

S E N T I N E L



R E D E F I N I N G
I N N O V A T I O N



TELEDYNE
RD INSTRUMENTS

A Teledyne Technologies Company

The future of current profiling has arrived.

For 15 years, **Teledyne RD Instruments'** Workhorse Acoustic Doppler Current Profilers have been the world's gold standard for measuring ocean currents and waves. The new generation V line of ADCP products raises the bar again. The new **Sentinel V** is the first product to be released from this emerging line. This self-contained instrument is available in three profiling ranges: 20m, 50m, and 100m.

The Sentinel V is much more than a new product platform—it's a completely new way of interacting with your ADCP and your collected data. V's new **Velocity** software is sure to become the industry benchmark, with its powerful features, multiple views, touch-screen capability, and highly intuitive interface. If you can navigate a smart phone—you're ready for Velocity.

Exciting new Sentinel V hardware / firmware features include:

Multiple simultaneous sampling strategies

Now, two users with vastly different interests in the same environment can share a single ADCP to accomplish the data collection goals of both, essentially doubling hardware output.

High-speed wireless data download



Lose the cables. Wireless functionality allows you to fly through your data download and instrument reconfiguration, saving you time and money. This feature also allows for wireless setup and software/firmware updates.

Record every measurement

There's no need to decide in advance what time scales are of interest. Sentinel V has the memory and ability to record all raw data, allowing you to investigate features of interest over time scales that you can determine at a later date.



5 beams for data redundancy and enhanced measurements

An integrated 5th beam provides a third vertical velocity measurement and a 5th range to the surface measurement, allowing

for enhanced turbulence and waves measurement capabilities.

- Measure vertical velocity profile
- Measure high-resolution echo intensity profile
- Measure range to the surface
- Allows turbulence measurements
- Allows error velocity validation with 3 beam solutions
- Allows redundant error velocity validation with 4 beams
- Allows zero up waves parameter



Off-the-shelf battery option

Gear up for your next deployment at the corner store. The Sentinel V reduces your operating costs and increases convenience with its ability to accept standard alkaline D batteries. (Good for 1 – 3 month typical deployment setup.)

Looking for a longer deployment?

You can still use a Teledyne RDI supplied battery pack option, best suited for 12 to 24 month deployments. External battery cases are also available for even longer deployment requirements.



Increased portability

Grab it and go! The Sentinel V is smaller than its Workhorse predecessor and includes a convenient removable carrying handle. Cradling is for babies—not instruments.

Multiple bandwidths

User-selectable bandwidth options offer the best of both worlds. Generally narrower bandwidths result in longer range, but less precision per measurement. However, there are times when range is of paramount importance. Sentinel V supports both configurations.



One-touch wireless

Now you can start your ADCP with a simple touch of your finger. The instrument will give an audible signal to know you've turned it on, and will time out to save battery life if you don't engage the instrument.

Uninterrupted data collection

Upload recorded data in the background while reconfiguring.



Replaceable transducer pucks

Transducers are potted and installed individually, making it easy and cost-effective to swap out a damaged transducer.

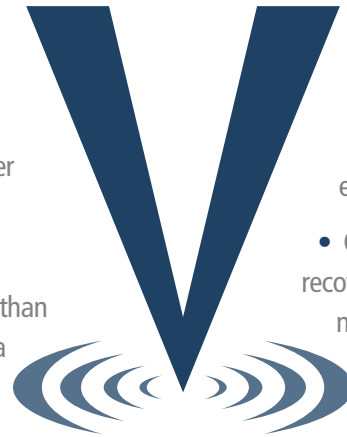
Flood-resistant electronics chamber

Separate battery and electronics chambers help to safeguard your system's electronics.

Captured O-rings

A dovetail groove retains the O-ring, which "snaps" into place so you know it's properly seated.

S E N T I N E L



Velocity: Pre-deployment Software

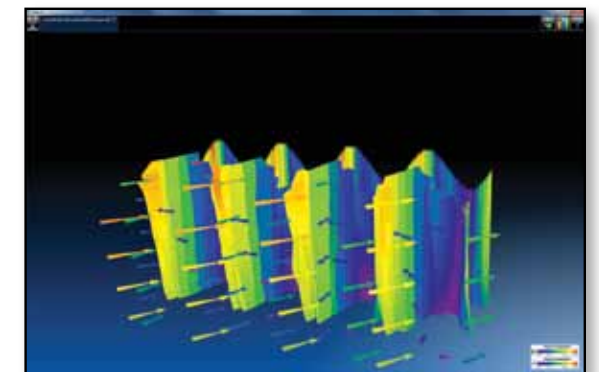
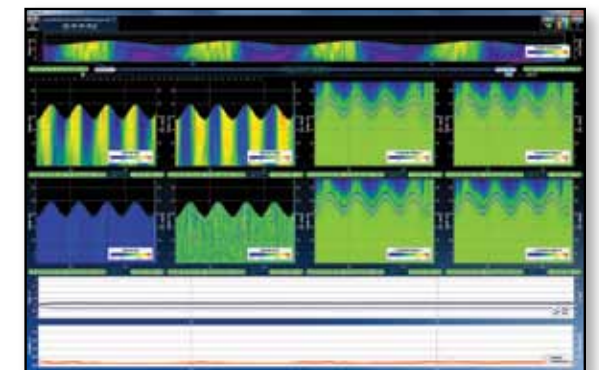
Our pre-deployment software is an all-purpose, real-time planning tool with an interface simple enough for a brand new ADCP user, yet powerful enough for the seasoned pro. Features include:

- **Onboard Software.** The software required to configure, deploy, and recover your data is resident on the ADCP. That means no software to install, no administrator access to acquire, and no need for a dedicated computer. All that's required to communicate with your ADCP is a computer of opportunity and web browser. This feature also allows you to keep your system's software and firmware up to date.
- **Intuitive Interface.** Velocity delivers a user-friendly interface that literally steps you through your pre-deployment planning to configure the Sentinel V for deployment, running all pre-deployment tests, and starting the deployment properly configured for the task at hand.
- **Onboard Maintenance Log.** When was the last time the compass was calibrated? The batteries changed? O-rings replaced? Now this information and more can be stored on the Sentinel V itself, for ready access whenever you are connected to the instrument.

