

Sentinel V

20 m, 50 m, 100 m Profiling ADCP



TECHNICAL SPECIFICATIONS

| Depth Cell Size ¹ | V20 (1000 kHz) | | V50 (500 kHz) | | V100 (300 kHz) | |
|---|---|--|--|--|---|--|
| | Range (m) ^{2,3} Wide/Narrow | Std Dev (cm/s) ^{3,4} Wide/Narrow | Range (m) ^{2,3} Wide/Narrow | Std Dev (cm/s) ^{3,4} Wide/Narrow | Range (m) ^{2,3} Wide/Narrow | Std Dev (cm/s) ^{3,4} Wide/Narrow |
| 0.25 m | 18.0/22.6 | 19.2/36.5 | | | | |
| 0.3 m | 19.3/24.0 | 11.1/20.8 | | | | |
| 0.5 m | 20.2/24.9 | 7.1/13.4 | 44.1/57.6 | 19.2/36.5 | | |
| 1.0 m | 22.1/26.9 | 3.6/6.7 | 50.5/64.6 | 7.1/13.5 | 94.5/120.6 | 10.9/20.6 |
| 2.0 m | 24.5/29.4 | 1.7/3.2 | 56.0/70.6 | 3.6/6.7 | 103.5/130.4 | 5.5/10.3 |
| 4.0 m | 26.9/32.0 | 0.8/1.6 | 63.1/78.2 | 1.7/3.2 | 114.6/142.3 | 2.7/5.2 |
| 6.0 m | | | 67.4/82.8 | 1.1/2.1 | 121.7/151.5 | 1.8/3.3 |
| Self-Contained (SC) Communications and Recording | Wireless/Ethernet Internal memory | | 802.11 b/g/n / TCP/IP One 16 GB Micro SD Card included | | | |
| Real-Time (RT) Communications | Serial/Ethernet | | RS232 and RS422 / TCP/IP (setup) UDP (output) | | | |
| Profile Parameters | Velocity accuracy | | V20/V50: 0.3% of the water velocity relative to the ADCP ± 0.3 cm/s V100: 0.5% of the water velocity relative to the ADCP ± 0.5 cm/s | | | |
| | Velocity resolution | | 0.1 cm/s | | | |
| | Velocity range | | ± 5m/s (default); ± 20m/s (maximum) | | | |
| | Ping rate | | Up to 4 Hz (SC); Up to 16 Hz (RT) | | | |
| Echo Intensity Profile | Vertical resolution Dynamic range Precision | | Depth cell size 80 dB ±1.5 dB | | | |
| Transducer and Hardware | Beam angle Configuration Depth rating Materials | | 25° 4-beam, convex; 5th beam vertical 200 m Transducer, housing, and end cap: plastic Connector: metal shell | | | |
| Standard Sensors | Temperature (mounted on transducer) Compass (magneto-inductive sensor) Tilt (MEMS accelerometers) | | Range -5° to 45°C, precision ± 0.4°C, resolution 0.1° Accuracy 2° RMS, resolution 0.1°, max. dip angle 85° Pitch range ± 90°, roll range ± 180°, accuracy 2° RMS, precision 0.05° RMS, resolution 0.1° | | | |
| | Pressure sensor (mounted on transducer) Recorder | | Range 300m, accuracy 0.1% FS 16GB Micro SD Card | | | |
| Power | External DC input Internal battery voltage Battery capacity; over-the-counter @ 0°C Battery pack @ 5°C | | 12–20 VDC 18 VDC new 100 watt hours (typical) 510 watt hours | | | |
| Software | Included Teledyne RDI Software | | ReadyV (SC)—Pre-deployment (testing, planning, and data recovery) ⁵ PLAN (RT)—Pre-deployment (testing and planning) ⁶ VMDAS (RT)—Real-Time (deploy and data processing) ⁶ Velocity (SC/RT)—Post-processing (data handling, display, and export) ⁶ | | | |
| | Optional Teledyne RDI Software (recommended) | | | | | |
| Environmental | Standard depth rating Operating temperature Storage temperature (without batteries) | | 200 m -5° to 45°C -30° to 60°C | | | |
| Available Options—Hardware Available Options—Firmware/Software | Straight or right-angle metal shell connector • AC/DC power converter and cable • External battery case Waves (SC) / Bottom Track (RT) | | | | | |
| Dimensions and Weights | Special configuration drawing available upon request | | | | | |

¹ User's choice of depth cell not limited to the typical values specified.
² Ranges specified are typical at temperature of 5°C and salinity of 35 psu; longer ranges are possible.
³ User selects the bandwidth mode; wide = 25% or narrow = 6%.

⁴ Standard deviations (Std Dev) are typical values for single ping data
⁵ Resident in ADCP accessed via a web browser.
⁶ Windows™ based software program.

