Teledyne RD Instruments

Workhorse **Rio Grande**

## Versatile River Discharge Measurement System

The Industry Standard

The WORKHORSE RIO GRANDE ADCP (Acoustic Doppler Current Profiler) is an accurate, rapid-sampling current profiling system designed to operate from a moving boat. The result is the fastest, safest, and most flexible method for measuring discharge.

The Rio Grande can be used for a wide range of river conditions, from shallow 0.5m deep streams to rushing rivers and tidal estuaries where no prior discharge data exists.

The advantages will revolutionize the way you collect data, resulting in more productive, diverse, and cost-effective river surveys; reduced lifetime equipment costs; and the highest-quality data sets available.

Teledyne RDI's Rio Grande ADCP allows you to collect real-time discharge measurements from any moving platform—from small tethered boats to inland survey vessels.
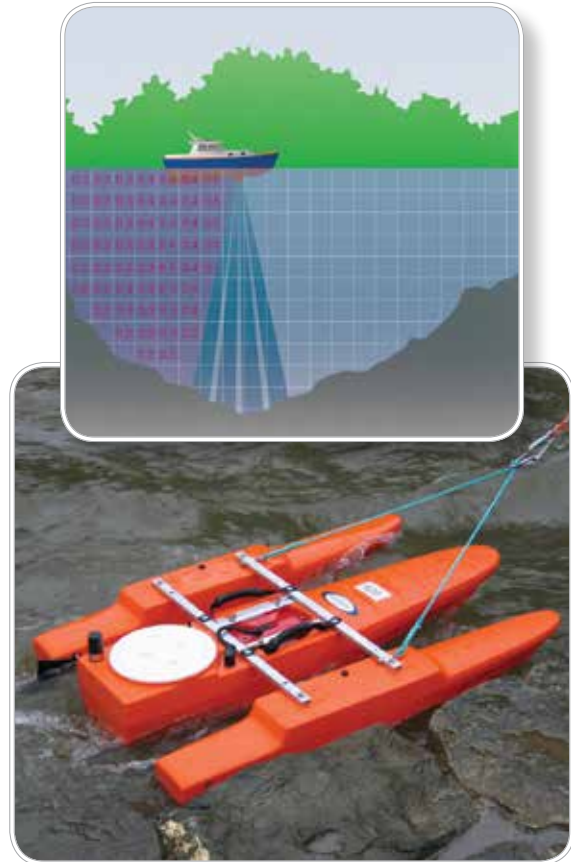
PRODUCT FEATURES

- **Accurate:** Teledyne RDI's Broadband technology allows for small depth cells and fast transects, allowing for highly accurate and repeatable velocity and discharge measurements.

- **Compatible:** The Rio Grande is designed to integrate with external sensors including GPS, depth sounder, and an external compass via WinRiver II Windows-based software.

- **Robust:** The Rio Grande boasts low flow or weak current measurement capability with high-precision modes (equipped as standard).

- **Versatile:** The unit's large depth range profiling capability that allows one unit to be used in both dry season (shallow and low flow) and flood season (high stage and strong flow) for the same site.

- **User-friendly:** The system includes comprehensive and multi-language data acquisition and processing software with standard discharge summary table.

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A Teledyne Marine Company

Workhorse Rio Grande
Versatile River Discharge Measurement System

TECHNICAL SPECIFICATIONS

		WHR600 600kHz	WHRZ1200 1200kHz
Water Velocity Profiling	Profiling range	0.7m[1] to 75m[2]	0.3m[1] to 25m[2]
	Velocity range	±5m/s default, ±20m/s maximum	
	Accuracy	±0.25% of water velocity relative to ADCP, ±2mm/s	
	Resolution	1mm/s	1mm/s
	Number of cells	1-128	1-128
	Cell size	0.1m to 4m	0.05m to 2m
	Blanking distance	0.25m	0.05m
	Data output rate	1-2Hz (typical)	1-2Hz (typical)
Bottom Tracking	Velocity range	±9.5m/s	±9.5m/s
	Depth range	0.8m to 90m[2]	0.5m to 30m[2]
	Accuracy	±0.25% of bottom velocity relative to ADCP, ±2mm/s	
	Resolution	1mm/s	1mm/s
Depth Measurement	Range	0.8m to 90m[2]	0.5m to 30m[2]
	Accuracy	±1%[3] ±1cm	±1%c ±1cm
	Resolution	1mm/s[4]	1mm/s[4]

Standard Sensors		Temperature	Tilt (pitch and roll)	Compass
	Range	-5°C to 40°C	±15°	0-360°
	Accuracy	±0.4°C	±0.5°	±2°
	Resolution	0.01°C	0.01°	0.01°

Operation Modes	Standard profiling mode (Broadband)	Mode 1
	High precision profiling mode (included)	Mode 5 and Mode 11
	High ping profiling mode (optional)	Mode 12
	Shallow water bottom tracking mode (optional)	Bottom tracking Mode 7

Transducer and Hardware	Configuration	Janus four beams at 20° beam angle
	Internal memory	Optional flash PC card up to 2GB

Software[5]
- WinRiver II (standard) for moving-boat measurement
- SxS Pro (optional) for stationary measurement; comes with an uncertainty model for in situ quality evaluation and control

Communications	Serial (standard)	RS-232, 1200 to 115,200 baud rate
	Radio modem (optional)	Range >30km (line of sight)

Integration	With GPS, depth sounder, or external gyrocompass: available through RS232 to PC with WinRiver II software

Power	Input voltage	10.5–18V DC
	Power consumption	1.5W typical

Float (optional)	Configuration	Three hulls (trimaran)
	Material	Polyethylene
	Dimensions	Length 120cm, width 80cm, height 18cm
	Weight	10kg bare; 17kg with instrument and battery

Environmental	Operating temperature	-5°C to 45°C
	Storage temperature	-20°C to 50°C

1. Assume one good cell (minimum cell size) with high-precision profiling mode; range measured from transducer surface.
2. Assume fresh water; actual range depends on temperature and suspended solids concentration.
3. Assume uniform water temperature and salinity profile.
4. For averaged depth data.
5. For system setup, data acquisition, discharge calculation, data display, and summary report

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