

# Workhorse Quartermaster

## 150 kHz ADCP

Teledyne RD Instruments' WORKHORSE QUARTERMASTER Acoustic Doppler Current Profiler (ADCP) has been designed to fill the gap between Teledyne RDI's higher frequency 300 kHz Workhorse units and the 75 kHz Long Ranger. The Quartermaster is ideally suited for current profile measurements that may require up to 300m range. The unit provides an unsurpassed combination of range, resolution, and versatility, thanks to Teledyne RDI's Broadband technology.

The highly flexible Workhorse Quartermaster is available in the following configuration: direct read or self-contained with a two and four battery pack option.. The Quartermaster is ideally suited for:

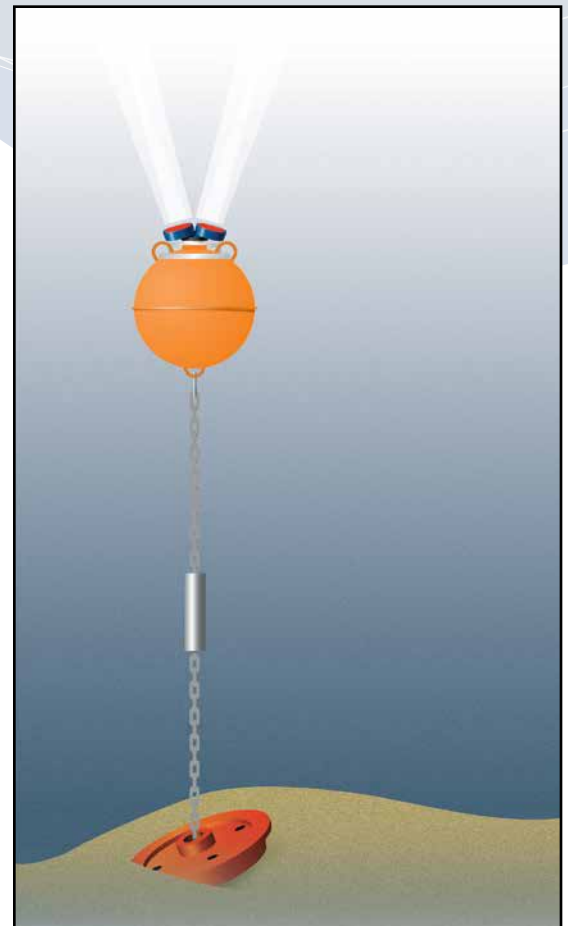
- Ocean observatories
- Shelf-edge profiling
- Upper ocean dynamics

### Third-party solutions

Collect data at your desk: the Quartermaster can operate in real-time or stored-data mode. Third-party products are available for delivery of data via an acoustic modem and radio data transfer direct to your desktop.

### PRODUCT FEATURES

- **Versatility:** The QuarterMaster offers ranges of up to 300m, as well as self-contained and direct read configurations.
- **Precision data:** Teledyne RDI's Broadband signal processing produces high-resolution, precise measurements without compromising battery life.
- **Reliability:** Set it and forget it; the highly reliable and energy-efficient Quartermaster can be deployed for three, six, or even twelve months of worry-free operation.
- **4-beam solution:** Teledyne RDI's 4-beam design provides a redundant data source in case of a blocked or damaged beam, as well as an independent measure known as error velocity to ensure the quality of the data.



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## TECHNICAL SPECIFICATIONS

	Mode	Depth Cell Size	Std Dev. <sup>1</sup>	First Cell Range <sup>2</sup>	Maximum Range <sup>3,4,5</sup>	
	High Resolution	4 m	7.0 cm/s	8.9 m	210 m	
		8 m	3.5 cm/s	12.8 m	235 m	
		16 m	1.8 cm/s	20.6 m	255 m	
		24 m	1.2 cm/s	28.4 m	270 m	
	Long Range	4 m	14.0 cm/s	8.8 m	275 m	
		8 m	7.0 cm/s	12.7 m	300 m	
		16 m	3.6 cm/s	20.5 m	325 m	
		24 m	2.5 cm/s	28.7 m	340 m	
		Bottom Track	N/A	N/A	N/A	540 m
	Profile Parameters (not designed for moving vessels)	Velocity accuracy	± 1% ± 5 mm/s			
Velocity resolution		1 mm/s				
Velocity range		± 5 m/s default, ± 10 m/s max				
Depth cell size		2–24 m				
Number of depth cells		1–255				
Ping rate		1 Hz (typical)				
Echo Intensity Profile	Vertical resolution	Depth cell size, user configurable				
	Dynamic range	80 dB				
	Precision	±1.5 dB (relative measure)				
Transducer and Hardware	Beam angle	20°				
	Beam width (1-way)	4°				
	Configuration	4-beam, convex				
	Internal memory	Two PCMCIA card slots; two memory card included (4 GB)				
	Communications	RS-232 or RS-422; ASCII or binary output at 1200-115,200 baud				
Power	DC input	20–50 VDC				
	Number of batteries	Select from 0, 2, or 4 battery pack configurations				
	Internal battery voltage	42 VDC (new) 28 VDC (depleted)				
	Battery capacity @0°C	450 watt hours typical / 900 or 1800 watt hours total				
Standard Sensors	Pressure sensor	Maximum range 2000 m				
	Pressure accuracy	0.25% of full scale				
	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°, Precision ±0.5°, Resolution 0.01°, Maximum tilt ±15°				
Environmental	Depth rating	1500 m (3000/6000 m optional)				
	Operating temperature	-5° to 45°C				
	Storage temperature without batteries	-30° to 60°C				
	Weight in air	SC (2 BP) 56 kg, SC (4 BP) 70 kg, DR (0 BP) 41 kg, ExtBC (4 BP) 39 kg				
	Weight in water	SC (2 BP) 30 kg, SC (4 BP) 38 kg, DR (0 BP) 22 kg, ExtBC (4 BP) 15.3 kg				
Software	Use Teledyne RDI's Windows™-based software for the best results: <b>WinSC</b> —Data Acquisition; <b>WinADCP</b> —Data Display and Export; <b>Teledyne RDI Tools</b> —Utilities					
Available Options	• 3000m and 6000m depth option • External battery case • Mooring accessories: in-line and bottom-mount accessories • Remote head configurations • <b>Velocity</b> for advanced post processing					
Dimensions	488.14 mm wide x 473.91 mm long (Monitor); 751.71 mm long (2-battery Sentinel); 994.71 mm long (4-battery Sentinel) (line drawings available upon request)					



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1 Standard deviation is ADCP uncertainty given a single ping.  
2 The first cell range is the distance from the transducer to the center of the first cell.  
3 Maximum range is a nominal value based on 5°C, 35ppt, and typical ocean backscatter; actual range will vary depending on environmental conditions.  
4 Assuming the ADCP is pointed vertically (0° tilt), the maximum range is limited to 94% of the distance to the surface.  
5 Assumes a power supply of 32VDC (typical average battery voltage).  
6 <±1.0° is commonly achieved after calibration.