Velocity: Post-processing Software

V's new ADCP post-processing software provides users with turnkey processes and tools that will wow even our most seasoned ADCP veterans. The features are too many to list in this small space, but highlights include:

- Intricate 2D and 3D graphs including:
 - Time series graphs
 - Contour graphs
 - Profile graphs
 - 3D surface / contour / profile graphs
- Basic/conventional processing features including averaging, coordinate transforms, and velocity reference
- Comprehensive, advanced, and fully customizable data processing engine
- A comprehensive log of all loaded and recent data files
- Export to multiple output formats



S E N T I N E L V : J O I N T H E R E V O L U T I O N

Sentinel V

SELF-CONTAINED 20M, 50M, 100M PROFILING ADCP



Technical Specifications

Water Profiling

Depth Cell Size ¹	V20 (1000kHz)		V50 (500kHz)		V100 (300kHz)	
	Range ^{2,3} (m)	Std. Dev. ⁴ (cm/s)	Range ^{2,3} (m)	Std. Dev. ⁴ (cm/s)	Range ^{2,3} (m)	Std. Dev. ⁴ (cm/s)
0.25m	18	11.1				
0.5m	20	4.2	42	11.1		
1m	22	2.1	49	4.1	90	6.3
2m	24	1.0	54	2.1	99	3.2
4m			61	1.0	110	1.5
8m					123	0.8

¹User's choice of depth cell size is not limited to the typical values specified. ²Longer ranges available. ³Profiling range based on temperature values at 5°C, salinity = 35ppt. ⁴Broadband mode single-ping standard deviation (Std. Dev.).

Communications & Recording

Wireless: IEEE 802.11b/g
Internal Memory: One 4GB Micro SD Card included

Profile Parameters

Velocity accuracy:
 V20/V50: 0.3% of the water velocity relative to the ADCP ±0.3cm/s
 V100: 0.5% of the water velocity relative to the ADCP ±0.5cm/s
Velocity resolution: 0.1cm/s
Velocity range: ±5m/s (default)
 ±20m/s (maximum)
Ping rate: Up to 10Hz

Echo Intensity Profile

Vertical resolution: Depth cell size
Dynamic range: 80dB
Precision: ±1.5dB

Transducer and Hardware

Beam angle: 25°
Configuration:
 4-beam, convex; 5th beam vertical
Depth Rating: 200m
Materials:
 Transducer, housing, and end cap: plastic
 Connector: neoprene or metal shell

Standard Sensors

Temperature (mounted on transducer):
 Range: -5° to 45°C
 Precision: ±0.4°C
 Resolution: 0.01°

Compass (magneto-inductive sensor):
 Accuracy: 1° RMS⁵
 Repeatability: 0.05° RMS
 Resolution: 0.1°
 Maximum dip angle: 85°

Tilt (MEMS accelerometers):
 Pitch Range: ±90°
 Roll Range: ±180°
 Accuracy: 1° RMS
 Precision: 0.05° RMS
 Resolution: 0.1°

Pressure Sensor (mounted on transducer):
 Range: 300m
 Accuracy: 0.10%FS

⁵<±1.0° is commonly achieved after field calibration

Power

External DC input: 10–24VDC
Internal battery voltage: 18VDC new
Battery capacity: Over the counter
 @0°C: 100 watt hours (typical)
 Battery Pack @0°C: 540 watt hours

Software

Teledyne RDI's new software (included):
 Velocity—Pre-deployment (resident in ADCP)
 Velocity—Post-processing (Data Handling, Display, and Export)

Environmental

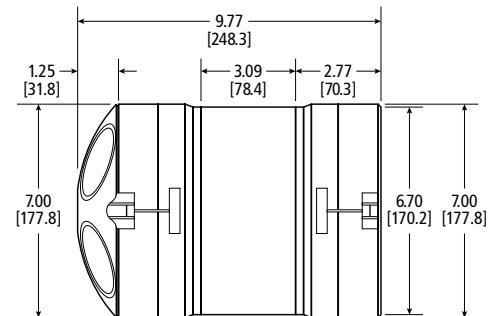
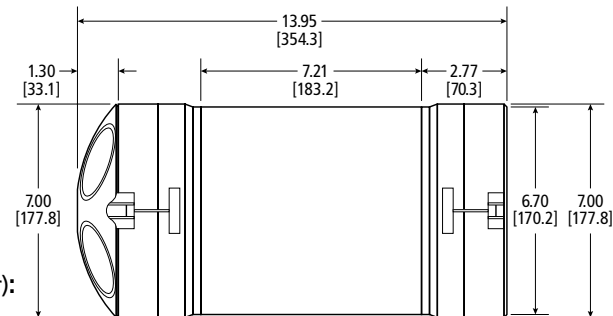
Standard depth rating: 200m
Operating temperature: -5° to 45°C
Storage temperature*: -30° to 60°C
Weight in air: 7.5kg – 16.0kg
Weight in water: 1.6kg – 6.0kg

* without batteries

Available Options

- 8GB and 16GB memory options
- RS232 or RS422; 300 to 230,400 baud
- External battery case
- AC/DC power converter
- Ethernet
- Right-angle neoprene or straight metal shell connector

Dimensions in inches (mm)



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