

Teledyne RD Instruments

Workhorse Sentinel

Self-Contained 1200, 600, 300 kHz 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 154 m, 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 ¹	Typical Range ² 12 m 1200 kHz		Typical Range ² 50 m 600 kHz		Typical Range ² 110 m 300 kHz	
	Vertical Resolution	Range ³	Std. Dev. ⁴	Range ³	Std. Dev. ⁴	Range ³	Std. Dev. ⁴
	0.25 m	11 m	14.0 cm/s				
	0.5 m	12 m	7.0 cm/s	38 m	14.0 cm/s	see note 1	
	1 m	13 m	3.6 cm/s	42 m	7.0 cm/s	83 m	14.0 cm/s
	2 m	15 m ²	1.8 cm/s	46 m	3.6 cm/s	93 m	7.0 cm/s
	4 m	see note ¹		51 m ²	1.8 cm/s	103 m	3.6 cm/s
	8 m					116 m ²	1.8 cm/s
Long Range Mode	2 m	19 m	3.4 m/s				
	4 m			66 m	3.6 cm/s		
	8 m					154 m	3.7 cm/s
Profile Parameters	Velocity accuracy	0.3% of the water velocity relative to ADCP ±0.3 cm/s		0.3% of the water velocity relative to ADCP ±0.3 cm/s		0.5% of the water velocity relative to ADCP ±0.5 cm/s	
	Velocity resolution	0.1 cm/s		0.1 cm/s		0.1 cm/s	
	Velocity range:	±5 m/s (default) ±20 m/s (max)		±5 m/s (default) ±20 m/s (max)		±5 m/s (default) ±20 m/s (max)	
	Number of depth cells	1–255		1–255		1–255	
	Ping rate	Typical 4 Hz, Max. 10 Hz		Typical 2 Hz, Max. 10 Hz		Typical 1 Hz, Max. 10 Hz	
Echo Intensity Profile	Vertical resolution			Depth cell size, user configurable			
	Dynamic range			80 dB			
	Precision			±1.5 dB			
Transducer and Hardware	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			
Power	DC input			20–50 VDC.			
	Number of batteries			1 internal battery pack			
	Internal battery voltage			42 VDC (new) 28 VDC (depleted)			
	Battery capacity @ 0°C			450 watt hrs			
Standard Sensors	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° ^s , Precision ±0.5° ^s , Resolution 0.01°, Maximum tilt ±15°			
Environmental	Standard depth rating			200 m; optional to 500 m, 1000 m, 6000 m			
	Operating temperature			-5° to 45°C			
	Storage temperature (without batteries)			-30° to 60°C			
	Weight in air			13.0 kg			
	Weight in water			4.5 kg			
Software	TRDI's Windows™-based software included: WinSC —Data Acquisition System; 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 or surface referencing track • AC/DC power converter, 48 VDC output • Pressure cases for depths up to 6000 m • Directional Wave Array • Acoustic Modem • Inductive Modem • Velocity for advanced post processing						
Dimensions	228.0 mm wide x 405.5 mm 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.