Specifications subject to change without notice.
© 2015 Teledyne RD Instruments, Inc. All rights reserved. MM-1039, Rev. Oct 2017.



Teledyne RD Instruments
14020 Stowe Drive, Poway, CA 92064 USA
Tel. +1-858-842-2600 • Email: rdisales@teledyne.com
Les Nertieres 5 Avenue Hector Pintus 06610 La Gaude France
Tel. +33-49-211-0930 • Email: rdie@teledyne.com

Teledyne RD Instruments

Measuring Water in Motion and Motion in Water

SENTINEL V—NEXT GEN ADCP
Product Line



Now Includes Real-Time,
Bottom Track, and Ping
Rates up to 16 Hz!



The Next Generation of ADCP Products

The Sentinel V is Teledyne RDI's next-gen family of Acoustic Doppler Current Profilers (ADCPs). Building upon the unparalleled success of our Workhorse ADCP products, our next generation V products offer a new level of features and versatility.

With profiling ranges from <1m to >150 m and a 200 depth rating, the Sentinel V ADCP is ideally suited for a wide variety of coastal and upper ocean applications.

The lightweight and adaptable Sentinel V is easily deployed on buoys or mounted on the seafloor. Real-time data can be transmitted to shore via a cable link or acoustic modem, or data can be stored internally for short or long-term deployments. With a pressure sensor delivered standard in Sentinel V, this highly versatile tool can be easily upgraded via an electronic firmware update to calculate directional and non-directional wave parameters. Our real-time Sentinel V can also be upgraded to include bottom track for your vessel-mounted applications.

Awesome Versatility for all Coastal Applications...



A comprehensive feature set that will handle anything your operational needs can throw at it:

Multiple simultaneous sampling strategies

Two users with 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.

Multiple bandwidths

User-selectable bandwidth options offer you the best of both worlds: wide bandwidth for high resolution and low noise measurements, narrow bandwidth for equal accuracy with extended profiling range.

Captured O-rings

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

Flood-resistant electronics chamber

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

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.

One-touch activation

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 not engaged.

Individual transducers

Sentinel V's transducers are compact, self-contained discs, which allows for quick, cost effective repairs at our factory if damage occurs in the field.

Off-the-shelf battery option

Now you can gear up for your deployment using supplies found at the corner store. The Sentinel V is available in two configurations. For short-term deployments (<30 days), or when your sampling strategy is spread out over longer periods of time, Sentinel V can be designed to accept standard alkaline D batteries, resulting in reduced operating costs and increased convenience. For longer deployments, you can order an optional external battery case for extended life, or purchase a Sentinel V configured with a standard internal battery pack.



5 beams: Sentinel V data redundancy and enhanced measurements

An integrated 5th beam provides a direct 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 robust zero-up waves parameter



Velocity SOFTWARE

Self-Contained Sentinel V Operations

Sentinel V's latest **Velocity** and **ReadyV** software are sure to become the industry benchmarks, with their powerful features, multiple views, touch-screen capability, and highly intuitive interface. If you can navigate a smart phone—you're ready for Velocity and ReadyV.

ReadyV: 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 needed to acquire, and no need for a dedicated computer. All that's required to communicate with your ADCP is a wireless computer of opportunity and web browser. This feature also allows you to keep your system's software and firmware up to date.
- **Intuitive Interface.** ReadyV 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

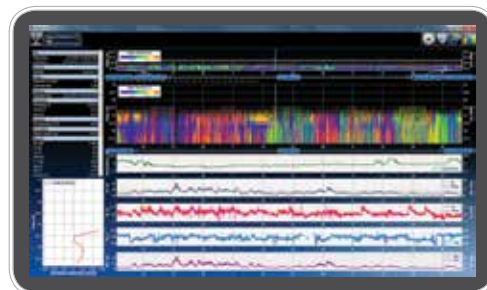
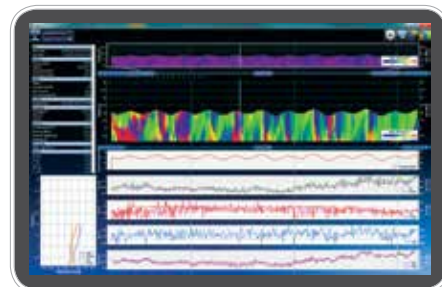
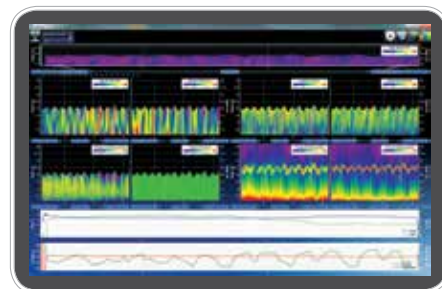
Sentinel V's latest ADCP post-processing software provides users with turnkey processes and tools that will wow even our most seasoned ADCP veterans. The features are too many to list in this small space, but highlights include:

- 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
- Comprehensive log of all loaded and recent data files
- Export to multiple output formats

Waves Processing Software:

Capitalizing on WAVESMON, our highly-popular waves processing software used with our Workhorse products, Sentinel V users can now use Velocity with its built in WavesMon features to seamlessly post process your Sentinel V data.

