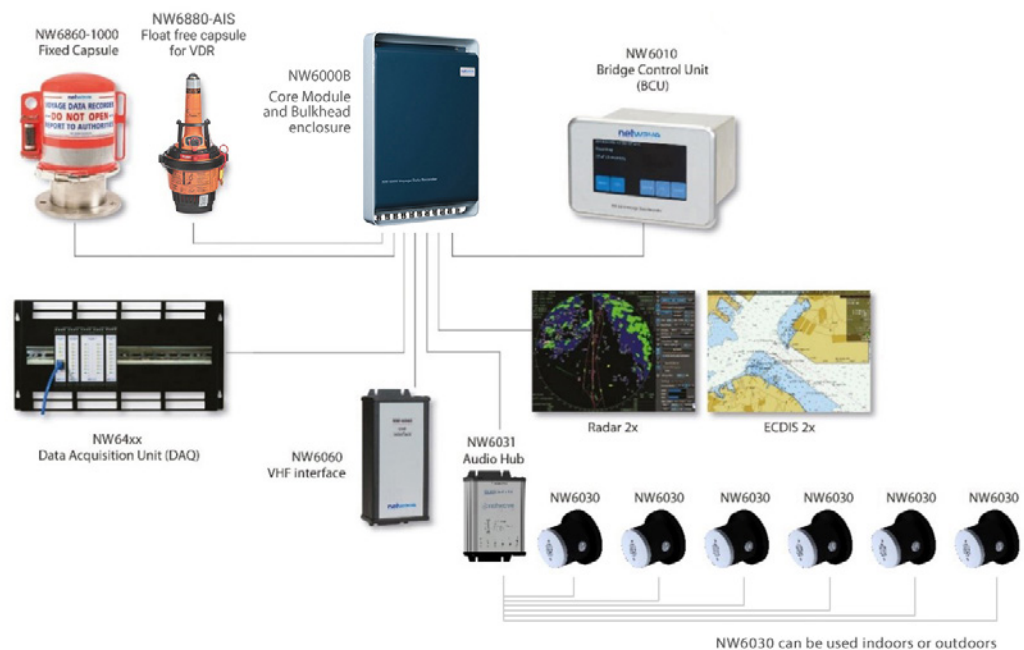


Designed and manufactured in the EU and supporting a global fleet of over 6000 vessels, the Seas of Solutions' Netwave brand has been a global leader in the provision of Voyage Data Recorders (VDRs) for over a decade.

With a reputation for innovation, design diversity and a focus on quality, a diverse range of customers deploy Netwave technology.

Military, Search and Rescue, Coast Guard, Commercial Marine and Cruise Ships customers are confident in its proven ease of installation, multiple IMO certifications including the Wheelmark and its unparalleled global support network; made up of approximately 320 Service Centres and 1300 engineers.



Netwave Voyage Data
Recorder Architecture

What is a VDR?

Voyage Data Recorders (VDRs) are mandated for commercial vessels under regulation 20 of SOLAS Chapter V, with the aim to enable accident investigators to review procedures and instructions in the moments before an incident and help to identify the cause of any accident. The VDR collects data from the sensors on board the vessel and stores it in an externally mounted Fixed Capsule. The capsule can be retrieved from the vessel and the stored data used to support investigations by authorities, therefore the capsule is a tamperproof unit designed to withstand the extreme environments, including impacts, shock, pressure and heat associated with a maritime incident.

Five Reasons Why Fleet Managers Install Netwave Brand VDRs

The Netwave NW6000 Series is one of the world's most popular VDR solutions, allowing fleet managers the flexibility and confidence to install technology with their requirements in mind. The top five reasons our customers highlight for picking Netwave are:

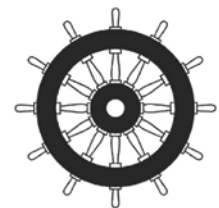
1. Design Versatility

- Single ethernet cable system architecture significantly reduces cabling requirement, while extensive Power by Ethernet (PoE) capability is designed to **reduce installation time**.
- Flexible, scalable installation design makes the NW6000 Series particularly attractive for VDR / (S)VDR **retrofits**.
- Proven solid state memory architecture **minimises** ongoing **maintenance and support costs**.
- Unique stainless steel Fixed Capsule housing offers a resilient design to **protect** vital recorders.



