

Intelligent Maritime IoT Infrastructure

- Flexible, Secured and
Cost-efficient Gateway to
Advanced Data Utilization



DanelecConnect



An agnostic solution to enable data-driven fleet management

DanelecConnect is a scalable, flexible and cost-efficient way to quickly gain economic and operational benefits from advanced ship data utilization whilst at the same time, future-proofing your vessel and its infrastructure to be able to comply with upcoming regulations and adapt to changes in operational strategy.

Danelec VDR remote management

- Remote configuration & support
- Pre-APT testing
- Alarm diagnostics
- On-demand data dump
- Condition-based maintenance



Fleet optimization

- Ship performance analysis
- Vessel tracking
- Event monitoring
- BOQA
- Noon-report automation

Our IoT infrastructure is built-upon two decades of expertise in vessel data collection as a leading Voyage Data Recorder (VDR) and Shaft Power Meter (KYMA) manufacturer for a truly reliable data collection and reporting solution.

Ensuring resilience and effectiveness, all Danelec solutions are designed according to our key product principles:

SOLID - SAFE - SIMPLE



Efficient Asset Management and Optimized Operations

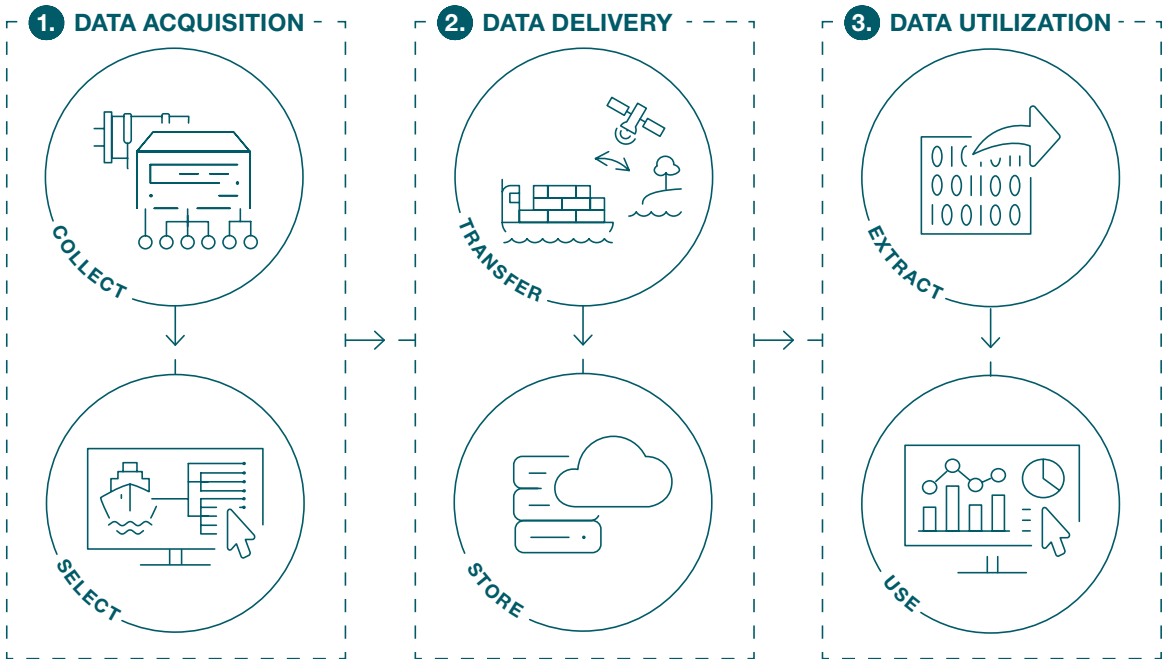
DanelecConnect provides increased transparency to enable more accurate decision-making for operational optimization and asset management. It eliminates uncertainty by providing facts to shipowners and their customers, allowing shore-side to interact with assets at sea, and promoting new levels of collaboration while removing cost, complexity, and security concerns typically associated with deploying and managing dedicated Internet of Things (IoT) infrastructure on board.