Velocity displays 2D contour currents and times series of waves within a single display, allowing for easy comparison of currents and waves for both novice and expert users. Further data displays can also be accomplished through our new WavesView software.



Velocity SOFTWARE

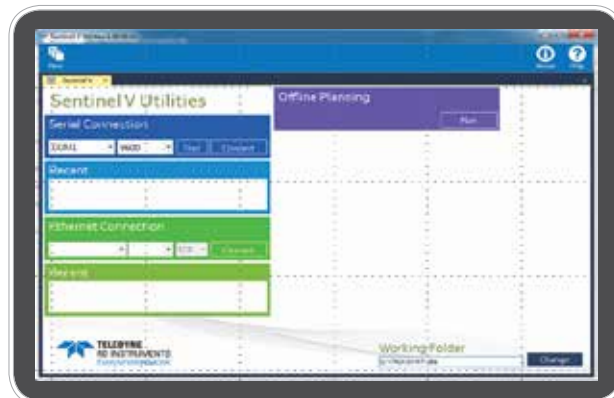
Real-Time Sentinel V Operations

Sentinel V Real-Time Utilities

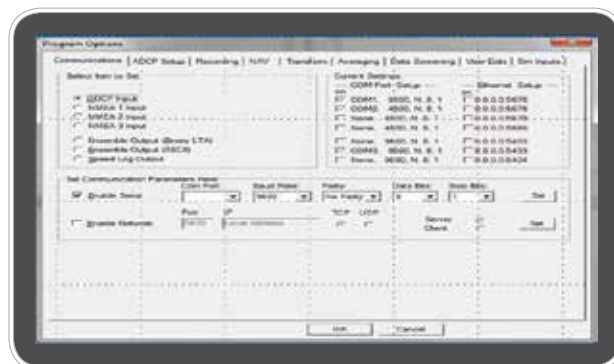
Sentinel V's latest Real-Time release includes a new software package, Sentinel V Real-Time Utilities, which includes a built-in wizard for those who prefer a step-by-step walk through to deploy your Sentinel V, or it can be bypassed if assistance is not required.

Features include:

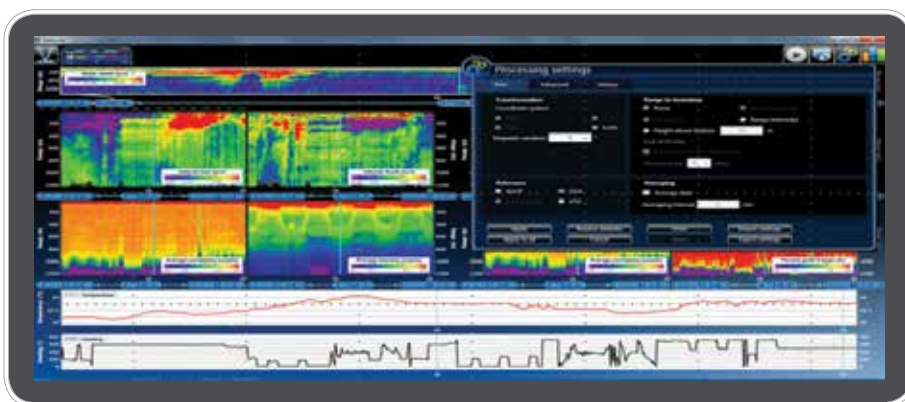
- **Sentinel V Real-Time Utilities Pre Deployment Testing:** Using the built-in wizard, or clicking directly on the self-tests allows the user a quick verification and safeguard that the system is ready to go for your real-time deployment.
 - **Real-Time Data Collection Options:** The software offers users the ability to collect data through either a built-in terminal emulator, or our long-standing VMDAS software for those that prefer this familiar format.
- #### Post-Processing:
- The **VMDAS** program allows users to both reprocess and playback the data with profile and ship track plots.
 - The **Velocity** software program allows users to playback the data with 2D/3D contour and time series plots.



Sentinel V Utilities for Real-Time Data Collection



Supports real-time current profile data collection from a Sentinel V mounted on a vessel



Supports playback of data collected by VMDAS with GPS referencing (includes support for WH and OS/OO data sets!)