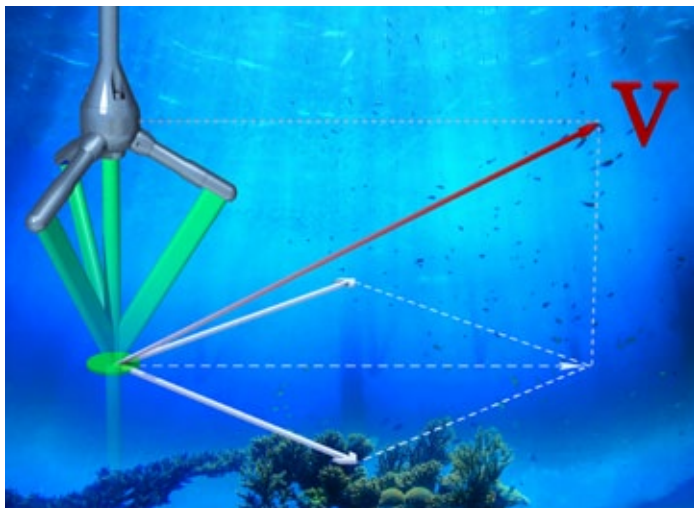


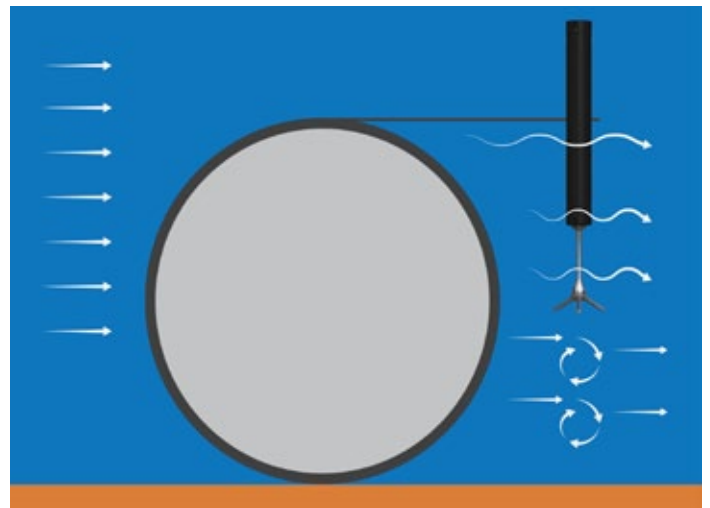
The Vector is a high-resolution acoustic velocimeter used to measure 3D water velocity in a wide variety of applications in the ocean. Leading oceanographers, coastal engineers, and hydraulic engineers all over the world commonly use the Vector to measure the 3D water velocity at high frequency as well as in applications where a distinct and small sampling volume is required.

Vector

3D Acoustic Velocimeter



The measurement technology used is coherent Doppler processing, which is characterized by accurate and nonintrusive velocity data at rates as high as 64 Hz with no appreciable zero offset.



The Vector is used in a wide range of applications, among these: studies of surf-zone dynamics and bottom boundary layer flows, wave orbital studies, combined wave and current monitoring or turbulence studies.

