

NO. 02 - APPLICATION NOTE - DVL INTEGRATION

Offering optimal navigational performance for diver sonars through Nortek DVL integration

Challenge

Technology developer Blueprint Subsea needed a versatile and compact DVL that would fit their handheld Artemis diver sonar – while offering optimal navigational performance.

Solution

Integrating the industry's smallest DVL in the Artemis diver sonar laid the foundation for providing reliable subsea navigation data. The small package and low weight of the Nortek 1MHz DVL gave Blueprint Subsea the flexibility they needed to integrate the DVL in their diver sonar.

End user value

“The Artemis handheld diver sonar integrated with Nortek’s DVL has now been trialed by various organizations worldwide and users are very impressed with the system’s small size and ease of use.”

James Barratt,
Director, Blueprint Subsea

A DVL with flexible system integration opens the door to new possibilities

Small underwater vehicles are becoming more prevalent in the subsea community. The Nortek DVL can be customized for operational users of workclass and mini ROVs and AUVs alike. And its flexible system integration has opened the door to new possibilities, such as seen in the Artemis handheld diver sonar.

The DVL is the latest instrument operating from Nortek's AD2CP platform. This is a modern hardware platform with powerful processors – and the platform is tried and tested in the oceanographic community. This platform is state-of-the-art due to its features of low power, exceptional range, accuracy and small package size.

Cost savings and unique functionality

A customized Nortek DVL is intended for applications focused on both cost savings and unique functionality, something technology developers at Blueprint Subsea have learned to appreciate.

They have recently integrated the Nortek DVL in the Artemis handheld diver sonar and navigator, and feedback from users is exceptional.

“The Artemis handheld diver sonar integrated with Nortek's DVL has now been trialed by various organizations worldwide and users are very impressed with the system's small size and ease of use – particularly when compared to other solutions in the market”, says James Barratt, Director at Blueprint Subsea.

What key values and outcomes does the Artemis give its users?

“The sonar enables divers to “see” objects such as mines in zero visibility, whilst the navigation function enables the diver to swim a pre-planned route and record object positions during the dive”, Barratt explains.

Additionally, all the sonar and navigation data are logged and time stamped for post dive review.

“We chose the Nortek DVL due to it's small size, low weight, high accuracy and ease of system integration”, says Barratt.

“And I must add that we were amazed by the support and follow-up from Nortek engineers as we worked on integrating the DVL in our product.”

The DVL gives the Artemis system the ability to navigate without the need for a towed GPS receiver buoy. This may be particularly useful for users such as naval special forces who do not wish to be identified on the surface.

“The DVL also outputs the diver's altitude from the seabed, which when combined with the output from the pressure sensor, gives the total water depth”, says James Barratt. This in turn is beneficial for divers who are performing shallow water beach topography surveys.

Flexible system integration

The Nortek DVL is available as two models, the 1 MHz and 500 kHz. These two DVLs differ primarily in the operational depth and the expected bottom track range.

The standard Nortek DVL is available as a self-contained unit (own housing) with standard power and communication ports. Alternatively, the DVL is available as a customized package. For example, this can be useful for applications where the end user wishes to integrate the DVL into their own pressure housing. This provides a means to construct a compact solution when weight and size are important.

The Nortek DVL supports protocols which have been available on the market historically (variants of PD0). Otherwise, system integrators may choose to use newer protocols which contains expanded information (independent beam information), delivered in efficient data packets.

The Nortek DVL explained

Powerful processing enables optimal bottom tracking

It is the powerful processing of the new platform which helps users improve on the bottom tracking capability. Users can expect bottom lock for greater ranges, soft bottoms, and very close to the bottom.

Higher precision navigation

The data stream contains information such as data quality parameters and time stamps with a 1-millisecond resolution. Precise knowledge of when the velocity estimate was made provides more accurate navigation.

It is the smallest DVL in the industry

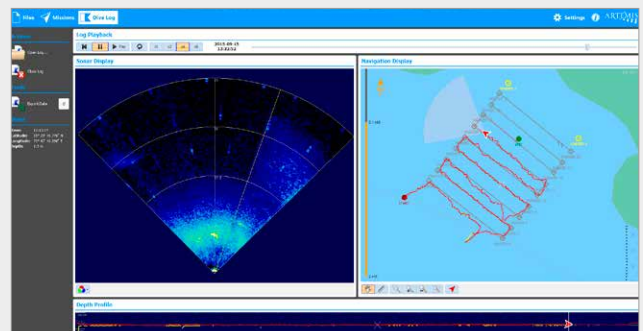
Small packages means improved mounting options for system integrators. It also opens the doors to smaller ROVs and AUVs where the payload is restrictive.



Blueprint Subsea have integrated the Nortek DVL in the Artemis handheld diver sonar and navigator.



The integrated Nortek DVL.



A screenshot showing the DVL output during a typical ladder beach survey.



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