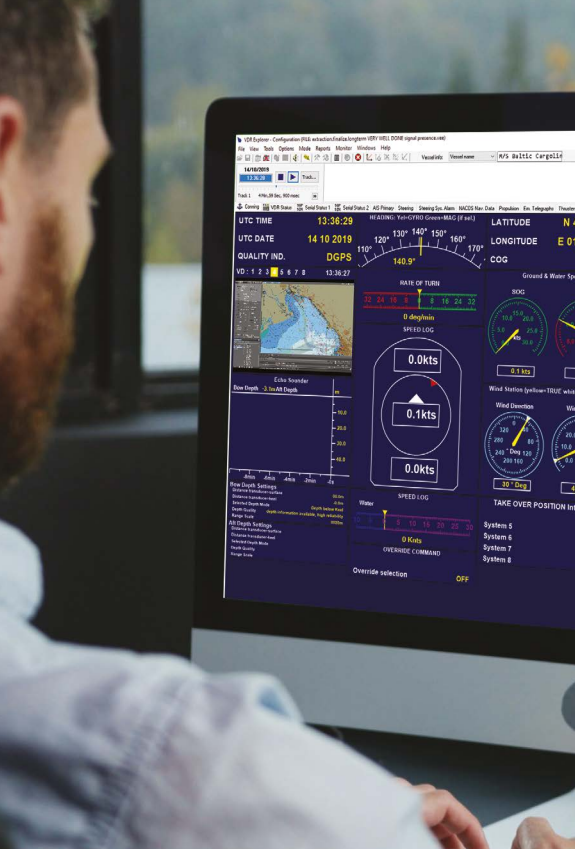
Our solution enables ship managers and technical superintendents to quickly and easily identify issues and failures, monitor vessel KPIs, and integrate third-party data analytics to continuously improve their fleet and assets.

Compatibility and Future Readiness

DanelecConnect is a completely agnostic solution, which means you will not be tied to any specific manufacturer or supplier. Data can be collected reliably from any equipment and any sensor on-board a vessel; you can choose and change who has access to what data for analysis and utilization. A high level of compatibility is core to DanelecConnect, ensuring that it can always adapt to equipment retrofits or changes in operational strategy.

Three Simple Steps





1. Data Acquisition

DanelecConnect is powered by the purpose-built VRS developed in-house from the ground-up and is the combination of a robust, cost-efficient aggregation point for all sensor data on-board a vessel and a connectivity module for transferring the collected data to shore.

Remote Data Interface modules pick up analog, digital or serial sensor data throughout the ship for on-board data collection. For a heightened level of security, the VRS relies on a Trusted Platform Module to store and operate sensitive data.

The VRS uses a sophisticated data compression system in preparation for transferring the information back to shore, on average utilizing only 1 mb of data per day.

2. Data Delivery

DanelecConnect uses cost-effective and secured data transfer with the VRS connected to the ship's existing IT infrastructure and communication network (satellite, 3G/4G/5G or LTE). While utilizing the vessel's network infrastructure, the VRS runs completely segregated to ensure isolation from the rest of the connected systems. A powerful built-in Network Processor combined with a physical switch on the device protect against the risk of cyber attacks and unwanted traffic.

The data reports are transferred at fixed user-defined intervals which can quickly and easily be modified from shore. The VRS software can also automatically be updated from shore.

The collected vessel data is then stored in the cloud on a secured Microsoft Azure server where Danelec ensures data quality check upon receipt.

3. Data Utilization

The data can safely be shared from the cloud server via API with an ever-growing selection of thoroughly tested 3rd party application and solution providers.

DanelecConnect also delivers enhanced asset management capabilities for condition-based maintenance of on-board equipment.

The seamless interaction between DanelecConnect and a wide range of advanced tools provides decision support for shipowners and operators. The data collected can be used for a variety of use cases including fleet performance analysis, vessel monitoring, operational efficiency improvement, increased safety on-board, reduction of CO2 emissions, Bridge Operating Quality Assurance (BOQA) and automatic noon-reports.

