

NETWAVE ULTRA COMPACT VOYAGE DATA RECORDERS

More than 5,500 vessels rely on us...



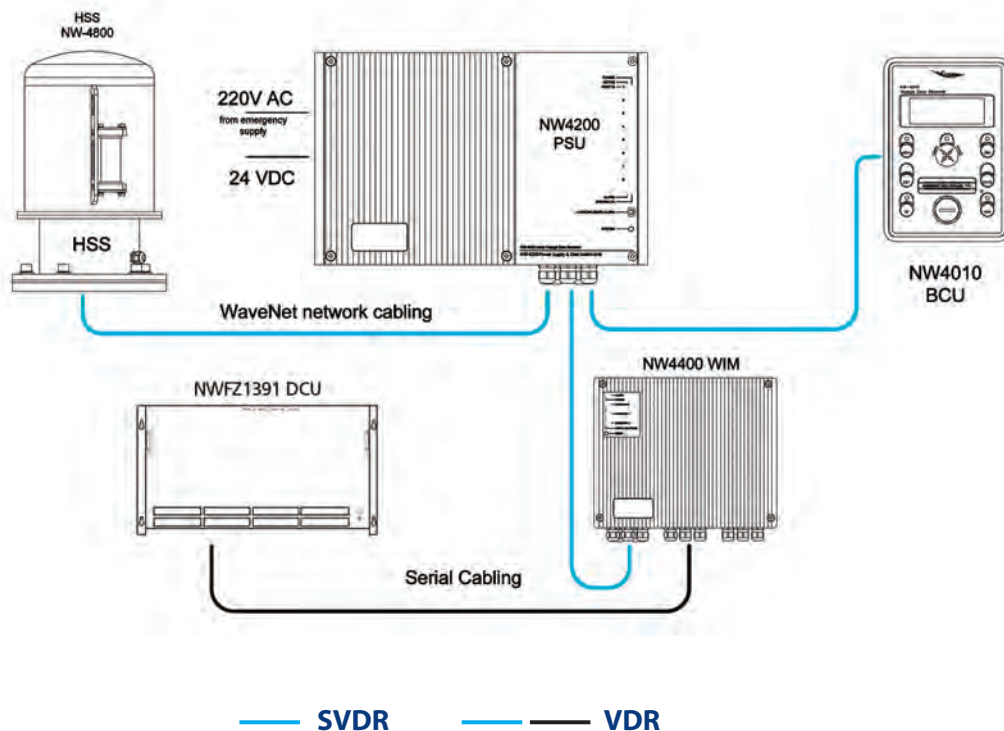
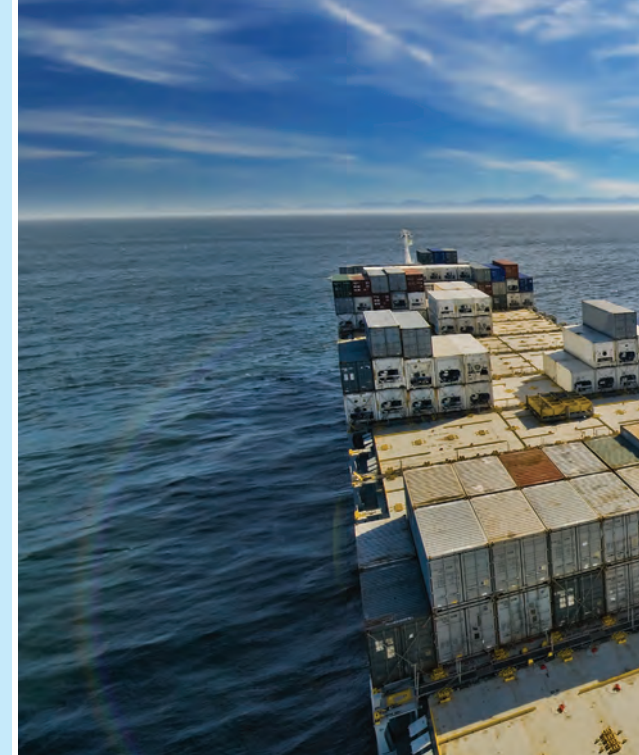
netwave

DESIGNED FOR THE MARITIME ENVIRONMENT

With over 5,500 vessels currently sailing with NetWave's Voyage Data Recorder solutions, the company is one of the most qualified VDR designers and manufacturers in the maritime industry. NetWave's VDR systems are specifically designed to overcome the issues arising in the Maritime environment.

**Reliable,
secure and
cost-effective**

The Netwave VDR is designed to be placed inside consoles to reduce cable laying. The benefit is faster (and therefore cheaper) installation, ease of service and with the Power over Ethernet interconnectivity, ease to use and expend. Because of the special design, the Netwave VDR is used in new building installations as part of IBS, and is also used to replace older VDR solutions which are end-of-life, have high service costs or are non-functional.



