Vector

4000 m, Generation 2

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
- ✓ Studies of deep-water currents
- ✓ Low flow measurements

Technical specifications

Water velocity measurements	
Distance from probe	0.15 m
Sampling volume diameter	15 mm
Sampling volume height	8 mm
Velocity range	±0.01, 0.1, 0.3,1, 2, 4, 7 m/s (software-selectable)
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	1-703 Hz

Echo intensity	
Acoustic frequency	6 MHz
Resolution	0.01 dB
Dynamic range	84 dB

Sensors	
Temperature	Temperature sensor in probe head

Sensors

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 < 30°
Tilt	Solid state, full 3D
Accuracy/resolution	0.2°/0.01°
Maximum tilt	Full 3D
Pressure	Piezoresistive
Range	0-4000 m (inquire for options)
Accuracy/precision	0.5% FS / Better than 0.005% of full scale

External inputs

No. of analog channels	None
Digital channels	1x RS485 or RS232/*
Supply voltage to external sensors	Fixed 5V or 12V

/*Pyroscience AquapHOx soon supported

Data recording

Capacity (standard):	16 / 64 / 128 / 256 GB SD card

Real-time clock

Accuracy	±1 min/year
Backup in absence of power	4 weeks

Data communications

I/O	RS-422 or Ethernet, user-selectable
Communication baud rate	115200-921600 Bayd
Recorder download baud rate	Fast Ethernet 100BASE-TX (90s per GB)
User control	Nortek Deployment SW
Synchronization	Trigg/sync A and B (RS485). Sync in/sync out.

Connectors

Bulkhead (Impulse)	MCBH-8-FS + MCBH-6-FS for communication and external sensor
Cable	PMCIL-8-MP on 5 m polyurethane cable (inquire for options)

Software

Functions	Nortek Deployment SW, instrument configuration, live display, export to ASCII and MATLAB. Data view in Nortek Insight

Power

DC input	9-24 V DC
Maximum peak current	2 Amp
Max. consumption	2.7 W at 64 Hz
Typical consumption, 4 Hz	2 W
Sleep consumption	< 150 µA

Power	
Transmit power	Adjustable 12 dB in 1 dB steps

Batteries	
Battery capacity	External battery pack: 50 Wh Alkaline (4x), 76 Wh Li-ion (4x), 165 Wh lithium (4x)
Data collection capacity	Refer to planning section in software

Environmental	
Operating temperature	-4 to +40 °C
Storage temperature	-20 to +60 °C
Vibration	IEC 60068-2-64, IEC 60068-2-27
Depth rating	4000 m

Materials	
Standard model	Titanium housing, titanium probe and screws

Dimensions (see drawings for details)	
Maximum diameter	48 mm
Maximum length	263 mm total

Weight	
Weight in air	1000 g (instrument only)
Weight in water	600 g (instrument only)

Distance measurements	
Distance measurements	Not yet released