The data can be displayed in customizable dashboards providing a gateway to all vessel related data measurements, allowing:

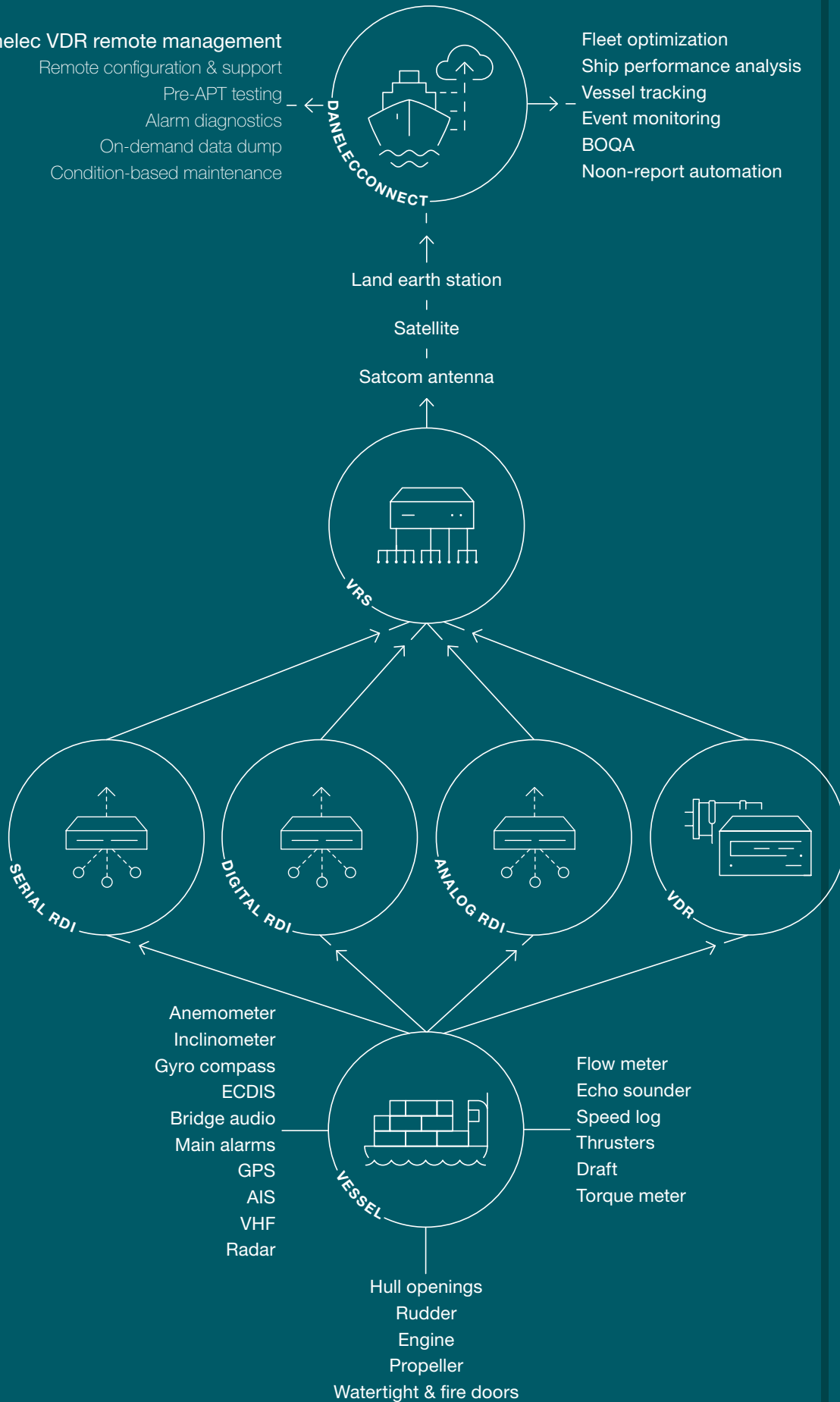
- **Quick attendance to issues while at sea**
- **Monitoring of vessel parameters from shore** (such as position, speed, RPM, etc.)

