



GENERAL DESCRIPTION

RD Instruments is the world leader in Doppler sonar technology. Now RD Instruments brings Doppler Velocity Logs (DVLs) to an astounding new level of precision, performance, price and size.

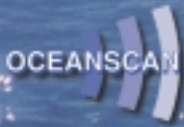
Introducing the Workhorse Navigator DVL. Available in either 1200 kHz or 300 kHz instruments, the Workhorse Navigator DVL is quite simply the world's most powerful combination of price, performance and reliability.

The Navigator uses patented[†] BroadBand technology which produces almost an order of magnitude reduction in random error (velocity standard deviation) compared to other Dopplers. RD Instrument's Workhorse hardware and firmware design puts this

capability into a new smaller, lighter package. As you will see, the Navigator can fit nearly anywhere.

The unique capabilities of the Navigator represent a combination of sensors never before offered to the industry at this low price. RDI Dopplers have been used as the integral part of the navigation suites of SSN submarines, rescue submarines, swimmer delivery vehicles, oilfield survey ROVs, military synthetic aperture sonar projects, dredge vessels, rock dumping vessels, cable and pipe laying operations and leading AUV projects from around the world.

[†] Patents 5,208,785; 5,343,443; 5,122,990



RDI NAVIGATOR WN-1200

DOPPLER VELOCITY LOG

Technical Specifications:

Transducer and hardware

Models	WN-1200	WN-300
Actual Frequencies:	1229 kHz	307.21 kHz
Beamwidth:	1.2°	3.9°
Beam Angle (From Vertical):	30°	30°
Configuration:	4-beam-convex	4-beam-convex
Housing & Transducer: Material	6061 aluminum	6061 aluminum
External Connector:	7-pin low-profile	7-pin low-profile
Weight (in air):	4.2 kg	9.7 kg
Weight (in water):	2.0 kg	4.8 kg

Altitude (uncertainty ±1%)

Altitude Limits (m)	WN-1200	WN-300
Minimum:	0.3	1.0
Maximum:	30	200

Bottom velocity (for $IVI < 10m/s$)

Short-term Error Precision ^{(cm/s) 1, 2}	WN-1200	WN-300
V=1.0 m/s:	0.3	0.3
V=3.0 m/s:	0.4	0.6
V=5.0 m/s:	0.5	0.8

Long-term Error Accuracy ^(cm/s)	WN-1200	WN-300
Accuracy ^(cm/s)	±0.2% ±0.01	±0.4% ±0.4
Ping Rate ³	1-10 Hz	0.5-7 Hz

Water velocity (reference layer)⁴

Range Limits (m)	WN-1200	WN-300
Minimum:	0.25	1.0
Maximum:	18	110

Short-term Error: Precision ^{(cm/s) 1, 2}	WN-1200	WN-300
Ref. Layer Size = 1.0 m:	6	15
Ref. Layer Size = 2.0 m:	5	9
Ref. Layer Size = 4.0 m:	3	6
Ref. Layer Size = 8.0 m:	2	5

Long-term Error Accuracy ^(cm/s)	WN-1200	WN-300
Accuracy ^(cm/s)	±0.2% ±0.01	±0.4% ±0.4
Ping Rate ³	1-10 Hz	0.5-7 Hz

Transmit power (per beam)

Transmit Power @ 32VDC:	WN-1200	WN-300
	8	25

Sensors

Signal Type	Range	Accuracy	Notes
Heading: Flux-gate	360°	±2°	60° dip, 0.3G
Roll/Pitch: Electrolytic	±15°	±0.5°	max=35°
Pressure: Piezoresistive	Variable	±0.5%	Optional
Temp: Thermistor	-5 to 45°C	±0.4°C	

Input power

Input Voltage:	WN-1200	WN-300
Input Voltage:	20-60 VDC	
Processing:	2.2 watts	
Average (@32VDC):	8w	15w

Data Communications

Interface:	RS-232 or RS-422 serial @ 300-115,200 baud
Data Format:	ASCII, HEX-ASCII or binary
Input Data:	ASCII commands control operation
Output Data:	3-axis bottom and water velocity, altitude, water temp & other data NMEA 0183
	Most Doppler manufacturer data output formats available

Environmental

Temperature:	-5° to 45°C (operating) -30° to 60°C (storage)
Vibration:	MIL-STD-167-1, Type 1 and IEC 1010
Shock:	IEC 1010
Maximum Depth:	1000 m - 6061 aluminum 6000 m - 7075 aluminum or titanium

- 1 Water and Bottom velocity precision are standard deviations of horizontal velocities for single pings. The standard deviation for an ensemble of pings will decrease proportional to the square root of the number of pings averaged together.
- 2 Single Ping Precision calculated for an altitude of one-half maximum altitude for a given frequency.
- 3 Ping Rates vary due to altitude, baud rate, and amount of water profiled.
- 4 Reference layer maximum ranges are for typical water conditions: 35% salinity, 10°C temperature.