2. Brand Quality

- Netwave brands globally recognised **quality**, ISO9001 and MED Module D certificates and IMO required certifications including Wheelmark and China Class.
- Extendable warranty options available



3. Competitive Solution

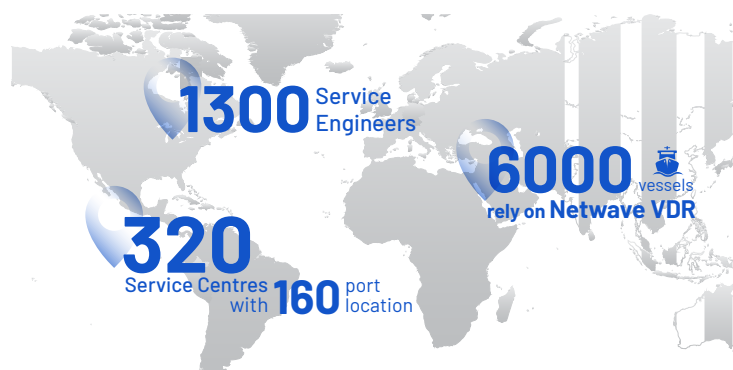
- **Competitive price** includes fitting kit and first APT, with multi-day auto archiving included as standard. The versatility of the NW6000 Series minimizes installation and maintenance costs, particular for retrofits, and comes with a **brand reputation and service support you can trust**.

4. Maritime Heritage

- The Netwave brand has been designing and manufacturing VDRs in Europe for **over 20 years**, with over a decade of experience in the design and manufacture of its' fixed capsule recording media, which is also widely used in OEM.
- **Over 6000 vessels** currently trust their mandated VDR / SVDR requirements to Netwave, including Cruise ships, Ferries, Commercial vessels, Coast Guard and Workboats.