SYSTEM CONFIGURATION

Power over Ethernet Infrastructure

NetWave's system architecture is unique in the fact that the used devices are connected by means of one single cable, referred to as WaveNet cabling technology. Power and Data are transmitted over this single cable on two twisted pairs, eliminating the need for extensive and complex, and therefore costly, cabling models.

The Netwave VDR is designed to allow fast track installation, ease of service due to its Flexible Modular Design. The NetWave VDR and (S)VDR systems consist of five major components:

- **HSS** Hardened Storage Server with Protected Memory (capsule)
- **PSU** Power Supply & Switch Unit
- **BCU** Bridge Control & Alarm Unit
- **WIM** WaveNet Interface Module
- **DCU** Digital Connection Unit



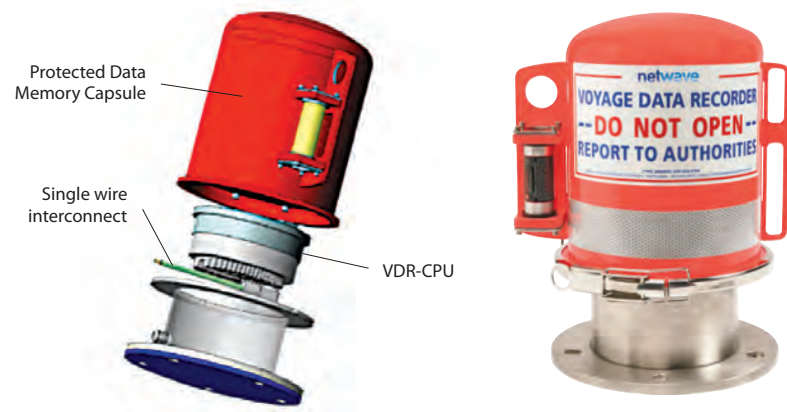
HARDENED STORAGE SERVER

Fixed Capsule for VDR & SVDR

As one of the leading Manufacturers of Hardened Storage Servers, Netwave has developed and is manufacturing its own HSS. The Capsule is unique in the marketplace today; with the integration of the complete Central Processing Unit and Data Storage Server into the armoured stainless steel (A316) capsule, all connected to other system components via one single cable only!

Compliant to IMO resolution A.861(78) for VDR and SVDR systems, IEC61996, IEC60945 and ED56/112:

- Fire resistant to 1100 °C @ 1 hour and 260 °C during 10 hours.
- Data memory pressure cylinder resistant to 20.000 PSI/600 Bar/6000 meters depth during extended periods.
- Color: RAL 3026 (fluor red) for SOLAS compliant ships. Other RAL colors available i.e. for mega yachts.
- Stainless steel A316 deck mount with optional welding plate delivered within standard package.
- IP66 WaveNet Quickconnect 'toolless' connector, single wire connection to PSU (Power Supply & network Switch Unit). (CPU exchange is less then 2 mins.).
- Memory 8 Gb: 4 Gb (protected) + 4Gb unprotected for incident recording. Minimum of 12 +12 hours recording time. Additional memory (optional): up to 160 Gb for longer recording times or extended number of recording channels.
- 8 Gb protected memory Capsule optional.
- Totally Solid State, no disk drives or other moving parts.
- Weight: 18 kg. (48 lb.).
- Size: diameter 220 mm, height 350 mm.
- Netwave is manufacturing its own capsule for other OEM brands as well.



BCU

Bridge Control Unit

The ultimate solution to user-friendly, easy to understand operation, this unit provides direct function access as well as remote system diagnostics, enabling any crewmember to find his way around without the need for special training.

Mounted within the bridge console, it continuously shows crystal clear unambiguous messages about what's going on within the VDR. May serve as the installation and configuration unit at commissioning time, and eliminates the need for an external PC at survey or service instances. Performs 'bit-error-rate analyses' at the mandated annual survey.

- Clear dimmable dot- matrix display 4 lines x 20 characters for easy to understand messages.
- Reports any faults with part- or unit identification to replace, in order to eliminate the ship's detainment as a result of malfunctioning of any VDR component. Monitors system integrity, power analysis, signal quality, etc., even remote.
- Front data-access (RJ-45) to the VDR network system for instant data download and Replay functionality in the event of incidents.
- Serves as the user terminal for configuration of automatic messages and day reports to be sent via Satcom systems.
- The BCU has a further 2 high-speed NMEA channels for i.e. AIS, enabling fast interconnection at the Bridge Console.

PSU

Power Supply and Switch Unit

This efficient, uninterruptible power supply and network switch is designed with installation time-and-space in mind and offers an unprecedented small footprint, scalability up to the largest vessel, and the very best on ease-of interconnection possible.