For a list of fully compatible applications and solutions to help you harness the power of your data, visit: danelec-marine.com

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Flexible and scalable data solution

Danelec's data solution is powered by our marine approved (IEC 60945) connectivity hardware modules. Developed using our decades of expertise with sensor data collection on-board vessels, these modules provide the basic building blocks of a cost-efficient and scalable maritime IoT infrastructure.

Our connectivity modules can seamlessly interface with existing Danelec VDR installations but can also easily connect to any other VDR make and model or any other equipment on-board a vessel.

Our Global Presence

With offices around the world and supported by a global network of partners for distribution, installation and maintenance consisting of over 600 factory-trained personnel in more than 50 countries worldwide; you can be confident Danelec will be able to meet your needs and requirements quickly, reliably and cost-efficiently.



Vessel Remote Server VRS 002 G2 / VRS 003

Specifications: 5 / 8 ethernet (1000BASE-T) ports · 1 RS-422 serial interface · 1 / 2 digital inputs · IEC 60945 protected · 256GB / 1TB SSD · 1GB / 4GB RAM · 1.000 / 10.000 max no. of tags · Built-in motion-tracking sensor · USB port for future applications (VRS 002 G2) · Application hosting (VRS 003) · DIN rail mountable (VRS 002 G2) · 12-24V DC power input · AC power (110-230V, 50-60Hz) through AC adaptor. **Dimensions and weight:** VRS 002 G2: W: 180 mm, H: 30 mm, D: 100 mm, W: 0,45 kg, VRS 003: W: 292mm, H: 32 mm, D: 124,5 mm, W: 1 kg



Remote Data Interface Serial / Analog / Digital

Specifications: 8 inputs for serial data (IEC 61162-1, IEC 61162-2 and Modbus) (serial version) · 8 inputs for analog data (analog version) · 24 inputs for digital data (digital version) · Powered from Data Acquisition Unit (PoE) or locally · Can be daisy chained · Can operate as standalone (analog and digital versions) · Support for SWAP technology™. **Dimensions and weight:** W: 141 mm, H: 32 mm, D: 163 mm, W: 0,3 kg



Remote Video Interface Analog: BNC / Digital: DVI-I

Specifications: 2 inputs for video recording · RGBHV (analog version) or DVI-D / DVI-A (digital version) · Ethernet (100BASE-TX) interface · Powered from Data Acquisition Unit (PoE). **Dimensions and weight:** W: 149 mm, H: 49 mm, D: 206 mm, W: 0,5 kg



Remote Audio Interface 4 / 8 channels

Specifications: 4 / 8 inputs for bridge audio and VHF · Ethernet (100BASE-TX) interface · Powered from Data Acquisition Unit (PoE). **Dimensions and weight:** W: 149 mm, H: 49 mm, D: 256 mm, W: 0,5 kg



SOLID Product design

Dependable operation

Equipment that is built to be at sea

– Our products are based on an application-specific design to ensure extreme reliability. Fewer components mean fewer points of failure, resulting in the highest Mean Time Between Failure in the industry.

Future proof

Never obsolete, always supported

– We guarantee serviceability of our products during their lifetime for a minimum of 10 years after their End-of-Life dates. Since our products are developed in-house, we have full control over all components.



SAFE Service & support

Immediate global support

There is always a service tech near your ship

– Our extensive global network of service centers carry spare parts and provide service repairs 24/7 with 600+ factory-certified technicians in 50+ countries.

World class service

Consistent, efficient and transparent

– Our eService platform™ automates and streamlines traditional manual processes, bringing unprecedented levels of consistency and efficiency to shipboard service.



SIMPLE Operation & maintenance

Information at your fingertips

Capture shipboard data and put it to use

– Our remote management solutions enable instant cost-optimized shore to ship management, so you can leverage big data for informed decisions and more efficient asset management.

Maximize uptime

Rest assured your ship sails on schedule

– Our exclusive SWAP technology™ enables fast and easy replacement of equipment in case of failure, without reinstalling software or reconfiguring the system.



Danelec

Danelec Marine A/S

Hørmarken 2, 3520 Farum, Denmark

T: +45 4594 4300

sales@danelec.com

danelec.com