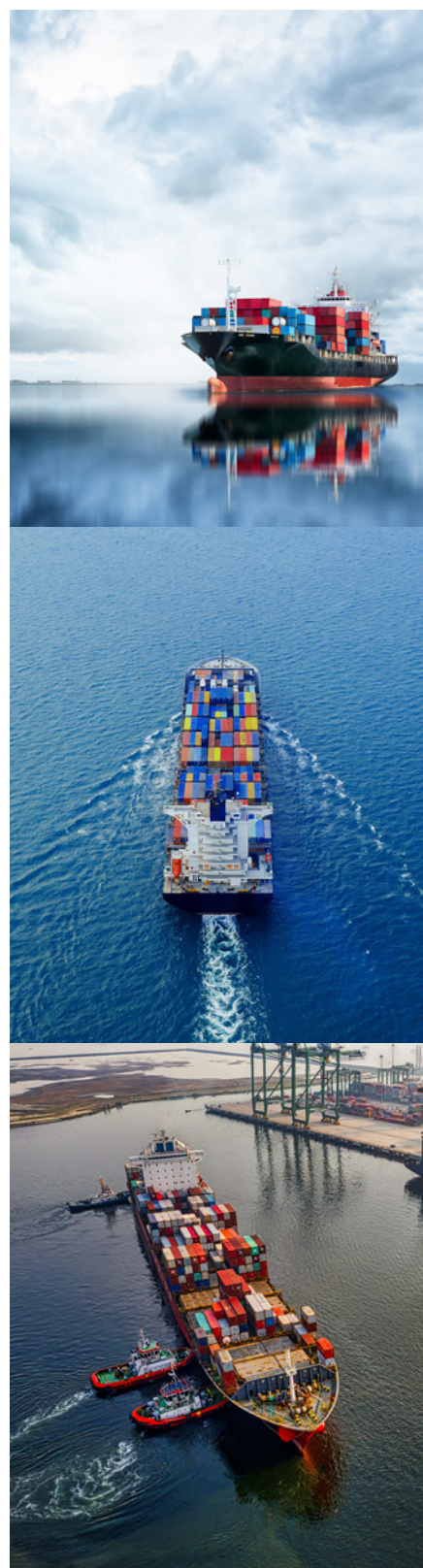
5. Service Network

- **160 service centre ports** on major shipping routes supported by approximately **1300 service engineers**, Seas of Solutions offers unparalleled support infrastructure.



Netwave VDR Features

VDR Feature	Netwave NW6000
Days of data	mimumum 30 days
Usability	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 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	Warranty included with option of extension
Spare Parts Availability	Service Centres in approximately 160 global ports
Re-Play Software	State-of-the-Art
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	NW6000 meets the latest mandated requirements and is highly adaptable
Customisation	Scalable, highly customisable architecture



NW6000 Specification Sheet

Unit	Type number	Dimensions (mm) (h x d x w)	Weight	Specifications	
Core module	NW6000	484x450x45	16.5 kg	- PSU unit (110 – 230 VAC, 50 – 60 Hz) / 100W 4x 6V 12Ah SLA connected battery backup - Switch unit (8 x 100Mbps PoE, 2 1Gbps) - CPU unit with min. 30 days storage	
Bulkhead mount frame and cover	NW6900	744x464x102	11 kg (excl core module)	Bulkhead mount with prepared internal wiring and external RJ45 connector bank	
Bridge control unit	NW6010	99x134x150	1.8 kg	- Powered from Core module thru PoE 4" touch colour screen - Panel mounted with frame 3 x IEC61162-2 serial interfaces	
Analogue Microphone (Internal/ External)	NW6030	83 x 83 x 70	0.4 kg	- Powered from the NW6031 Audio Hub 4 wire interface – 2x PWR, 2x Audio - Differential audio driver - Built-in sound generator for audio test - LED indicator for annunciation and test - Omni-directional with a radius of 4m	
Audio Hub	NW6031	152 x 106 x 35	0.35kg	- Built-in sound generator for audio test - Powered from the NW6000 PoE Switch 6x audio interfaces - Microphone or VHF configurable per interface - Pluggable terminal blocks per audio interface	
VHF interface	NW6060	180x47x87	0.5 kg	- Powered thru PoE 2x input channels	
Hardened FRM	NW6860	411x311	27.5 kg	- Powered thru PoE from Core module - Deck mounted protective capsule 48 hours storage - With Under water locator beacon (90 days)	
Float free FRM	NW6880-AIS	533x218x240	5.4 kg	- Powered thru PoE from Core module - Incl. 2m maritime CAT-6 cable - Bulkhead mounted in protective cover 48 hours storage	
Data Acquisition Unit	NW64900	182x232x436	2-3 kg (subject to 1-7 module interfaces)	- Powered thru PoE from Core module - DIN rail mounted interface - For NMEA sensors (multiple 8 port) - For digital sensors (multiple 8 port) - For analogue sensors (multiple 4 port)	

Note:

- To provide optimal shielding maritime CAT.7 S/FTP 23 AWG LSFR0H SHF1 is preferred
- Complete system runs from 110-230 VAC (50-60 Hz) through core module
- Power consumption 105 watt (max)

About Netwave

Netwave is a global leader in the provision of Voyage Data Recorders (VDR) and Simplified VDRs, designed and manufactured in the EU for over a decade. With a reputation for quality, reflected in our mechanical and software innovations that help accelerate VDR retrofit economically, our systems are trusted by a global fleet of over 6000 vessels.