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SEAS OF SOLUTIONS BRAND

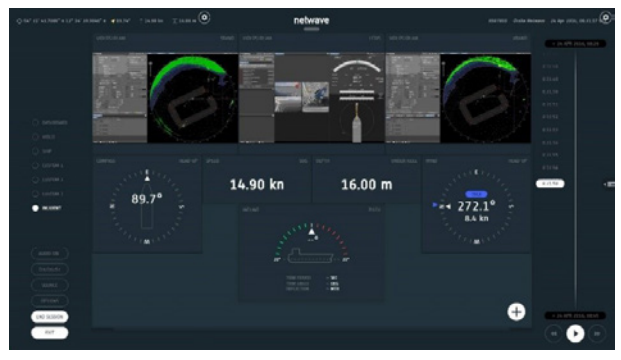
Netwave NW8000 Inland Waterways Voyage Data Recorder

Seas of Solutions have developed a new range of Voyage Data Recorders (VDRs); based on the innovative Netwave NW6000 series; designed specifically to support a growing demand for robust but economic voyage data capture solutions for inland waterway vessels.

The Netwave brand has been a global leader in the provision of Voyage Data Recorders and Simplified VDRs since 2006, with over 6000 deployed globally. The latest model reflects Seas Of Solutions in-depth knowledge of the needs of river vessels; through strategic partnerships with leading marine technical service providers; and growing concerns within the industry on the need to learn lessons from numerous incidents on global inland waterways.



What is a VDR?

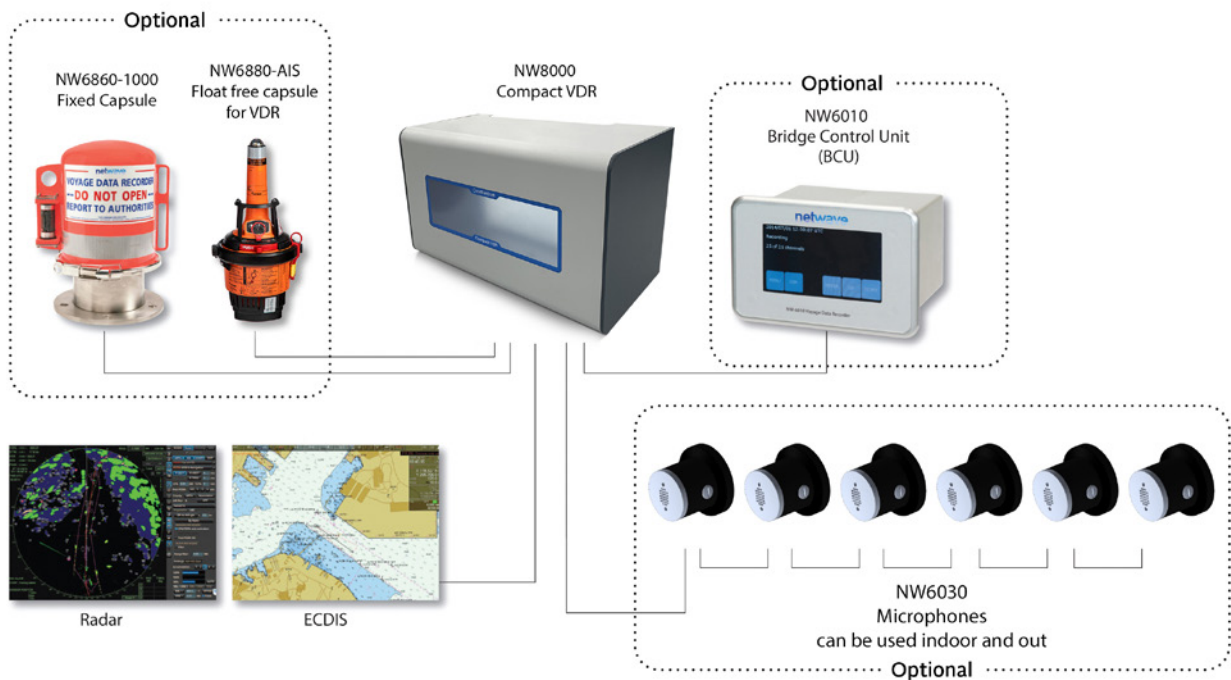


VDRs are data recording systems, mandated for commercial vessels in international waters under MSC. 333(90), to enable accident investigators to review procedures and instructions in the moments before an incident and help to identify the cause of any accident for ocean going vessels.

