

Teledyne RD Instruments

# Workhorse Sentinel

Self-Contained 1200, 600, 300kHz ADCP

## The Industry Standard for High Accuracy Data Collection



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 154m, the high-frequency Sentinel ADCP is ideally suited for a wide variety of applications. Thanks to Teledyne RDI's 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.



### PRODUCT FEATURES

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



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## TECHNICAL SPECIFICATIONS

Water Profiling	Depth Cell Size <sup>1</sup>	Typical Range <sup>2</sup> 12m <b>1200kHz</b>		Typical Range <sup>2</sup> 50m <b>600kHz</b>		Typical Range <sup>2</sup> 110m <b>300kHz</b>	
		Vertical Resolution	Range <sup>3</sup>	Std. Dev. <sup>4</sup>	Range <sup>3</sup>	Std. Dev. <sup>4</sup>	Range <sup>3</sup>
	0.25m	11m	14.0cm/s				
	0.5m	12m	7.0cm/s	38m	14.0cm/s	see note 1	
	1m	13m	3.6cm/s	42m	7.0cm/s	83m	14.0cm/s
	2m	15m <sup>2</sup>	1.8cm/s	46m	3.6cm/s	93m	7.0cm/s
	4m	see note 1		51m <sup>2</sup>	1.8cm/s	103m	3.6cm/s
	8m					116m <sup>2</sup>	1.8cm/s
<b>Long Range Mode</b>	2m	19m	3.4m/s				
	4m			66m	3.6cm/s		
	8m					154m	3.7cm/s
<b>Profile Parameters</b>	Velocity accuracy	0.3% of the water velocity relative to ADCP ±0.3cm/s		0.3% of the water velocity relative to ADCP ±0.3cm/s		0.5% of the water velocity relative to ADCP ±0.5cm/s	
	Velocity resolution	0.1cm/s		0.1cm/s		0.1cm/s	
	Velocity range:	±5m/s (default) ±20m/s (max)		±5m/s (default) ±20m/s (max)		±5m/s (default) ±20m/s (max)	
	Number of depth cells	1–255		1–255		1–255	
	Ping rate	Up to 10Hz		Up to 10Hz		Up to 10Hz	
<b>Echo Intensity Profile</b>	Vertical resolution	Depth cell size, user configurable					
	Dynamic range	80dB					
	Precision	±1.5dB					
<b>Transducer and Hardware</b>	Beam angle	20°					
	Configuration	4-beam, convex					
	Internal memory	Two PCMCIA card slots; one memory card included					
	Communications	RS-232 or RS-422; ASCII or binary output at 1200-115,200 baud					
<b>Power</b>	DC input	20–50VDC.					
	Number of batteries	1 internal battery pack					
	Internal battery voltage	42VDC (new) 28VDC (depleted)					
	Battery capacity @ 0°C	450 watt hrs					
<b>Standard Sensors</b>	Temperature (mounted on transducer)	Range -5° to 45°C, Precision ±0.4°C, Resolution 0.01°					
	Tilt	Range ±15°, Accuracy ±0.5°, Precision ±0.5°, Resolution 0.01°					
	Compass (fluxgate type, includes built-in field calibration feature)	Accuracy ±2° <sup>5</sup> , Precision ±0.5° <sup>5</sup> , Resolution 0.01°, Maximum tilt ±15°					
<b>Environmental</b>	Standard depth rating	200m; optional to 500m, 1000m, 6000m					
	Operating temperature	-5° to 45°C					
	Storage temperature (without batteries)	-30° to 60°C					
	Weight in air	13.0kg					
	Weight in water	4.5kg					
<b>Software</b>	TRDI's Windows™-based software included: <b>WinSC</b> —Data Acquisition System; <b>WinADCP</b> —Data Display and Export						
<b>Available Options</b>	<ul style="list-style-type: none"> <li>• Memory: 2 PCMCIA slots, total 4GB</li> <li>• Pressure sensor</li> <li>• External battery case</li> <li>• High-resolution water-profiling modes</li> <li>• Bottom tracking or surface referencing track</li> <li>• AC/DC power converter, 48VDC output</li> <li>• Pressure cases for depths up to 6000m</li> <li>• Directional Wave Array</li> <li>• Acoustic Modem</li> <li>• Inductive Modem</li> <li>• <b>Velocity</b> for advanced post processing</li> </ul>						
<b>Dimensions</b>	228.0mm wide x 405.5mm long (line drawings available upon request)						

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

2 Longer ranges available.

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

4 BroadBand mode single-ping standard deviation (Std. Dev.).

5 <±1.0° is commonly achieved after calibration.