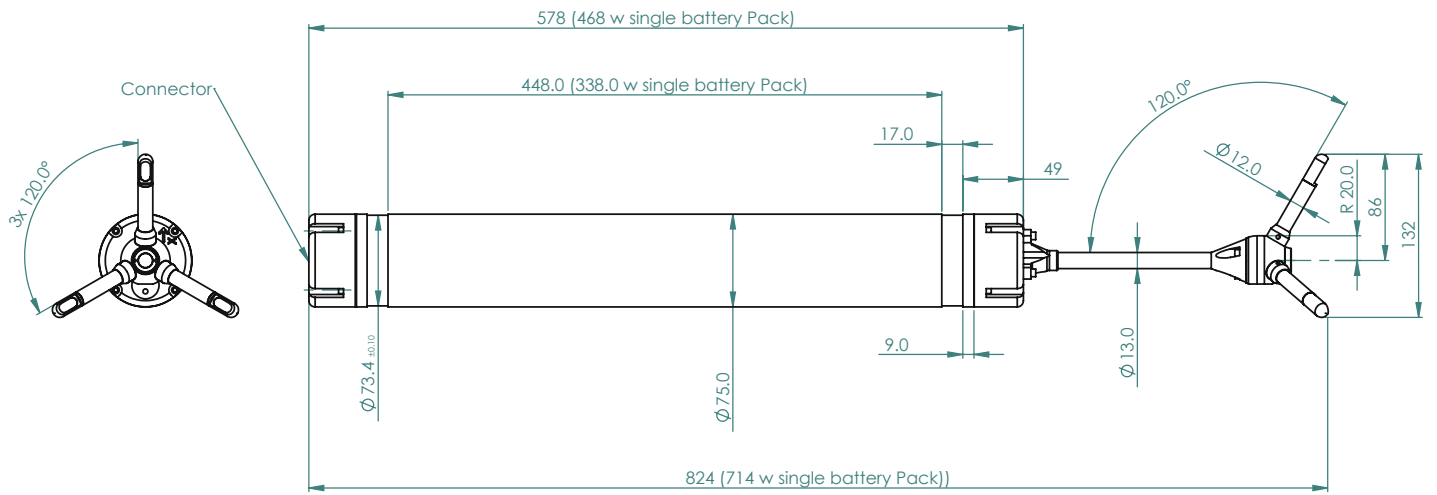
CURRENT AND WAVE MEASUREMENTS IN THE OCEAN, LAKE AND LABORATORY



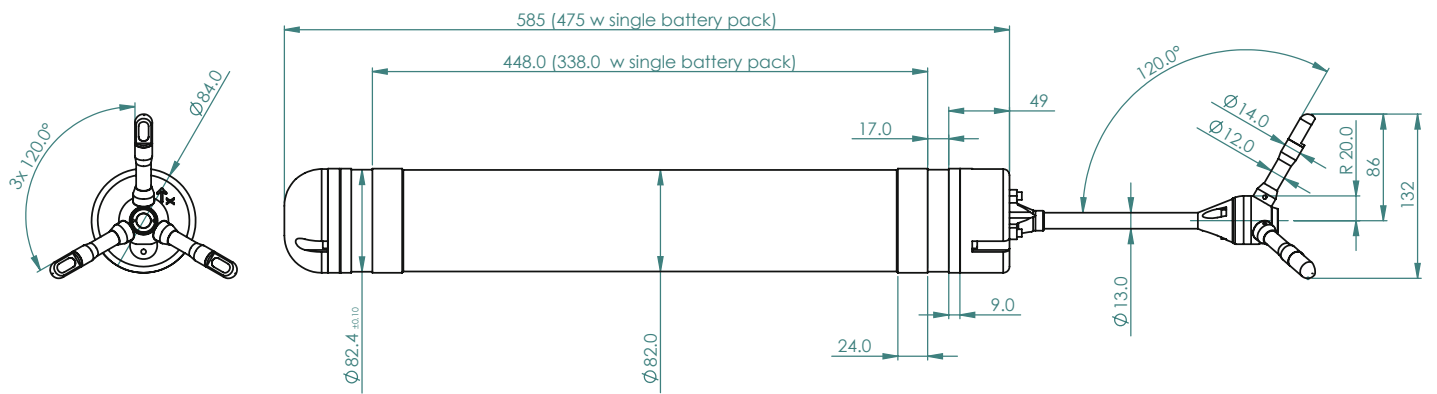
Nortek AS
Vangkroken 2
1351 Rud, Norway
Tel: +47 6717 4500
Fax: +47 6713 6770
E-mail: inquiry@nortek.no



