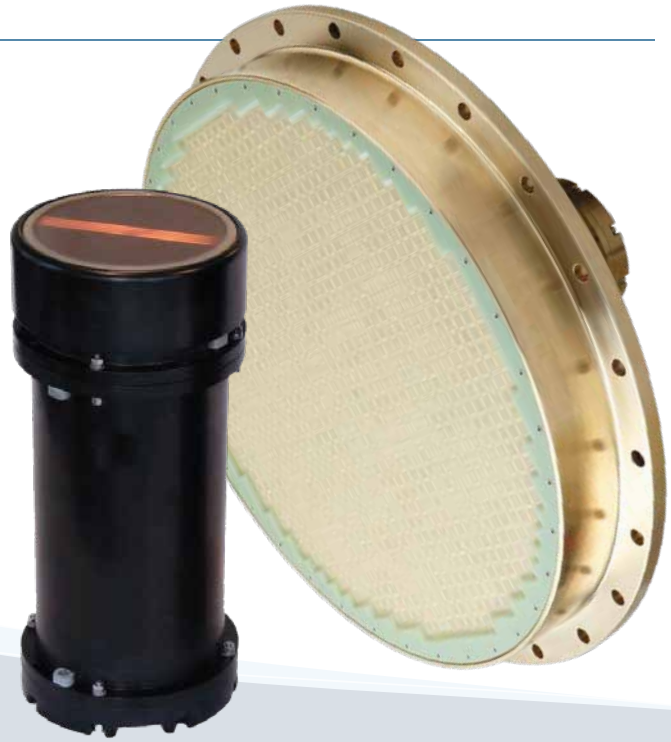
Pioneer

150 kHz / 38 kHz Phased-Array DVLs



Teledyne RD Instruments' 150 kHz and 38 kHz **Phased-Array Doppler Velocity** Logs (DVLs) include the industry's first DVL designed to provide precision velocity data at ranges of 500 m to greater than 2,500 m above the seafloor.

This extended range makes the Pioneer DVLs ideally suited for aiding navigation systems onboard small, medium, and large platforms where the ability to transition from the deep waters of the open oceans to the shallow environments of the littoral zone is a critical enabler.

Designed specifically with the Unmanned Underwater Vehicle (UUV) in mind, the self-contained 38 kHz has oil-filled sensors for larger, full ocean depth platforms. Additionally, these DVLs can also be leveraged for surface and submarine manned and unmanned vessels.

Utilizing state-of-the-art electronics, the 150 kHz and 38k Hz Pioneer DVLs provide expanded connectivity with other sensors while minimizing overall power consumption.

These powerful DVLs use Teledyne RDI's proven bottom detection algorithms and single ping bottom location capability with its Broadband velocity processing technology, providing users with highly reliable precision velocity data for navigation and position processing, even over indeterminate terrain.

PRODUCT FEATURES

- 1000 m depth rating and 500 to 2,500 meter bottom-tracking capability for deep water operations
- Accommodates vehicles from 12-inch (32 cm) diameter up to large manned platforms
- Flexible triggering with both trigger in and trigger out
- Time of validity output for highly accurate coupling with an Inertial Navigation System (INS)
- Real-time current profiling option provides additional critical data parameters from a single instrument
- Extended Range Tracking (XRT option) provides 50% increase in bottom tracking range

TELEDYNE MARINE
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TECHNICAL SPECIFICATIONS

		150 kHz	38 kHz
Bottom Tracking	Maximum Altitude[1,2]	500 m (800 m optional)	2,200 m
	Minimum Altitude	2 m	12 m
	Velocity Range[3]	±9.5 m/s or +16 m/s upon request	±9.5 m/s or +16 m/s upon request
	Long Term Accuracy[4]	±0.6% ±0.2 cm/s	±1.0% ±0.5 cm/s
	Long Term Accuracy[5]	±1.15% ±0.2 cm/s	±1.15% ±0.5 cm/s
	Precision @ 1 m/s	±0.9 cm/s @ ½ altitude	±0.8 cm/s @ ½ altitude
	Precision @ 3 m/s	±2.5 cm/s @ ½ altitude	±2.2 cm/s @ ½ altitude
	Precision @ 5 m/s	±3.6 cm/s @ ½ altitude	±3.4 cm/s @ ½ altitude
	Resolution	0.1 cm/s (default); 0.001 cm/s (selectable)	0.1 cm/s (default); 0.001 cm/s (selectable)
	Maximum Ping Rate[6]	3.3 Hz	3 Hz
Water Profiling	Maximum Range[1,2]	275 m	1100 m
	Minimum Range	8 m	22 m
	Velocity Range[3]	±17 m/s	±17 m/s
	Long Term Accuracy	±0.6% ±0.2 cm/s	±1.0% ±0.5 cm/s
	Precision @ 1 m/s	±6.3 cm/s@8m bin size	±6.4 cm/s@32 m bin size
	Precision @ 3 m/s	±6.6 cm/s@8 m bin size	±6.6 cm/s@32 m bin size
	Precision @ 5 m/s	±7.0 cm/s@8 m bin size	±6.9 cm/s@32 m bin size
	Resolution	1 mm/s	1 mm/s
	Cell Sizes	1 m-16 m	4 m–64 m
Acoustic	Center Frequency	153.6 kHz	38.4 kHz
	Source Level (re 1 µPa)	220 dB@1 m	227 dB@1 m
	1-Way Beam Width	3.9°	3.5°
	Number of Beams	4-phased array	4-phased array
	Beam Angle (nominal)	30°	30°
	Bandwidth (nominal)	6.25% of center freq.	6.25% of center freq.
Environmental (Sensor)	Maximum Operating Depth	1000 m, 6000 m	1000 m
	Operating Temperature	-5°C to 45°C	-5°C to 45°C
	Storage Temperature	-30°C to 60°C	-30°C to 60°C
	Weight in Air (std)	179 kg - 1000 m; 28.9 kg - 6000 m	364 kg
	Weight in Water (std)	6.0 kg - 1000 m; 13.5 kg - 6000 m	282 kg
Internal Sensors	Health Monitor	Transducer health, pressure cycles, maximum pressure, over pressure, operating time	
Optional Sensors—Performance Parameters	Pressure Sensor	1000 m, 6000 m	1000 m, 6000 m
	Pressure Sensor: Resolution = 0.002% FS; Accuracy = ±0.1% FS TEB (total error band) over compensated temp. range of -10-80°C		
Power	Average Power[6]	35 W	95 W
	Quiescent Power	<1.5 W	<1.5 W
	Input Voltage (VDC)	24-48 V	24-48 V
	Surge Current	<6.8 A	<25 A
Upgrades Available	Current Profiling		
Communications	Communications: RS232 (or optional RS422 install at factory)		
Dimensions	Height x Ø (cm)	42.55 x 20.32	12.16 x 91.44; Canister: 20.32 x 33.02 H

1 @5°C and 35ppt, salinity, @ max V.
2 Maximum range may be reduced due to flow noise.
3 When mounted with beam @45°. Also, for platforms with forward velocity higher than reverse (or vice versa), the maximum velocity can be increased to [-2m/s -> +16m/s] for bottom track via firmware modification.
4 ECCN 6A001
5 ECCN 6A991
6 Worst case at low altitude.

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