



# Workhorse Waves Array

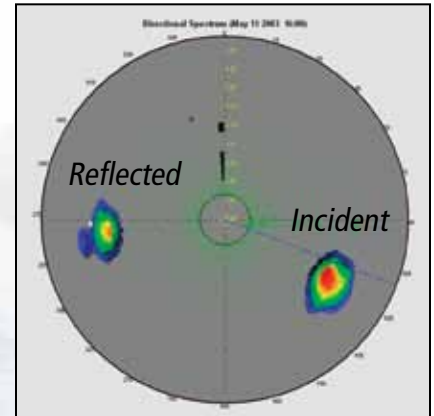
## DIRECTIONAL WAVE MEASUREMENT OPTION FOR WORKHORSE ADCPs

### 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.



- **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.**



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MEASURING WATER IN MOTION AND MOTION IN WATER

# Workhorse Waves Array

DIRECTIONAL WAVE MEASUREMENT OPTION FOR WORKHORSE ADCPs



## 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

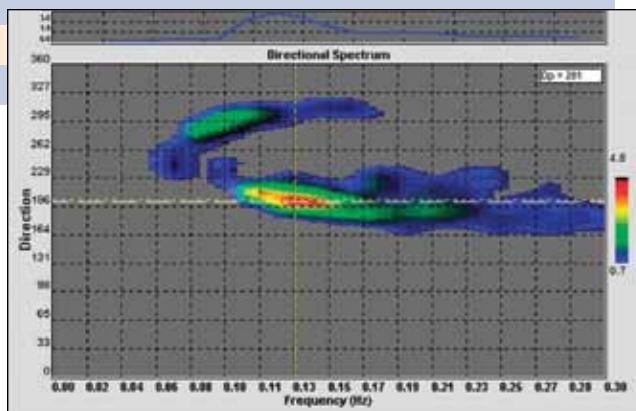
Calculated Wave Parameters						
Primary data source	Near-surface velocity sensors					
Redundant data sources	Pressure sensor and "surface track" derived parameters for data QA					
Height	$H_s$	$H_{1/10}$	$H_{mean}$			
Period	$T_p$	$T_{mean}$				
Direction	$D_p$					
Custom	$H_{sea}$	$H_{swell}$	$T_{sea}$	$T_{swell}$	$D_{sea}$	$D_{swell}$

Minimum Wave Period Measured			
Deployment	Surface Track	Non-Directional	Directional
Depth (m)	High-Freq. Cutoff <sup>1</sup> (sec)	High-Freq. Cutoff (sec)	High-Freq. Cutoff (sec)
5	1.0	1.7	1.8
20	1.0	2.2	3.5
80	1.0	4.4	7.0

Recommended Deployment Depths	
ADCP Frequency	Depth (m) <sup>2</sup>
1200	2.5–14
600	5–45
300	10–80

<sup>1</sup>Acoustic surface track is only reliable in non-"whitcapping" conditions

<sup>2</sup>Assumes bottom-mounted ADCP, near-surface deployment on top of a current meter mooring is possible.



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

## Raw Sensor Data

All sensors are sampled at a 2Hz rate default. Sample rates of up to 4Hz are possible.

### Velocity:

1200 kHz accuracy  $\pm 0.3\%$   $\pm 0.3\text{cm/s}$   
 600 kHz accuracy  $\pm 0.3\%$   $\pm 0.3\text{cm/s}$   
 300 kHz accuracy  $\pm 0.5\%$   $\pm 0.5\text{cm/s}$

### 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  $\pm 2^\circ$   
 Precision  $\pm 0.5^\circ$

\* $\pm 1.0^\circ$  is commonly achieved after field calibration

## 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.

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