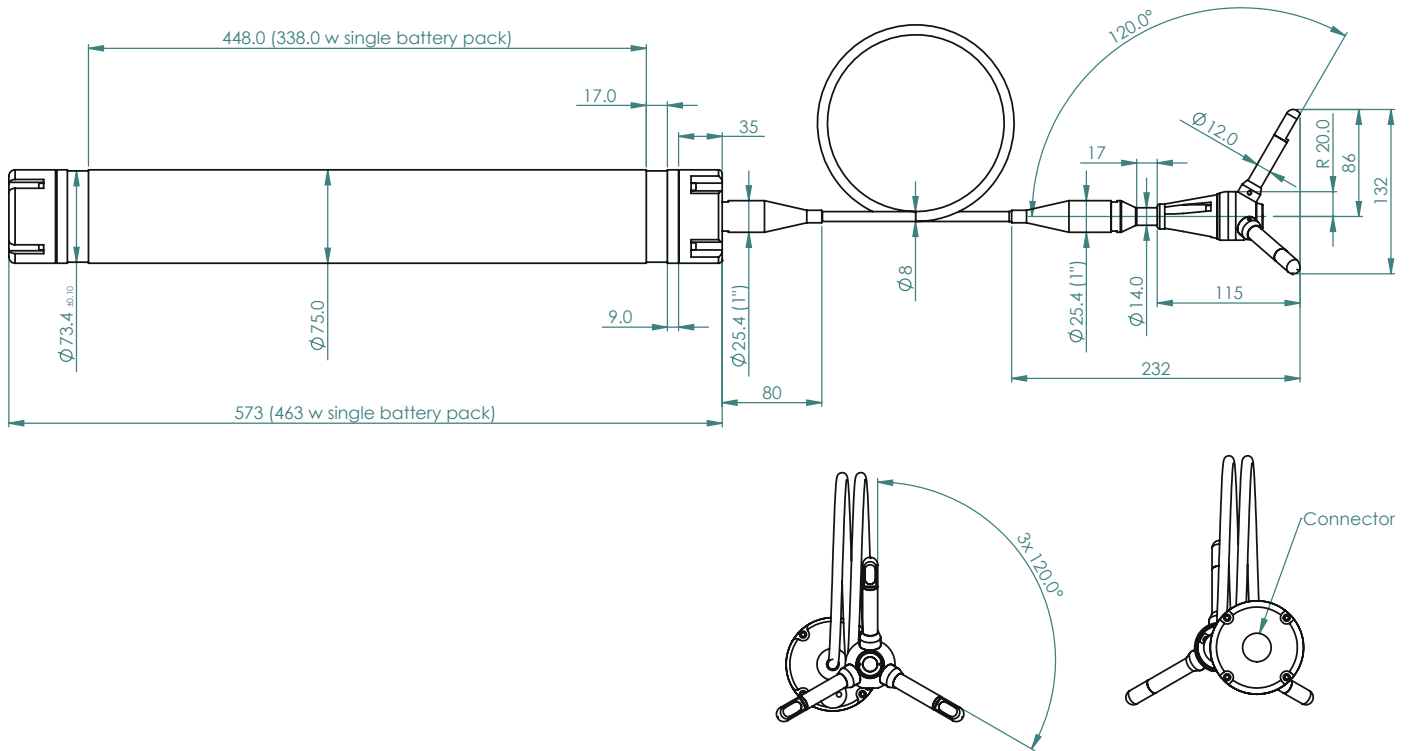
www.nortek-as.com
True innovation makes a difference



