

# Workhorse Sentinel

SELF-CONTAINED 1200, 600, 300 kHz ADCP

## The Global Leader in High-accuracy Data Collection



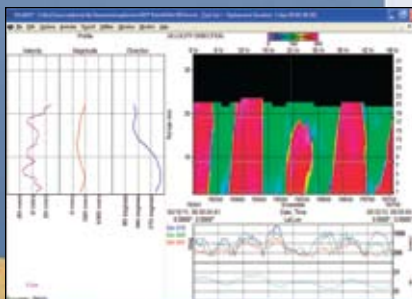
### The Workhorse Sentinel offers:

- *Versatility:* Direct reading or self contained, moored or moving, the Sentinel provides precision current profiling data when and where you need it most.
- *A solid upgrade path:* The Sentinel has been designed to grow with your needs. Easy upgrades include pressure, bottom tracking, and directional wave measurement.
- *Precision data:* Teledyne RDI's patented BroadBand signal processing delivers very low-noise data, resulting in unparalleled data resolution and minimal power consumption.
- *A four-beam solution:* Teledyne RDI's patented 4-beam design improves data reliability by providing a redundant data source in the case of a blocked or damaged beam; improves data quality by delivering an independent measure known as error velocity; and improves data accuracy by reducing variance in your data.

The self-contained **Sentinel** is Teledyne RD Instruments' most popular and versatile Acoustic Doppler Current Profiler (ADCP) configuration, boasting thousands of units in operation in over 50 countries around the world.

By providing profiling ranges from 1 to 165m, the high-frequency Sentinel ADCP is ideally suited for a wide variety of applications. Thanks to Teledyne RDI's patented Broadband signal processing, the Sentinel also offers unbeatable precision, with unmatched low power consumption, allowing you to collect more data over an extended period.

The lightweight and adaptable Sentinel is easily deployed on buoys, boats, 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. The Sentinel is easily upgraded to include pressure, bottom tracking, and/or directional wave measurement—for the ultimate data collection solution.



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## Technical Specifications

### Water Profiling

Depth	Typical Range <sup>2</sup> 12m		Typical Range <sup>2</sup> 50m		Typical Range <sup>2</sup> 110m	
Cell Size <sup>1</sup>	1200kHz		600kHz		300kHz	
Vertical Resolution (m)	Range <sup>3</sup> (m)	Std. Dev. <sup>4</sup> (cm/s)	Range <sup>3</sup> (m)	Std. Dev. <sup>4</sup> (cm/s)	Range <sup>3</sup> (m)	Std. Dev. <sup>4</sup> (cm/s)
0.25m	11–14	12.9				
0.5m	13–16	6.1	39	12.9	see note <sup>1</sup>	
1m	14–18	3.0	43	6.1	92–71	12.8
2m	15–20 <sup>2</sup>	2.0	47	3.0	102–78	6.1
4m	see note <sup>1</sup>		52 <sup>2</sup>	2.0	113–86	3.0
8m					126–95 <sup>2</sup>	2.0

<sup>1</sup> User's choice of depth cell size is not limited to the typical values specified.

<sup>2</sup> Longer ranges available.

<sup>3</sup> Profiling range based on temperature values at 5°C and 20°C, salinity = 35ppt.

<sup>4</sup> BroadBand mode single-ping standard deviation (Std. Dev.).

## Long Range Mode

	Range (m)	Depth Cell Size (m)	Std. Dev. (cm/s)
1200kHz	24	2	3.8
600kHz	70	4	4.2
300kHz	165	8	4.2

## Profile Parameters

### Velocity accuracy:

- **1200, 600:** 0.3% of the water velocity relative to the ADCP  $\pm 0.3\text{cm/s}$
- **300:** 0.5% of the water velocity relative to the ADCP  $\pm 0.5\text{cm/s}$

### Velocity resolution: 0.1cm/s

Velocity range:  $\pm 5\text{m/s}$  (default)  
 $\pm 20\text{m/s}$  (maximum)

Number of depth cells: 1–128

Ping rate: 2Hz (typical)

## Echo Intensity Profile

Vertical resolution: Depth cell size

Dynamic range: 80dB

Precision:  $\pm 1.5\text{dB}$

## Transducer and Hardware

Beam angle: 20°

Configuration: 4-beam, convex

Internal memory: Two PCMCIA card slots; one memory card included

Communications: Serial port selectable by switch for RS-232 or RS-422. ASCII or binary output at 1200–115,400 baud.

## Standard Sensors

Temperature (mounted on transducer):

Range:  $-5^{\circ}$  to  $45^{\circ}\text{C}$

Precision:  $\pm 0.4^{\circ}\text{C}$

Resolution: 0.01°

Tilt: Range:  $\pm 15^{\circ}$

Accuracy:  $\pm 0.5^{\circ}$

Precision:  $\pm 0.5^{\circ}$

Resolution: 0.01°

Compass (fluxgate type, includes built-in field calibration feature):

Accuracy:  $\pm 2^{\circ}$  <sup>5</sup>

Precision:  $\pm 0.5^{\circ}$  <sup>5</sup>

Resolution: 0.01°

Maximum tilt:  $\pm 15^{\circ}$

<sup>5</sup>  $\pm 1.0^{\circ}$  is commonly achieved after calibration

## Power

External DC input: 20–50VDC

Internal battery voltage: 42VDC new;  
28VDC depleted

Battery capacity: @0°C: 450 watt hours

## Environmental

Standard depth rating:

200m; optional to 6000m

Operating temperature:  $-5^{\circ}$  to  $45^{\circ}\text{C}$

Storage temperature\*:  $-30^{\circ}$  to  $60^{\circ}\text{C}$

Weight in air: 13.0kg

Weight in water: 4.5kg

\* Without batteries

## Software

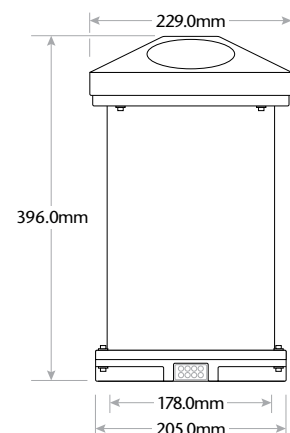
Teledyne RDI's Windows™-based software included:

- WinSC—Data Acquisition
- WinADCP—Data Display and Export

## Available Options

- Memory: 2 PCMCIA slots, total 4GB
- Pressure sensor
- External battery case
- High-resolution water-profiling modes
- Bottom tracking
- AC/DC power converter, 48VDC output
- Pressure cases for depths up to 6000m
- Directional Wave Array

## Dimensions



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