Teledyne RD Instruments

Workhorse Waves Array

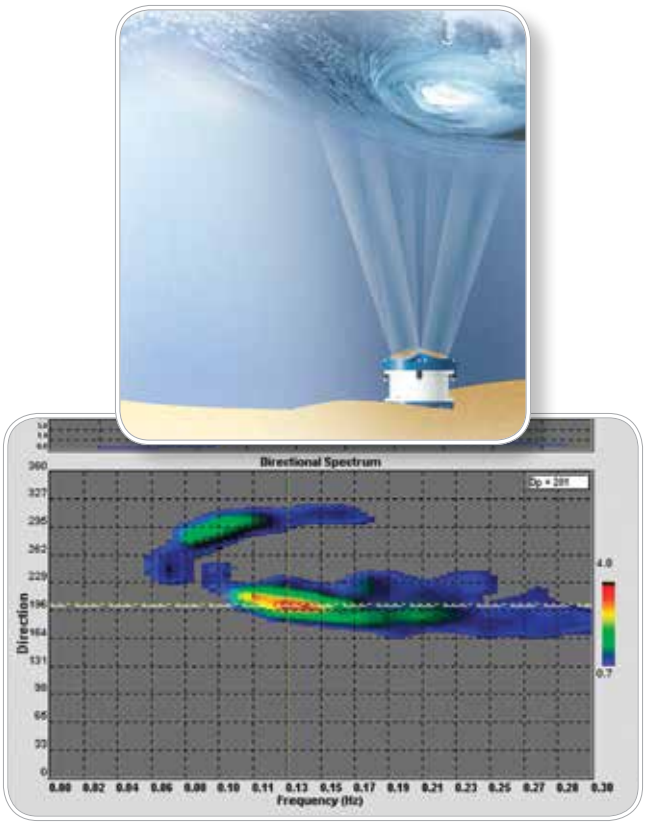
Directional Wave Measurement ADCP Option

Collect High-Quality Waves and Current Data with your Workhorse ADCP

Teledyne RDI's WORKHORSE WAVES ARRAY is an innovative, cost-effective upgrade that allows you to take your Teledyne RDI ADCP to the next level. Via a simple upgrade, you can capture not only the industry's most field-proven and dependable Broadband current profiling data, but highly accurate multi-directional wave measurements as well.

Teledyne RDI's Workhorse ADCP has long been viewed as the industry's most versatile ADCP. With a single instrument you can collect precision ADCP data from the seafloor, the surface, or even a moving vessel. And now, for the fraction of the cost of a stand-alone waves measurement tool, you can add highly robust multi-directional waves measurement capability to your instrument's repertoire.

Why limit yourself to a single measurement, or settle for inferior measurements, when Teledyne RDI's Waves Array allows you to have it all—at a price that meets your budget.

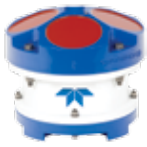


Frequency/Direction spectrum. The ADCP is showing multiple waves at similar frequencies that arrive from different directions.

PRODUCT FEATURES

- **More than a basic wave gauge.** Waves Array not only measures the complete frequency/direction wave spectrum, it provides you with the most reliable and field proven ADCP data available.
- **Better than a directional buoy.** This ADCP distinguishes waves from multiple directions with high resolution. Ocean floor deployment reduces the risk of loss or damage.
- **More powerful than a single-purpose instrument.** Waves Array allows your existing ADCP to measure multi-directional wave spectra, current velocity profiles, and water level—all at the same time.
- **Waves data when and where you need it.** Store your data in our stand-alone configuration, or transmit it directly to the surface utilizing our optional NEMO Waved Data Processing Module.
- **Available as an option to your new ADCP, or as an upgrade to your existing Workhorse or Horizontal ADCP.**

Workhorse Waves Array



Directional Wave Measurement ADCP Option

TECHNICAL SPECIFICATIONS

Measurement Technique	Derivation of directional distribution	Array processing
	Location of sensors	Remotely measured near surface
	Number of independent sensors	12
	Array aperture	~0.7 x depth
	Acoustic sensor signal processing	Broadband
	Simultaneous sampling of wave burst + standard current profile	Yes
Calculated Wave Parameters	Primary data source	Near-surface velocity sensors
	Redundant data sources	Pressure sensor and "surface track" derived parameters for data QA
	Height	H_s $H_{1/10}$ H_{mean}
	Period	T_p T_{mean}
	Direction	D_p
	Custom	H_{sea} H_{swell} T_{sea} T_{swell} D_{sea} D_{swell}

Minimum Wave Period Measured

Deployment Depth	Surface Track High-Freq. Cutoff[1]	Non-Directional High-Freq. Cutoff	Directional High-Freq. Cutoff
5m	1.0s	1.7s	1.8s
20m	1.0s	2.2s	3.5s
80m	1.0s	4.4s	7.0s

Recommended Deployment Depths

ADCP Frequency	Depth[2]
1200kHz	2.5–14m
600kHz	5–45m
300kHz	10–80m

Raw Sensor Data

All sensors are sampled at a 2Hz rate default. Sample rates of up to 4Hz are possible with a specialized setup with a 1200 kHz..

Velocity	1200kHz accuracy	±0.3% ±0.3cm/s
	600kHz accuracy	±0.3% ±0.3cm/s
	300kHz accuracy	±0.5% ±0.5cm/s
Precision	See Workhorse ADCP brochure	
Surface track range	Accuracy	1.0% of full scale
	Precision	ADCP bin size/3.5
Pressure	Accuracy	0.25% of full scale
	Precision	1/40,000 of full scale
Compass	Accuracy	±2°[3]
	Precision	±0.5°

Installation	Cable power/communications	Provides unlimited duration for real-time data.
	Battery power	For remote locations, power for 90 days or more available. Optional external pack available.
Software	Planning software	Self-contained or real-time deployment set up with waves, current profiles, or both.
	Monitoring software	Data acquisition and processing.
	Viewing software	Zoom, animate, average. Export to bmp, png, or text files.
Available Options	New ADCPs can be ordered with the Waves Array option, or you can upgrade your existing ADCP to include this capability. See the Workhorse NEMO datasheet for real-time waves processing capability.	

1 Acoustic surface track is only reliable in non-"whitecapping" conditions.
2 Assumes bottom-mounted ADCP, near-surface deployment on top of a current meter mooring is possible.
3 ±1.0° is commonly achieved after field calibration.

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