calls, or direct commands.
Analog outputs	3 channels standard, one for each velocity component or two velocities and pressure.
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®).
\rightarrow Multi unit operation	and conversion (for Windows®).
→ Multi unit operation Software	and conversion (for Windows®). N/A
Software	N/A
Software I/O	N/A
Software I/O → Power	N/A N/A
Software I/O → Power DC input	N/A N/A 9-15 V DC
Software I/O → Power DC input Maximum peak current	N/A N/A 9-15 V DC 3 A
Software I/O → Power DC input Maximum peak current Max. consumption	N/A N/A 9-15 V DC 3 A 1.5 W at 64 Hz
SoftwareI/O→ PowerDC inputMaximum peak currentMax. consumptionTypical consumption, 4 Hz	N/A N/A 9-15 V DC 3 A 1.5 W at 64 Hz 0.6 - 1 W
Software I/O → Power DC input Maximum peak current Max. consumption Typical consumption, 4 Hz Sleep consumption	N/A N/A 9-15 V DC 3 A 1.5 W at 64 Hz 0.6 - 1 W < 100 μA

→ Batteries	
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	e
Vertical or horizontal probes	
Alkaline, lithium or Li-ion external batteries	