

# Workhorse Sentinel

MARINE MEASUREMENTS

NAVIGATION

WATER RESOURCES

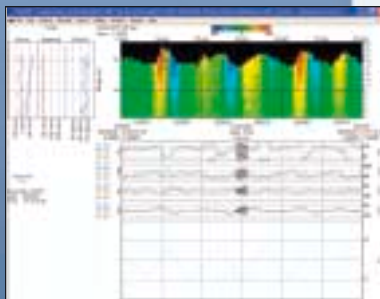
SELF-CONTAINED 1200, 600, or 300 kHz ADCP

## The global leader in high-accuracy data collection

The **Sentinel** is RD Instruments' most popular and versatile Acoustic Doppler Current Profiler, boasting thousands of units in operation in over 50 countries around the world.

With up to 165 meters of profiling range, the Sentinel is ideally suited for a wide variety of applications. Thanks to 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.



### 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:** RDI's patented BroadBand signal processing delivers very low-noise data, resulting in unparalleled data resolution and minimal power consumption.
- **A four-beam solution:** 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.



RD Instruments  
Acoustic Doppler Solutions

# Workhorse Sentinel

## SELF-CONTAINED 1200, 600, OR 300 kHz ADCP



### Technical Specifications

#### Water Profiling

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

<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                   | 3.5              |
| 600kHz  | 70        | 4                   | 3.8              |
| 300kHz  | 165       | 8                   | 3.8              |

### Profile Parameters

#### Velocity accuracy:

- **1200, 600:**  $\pm 0.25\%$  of the water velocity relative to the ADCP  $\pm 0.25\text{cm/s}$
- **300:**  $\pm 0.5\%$  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:**  $\pm 1.5\text{dB}$  (relative measure)

### 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:  $0.01^\circ$

**Tilt:** Range:  $\pm 15^\circ$

Accuracy:  $\pm 0.5^\circ$

Precision:  $\pm 0.5^\circ$

Resolution:  $0.01^\circ$

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

Accuracy:  $\pm 2^\circ$  <sup>4</sup>

Precision:  $\pm 0.5^\circ$  <sup>4</sup>

Resolution:  $0.01^\circ$

Maximum tilt:  $\pm 15^\circ$

<sup>4</sup>@  $60^\circ$  magnetic dip angle, 0.5G total field

### Power

**DC input:** 20–60VDC; internal battery pack, external battery pack, or external power supply

**Voltage:** 42VDC new; 28VDC depleted

**Capacity:** @  $0^\circ\text{C}$ : 400 watt hours

**Transmit:**

- 16W @ 35V (1200kHz)
- 37W @ 35V (600kHz)
- 115W @ 35V (300kHz)

### Environmental

**Standard depth rating:**

200m; optional to 6000m

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

**Storage temperature:**  $-30^\circ$  to  $75^\circ\text{C}$

**Weight in air:** 13.0kg

**Weight in water:** 4.5kg

### Software

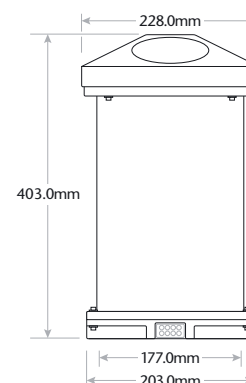
Use RDI's Windows™-based software for the best results:

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

### Upgrades Available

- Memory: Up to 2 gigabytes
- 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

### Dimensions



## RD Instruments

Acoustic Doppler Solutions

[www.rdinstruments.com](http://www.rdinstruments.com)

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