What is an Inland Waterway VDR?

An Inland Waterway VDR differs from the mandated SOLAS version in a number of ways. Primarily, the Inland Waterways VDR doesn't have the rigid specifications of the mandated variant and the solution can be configured for the owner or vessels requirements. The central capability is to capture Radar, AIS, GPS, Depth, Rudder Position, Compass and Rate of Turn Indicator, as part of the core eight sensor recording system. Secondly, as the configuration is not constrained by legal requirement, there is flexibility on what information is captured and the ability to upgrade the specification to include audio recordings and protected memory capsule. This flexibility allows the owner to define what information they require and makes the solution more affordable by only capturing relevant data.

Inland Waterways VDR Specification



What factors are driving the need for specific inland waterway solution?

As inland waterway transport continues to grow, demand for effective voyage data capture as a means to ensure safe and efficient vessel management and as a tool to investigate the cause of marine accidents is coming from two main sources. Midsized inland waterway fleet owners have to manage the downward pressure on margins driving demand for cost saving and an increase in multinational crews without a common shared language. The ability of owners to capture vessel manoeuvres to highlight training or communications issues can be used as a proactive tool to reduce accidents.

Additionally, the marine insurance industry and government safety bodies want to reduce the impact of inland waterway accidents and offer better protection for crew and passengers by insuring both the cause of accidents is understood and those responsible for vessels know their actions are being recorded.

Inland Waterways incident Overview

Collisions with infrastructures and bridges remain the main type of accident for vessels on inland waterways, followed by vessel collisions, which for example represented 22% of all Danube river accidents in 2017*. However, incidents involving tourist vessels receive disproportionate press coverage and is driving demand for greater safety regulation.

Feature	Netwave NW8000 Compact VDR
Data memory	1TB SSD, which is standard configuration records 60 days of data
Usability	The optional Bridge Control Unit is highly intuitive and offers touch screen interaction
Service Coverage	Large Global Service Network, with approximately 1300 service engineers
OPT test	Crew can test VDR is operating correctly from the optional Bridge Control Unit (BCU)
Cost of ownership	Flexible installation platform and designed with minimal cabling reduces install and maintenance requirements
Reliability	European design and manufacture, with a 6000+ vessel install base, global service and parts availability
Warranty term	Two year warranty included with the option of extension
Spare Parts Availability	Global Service Centres in approximately 160 ports
Speed of client Response	24/7 customer service support, satisfaction reflected in latest customer feedback scores
Installation Time	Versatile design allows flexible installation
Future Proof	NW8000 is highly adaptable for additional sensor capture
Customisation	Scalable, highly customisable architecture

Netwave Proven Design Versatility

Netwave's VDR ethernet network architecture significantly reduces cabling requirement, while extensive Power over Ethernet (PoE) capability is designed to reduce installation time and offer flexible, scalable installation design. The proven solid-state memory architecture of the NW8000 minimises ongoing maintenance and support costs and its reliability is reflected in the brands globally renowned quality supported by ISO9001. With an unparalleled global service network with approximately 1300 trained VDR service engineers, Seas Of Solutions is setting standards in VDR performance.

Optional extras of the Inland Waterways VDR also support wide ranging additional features, including voice recording with both indoor and outdoor microphones and cameras. The Netwave designed fixed capsule recording media with unique stainless-steel fixed capsule housing also offers the added resilience to protect data captured from the harshest environments.

Inland Waterways VDR Configuration



NW8000 Compact VDR

- For 24 VDC
- DIN rail mounted
- CPU including 1TB memory
- Buscoupler including 3 x IEC 61162-2 NMEA
- 10 port ethernet managed switch
- 24 VDC 6 channel audio/VHF hub
- 2 Port video interface
- DAQ module with 4 x analogue, 8x digital and 8x IEC 61162-1 NMEA

Optional Features



Fixed capsule NW6860-1000

- 'Fixed' Final Recording medium records for minimum 48h
- Records with 64GB storage
- Fitted with Netwave's Underwater Locator Beacon compliant to the SAE8045AS standard
- Fire / pressure resistant



AIS Float free capsule NW6880-AIS

- Powered thru PoE from core module
- Incl. 25 mtr maritime CAT-6 cable
- Bulkhead mounted in protective cover for 48 hours storage (IP67)



Bridge Control Unit NW6410

- Touch screen
- Operational Performance Test (OPT)
- Power over Ethernet connection (PoE)



Microphones NW6030

- High Audio Quality
- Single Wire, Daisy-chainable