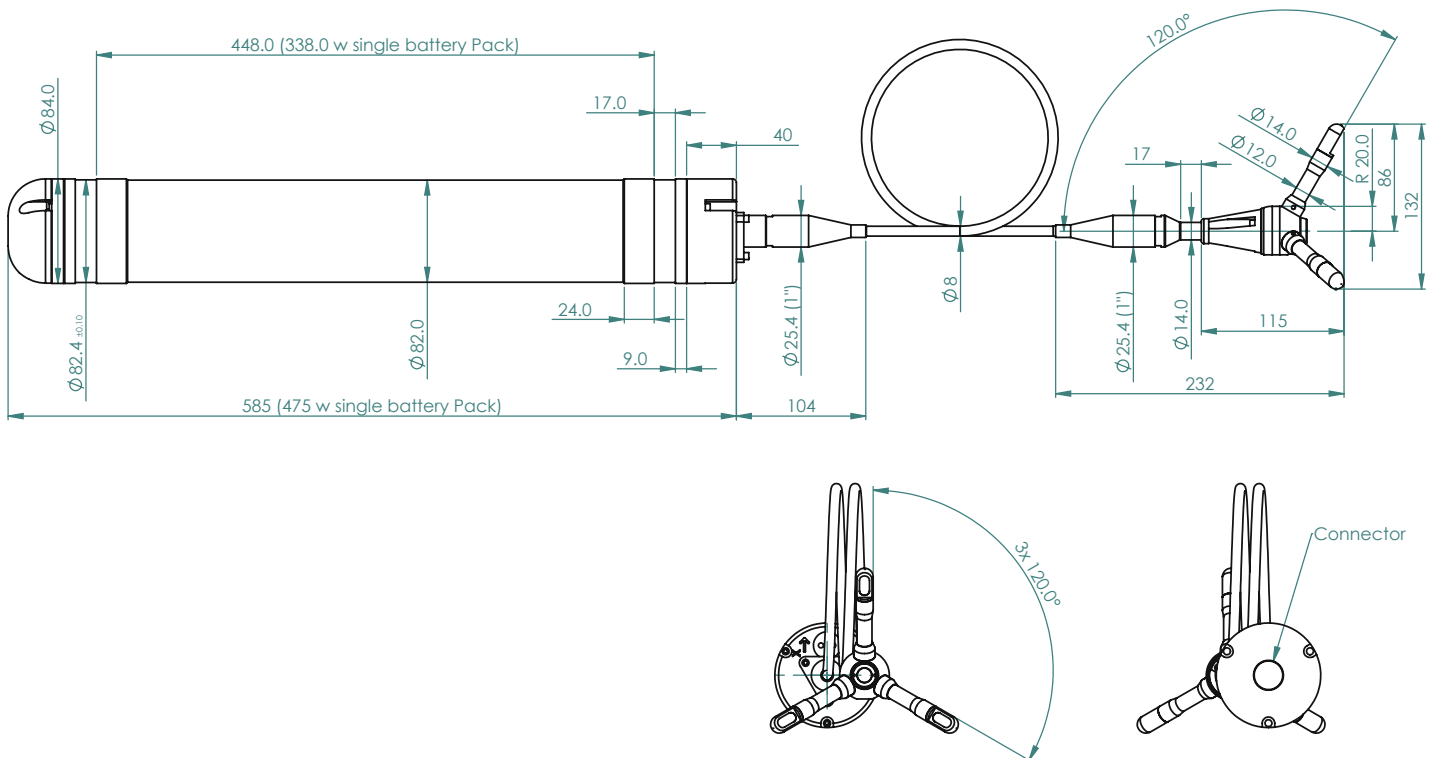
Fixed Stem 4000m



Cable Probe Standard



Cable Probe 4000m



Water Velocity Measurement

Range:	±0.01, 0.1, 0.3, 2, 4, 7 m/s (software selectable)
Accuracy:	±0.5% of measured value ±1 mm/s
Sampling rate (output):	1–64 Hz
Internal sampling rate:	100–250 Hz

Sampling Volume

Distance from probe:	0.15 m
Diameter:	15 mm
Height (user selectable):	5–20 mm

Doppler Uncertainty (noise)

Typ. uncertainty at 16 Hz:	1% of velocity range
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Echo Intensity

Acoustic frequency:	6 MHz
Resolution:	0.45 dB
Dynamic range:	90 dB

Sensors

Temperature:	Thermistor embedded in end bell
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Range:	–4 °C to 40°C
Accuracy/Resolution:	0.1 °C / 0.01°C
Time response:	10 min

Compass:	Magnetometer
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Accuracy/Resolution:	2°/0.1° for tilt < 20°
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Tilt:	Liquid level
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Accuracy/Resolution:	0.2°/0.1°
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Up or down:	Automatic detect
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Maximum tilt:	30°
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Pressure:	Piezoresistive
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Standard Range:	0–20 m, inquire for options
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Accuracy/Resolution:	0.5% / Better than 0.005% of full scale
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Data Communication

I/O:	RS 232 or RS 422. Software supports most commercially available USB– RS 232 converters.
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Communication Baud rate:	300–115200
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Recorder download baud rate:	600/1200 kBaud for both RS232 and RS422
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User control:	Handled via Vector Win32® software, ActiveX® function calls, or direct commands.
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Analog outputs:	3 channels standard, one for each velocity component or two velocities and pressure. Output range is 0–5 V, scaling is user selectable.
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Analog Inputs

No. of channels:	2
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Supply voltage to analog output devices:	Three options selectable through firmware commands: • Battery voltage/500 mA • +5V/250 mA • +12V/100 mA
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Software (“Vector”)

Operating system:	Windows®XP, Windows®7
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Functions:	Deployment planning, start with alarm, data retrieval, ASCII conversion. Online data collection and graphical display. Test modes
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Data Recording

Capacity (standard):	9 MB, can add 32/176/352MB or 4GB (Prolog)
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Data record:	24 bytes at sampling rate + 28 bytes/second
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Power

DC Input:	9–15 VDC
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Peak current:	3A
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Max consumption:	64 Hz 1.5 W
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Typ. consumption, 4Hz:	0.6–1.0 W
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Sleep consumption:	0.0003 mW (RS232), 0.005 mW (RS422)
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Transmitt power:	2 adjustable levels
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Battery capacity:	50 Wh
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New battery voltage:	13.5 VDC
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Data collection capacity:	Refer to planning section in software
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Real time clock

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

Bulkhead (Impulse):	MCBH-8-FS
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Cable:	PMCIL-8-MP on 10-m polyurethane cable
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Materials

Standard model:	Delrin® housing. Titanium probe and screws
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Environmental

Operating temperature:	–4°C to +40°C
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Storage temperature:	–20°C to +60°C
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Shock and vibration:	IEC 721-3-2
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Pressure rating:	300 m for canister.
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Dimensions

	see drawings on page 2-3
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Weight in air:	5.0 kg (standard), 8.3 kg (4000m)
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Weight in water:	1.5 kg (standard), 5.1 kg (4000m)
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Options

Acoustic beams:	Probe mounted on fixed stem or on 2-m cable (see drawing)
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Batteries:	Lithium or Lithium Ion
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External batteries:	Alkaline, Lithium or Lithium Ion (see battery brochure for details)
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Pressure sensor:	Specify range.
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In most cases, the Vector is deployed as a self contained instrument with internal recorder, or connected to an on-line PC. It can also be operated from any third-party controller using RS 232 or RS 422 communication.