- NW-4200 PSU has 8 ports, plenty for any size of vessel, and provides power & data switching capabilities to the HSS (Hardened Storage Server), the BCU (Bridge Control Unit) as well as the WIMs (WaveNet™ Interface Modules which contain the WaveNet Adaptor Modules, acquiring the various data-signals from external equipment like GPS, Radar, AIS, etc.).
- IP66 WaveNet Quickconnect™ 'tool-less' interconnection.
- RJ-45 for network connection to a notebook PC or permanently to a network hub, i.e. satcom systems.
- Incorporates batteries for uninterrupted operation in the event of loss of any of the primary power supplies (85-264V AC and/or 24 VDC) according to IEC-61996 requirements.
- Provides - as a secondary location - remote alarm and alarm contacts.
- The ultimate in service friendliness, replace any internal component in less then 10 minutes, or the whole unit in less then 5, including demounting, mounting and connecting.



NW-4200
Power Supply (USP)
and Data Switch Unit



NW-4400
WaveNet
Interface
Module



NETWAVE NW-4000 SERIES



WIM

Wavenet Interface Module

The Wavenet Interface Module are daisy changed interface modules, linked by a single cable over which data & power are transported. With this improved design, you can save up to 75% on the cabling of your system!

- WaveNet Interface Modules have 5 adaptors slots, containing:
 - Video (1)
 - Bridge Microphones (6)
 - VHF audio (2)
 - NMEA IEC61662 (8)
- IP66 WaveNet Quickconnect™ 'tool-less' interconnection.
- The WaveNet Interface Modules are designed for installation everywhere. With a box only 40x25x10 cm, you can install the Module very close to Interfaces requiring a lot of wire, eliminating the length of all these cables. Only the single wire is connecting the module with the PSU.
- Each WaveNet Interface Module is auto-sensing & configuring.
- The ultimate in service friendliness, replace any internal component in less then 10 minutes, or the whole unit in less then 5, including demounting, mounting and hooking up.

DCU

Digital Controlling Unit

The Digital Controlling Unit is especially designed to connect any digital or analogue sensors. With an MCU in front of the DIN-rail, making the connection to a NMEA channel in the WIM, all Digital Interface Modules and Analogue Interface Modules are placed on the DIN-rail, connecting the amount of channels you would require.

- In standard configuration you can connect 48 digital and 4 analogue channels.
- Due to its modular design, you can change or add the channels you need.



WORLD-WIDE SERVICE NETWORK

Netwave has one of the largest service networks: In over 130 ports, we have over 900 trained engineers in more than 60 countries.

All trained engineers are capable of installation and commissioning VDR's and S-VDR' and are allowed to perform annual survey's. Because of such a large network, the service cost will always be limited as we can ask local engineers to attend the vessels.

Most of our agents are also Certified to perform the APT test according to all major Classification Societies, which is mandatory according to the SOLAS regulations.

For a complete overview please visit www.netwavesystems.com



NETWAVE VDR'S UNIQUE CHARACTERISTICS

The NetWave VDR series are an entirely new generation of Ultra Compact (S)VDRs, designed with emphasis on cost-effective installation and ease of use.

On today's market, this system provides the smallest footprint, the lowest installation cost and offers the ship-owner the option to not merely consider the (S)VDR system as a mandatory necessity, but provides management -tools and -data to improve transparency in the ship's overall operational performance.

Fast Track Installation

Simplified installation due to one single wire WaveConnect® cabling between the main units using 'no-solder' Quickcon® hermetically sealed connectors, which allow connections within 10 seconds, requiring no tooling, and achieve long lasting protection. Daisy-chainable interconnection scheme further reduce installation cost. With WaveNet Single Wire connection for Data as well as for Power, the amount of cabling necessary is reduced with more than 50%, allowing the system installation to be performed faster than any other (S)-VDR.

Auto Configuring

As soon as the system is physically connected, you can add the power source to the PSU. Right after this, the system will auto configure itself, detecting on which channel is what system. Auto Configuring will reduce the time the engineer is installing the system and is reducing the errors made by installing manually.

NW-4600 Hardened storage Server

Netwave developed its own Hardened Storage Server, making sure the total concept is in our hands. With our own capsule with integrated storage server with network drive, we proof to be the expert on VDR and S-VDR.

Flexible Modular Design

We have no difference in S-VDR and VDR, except for the number of DCU's to be connected. With our single wire system, you can increase the number of Interface Modules by just adding them to the system!

Service Friendly

Power of Ethernet enables you to change adapters or total interfaces within 15 minutes by un-plugging the channel, remove the adapter and re-plug the channel again. This will reduce your service cost over the years, which can be a huge burden afterwards!

Monitoring

a. Live Data Monitoring

On the bridge control unit, you can see real-time what the VDR is storing.

b. Laptop/PC

If you would like to see the software on your screen, just plug a laptop into the JR-45 port in front of the bridge control unit and you can instantly check the system; Ideal for engineers and customs officers! With the 2nd RJ-45 port in the PSU, you can connect one PC (preferably PC in Master office) which is always connected to the VDR for urgent checks and downloads.

c. Remote Diagnostics

With secured passwords, you can check in the system real time from your office PC via Satcom. With our WavePlay software, you can easily make the right diagnostics for management purposes.

NETWAVE 4000 SERIES

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