

**A Revolution in Shipboard Service**

Servicing and repairing shipboard electronics can be time consuming and expensive. There are the complicated logistics of scheduling a service call and finding a properly trained technician – sometimes from a remote port. Then there is the question of whether the techs have the correct spare parts on hand and can complete the repairs in time to meet the ship's sailing schedule.

Now there is a way to save time and money, while eliminating in-port delays, thanks to the new **SoftWare Advanced Protection (SWAP)** solution from Danelec. With SWAP technology, all system software and configuration, as well as programming data, is automatically saved on a hot-swappable memory card that can easily be removed from the old unit and inserted into the new Danelec unit. Relocating the repair from ship to shore saves hours of time in re-installing software and re-programming the unit.

**The Traditional Way**

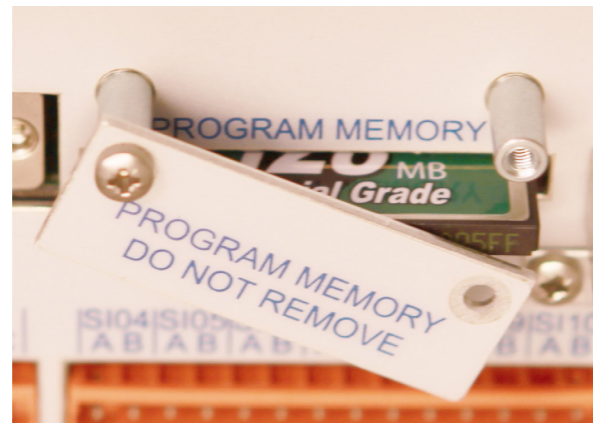
In a typical service scenario, the technicians board the ship, troubleshoot the problem and determine what spares are needed to make the repair. If the parts are not available locally, they must be ordered. Depending on the system, port state control authorities may prevent the ship's departure until the repairs are made, resulting in expensive demurrage and port costs. If the ship is allowed to sail, the spares must be delivered to its next port, requiring another expensive service call to complete the repairs.

**The Danelec Way**

- The SWAP solution is quick and easy:
- When a Danelec-trained technician reports to the ship for a service call, he arrives with a replacement unit in hand
  - The technician removes the memory card from the old unit
  - He switches out the old unit with the replacement unit
  - Inserts the memory card into the new unit
  - Then he takes the old unit to shore for repair

**The Benefits are Invaluable**

- SWAP technology:
- **Saves time** by enabling onboard repairs to be accomplished in a matter of hours, not days
  - **Saves money** by reducing man hours for service calls
  - **Protects valuable shipboard data** on a hot-swappable memory card
  - **Keeps ships on schedule**, eliminating in-port delays for repairs



Danelec's SWAP technology is nothing short of revolutionary, and our global network and 24/7 service mean that technicians arrive quickly – with the equipment you need. The entire process is completed in one service call in just a few hours.

That's the Danelec difference...

**Worldwide Network**

Our customers are based all over the world. This is why you find our certified service and sales representatives in more than 50 countries. Our unparalleled worldwide network ensures timesaving and cost effective installations, maintenance and Annual Performance Tests. Whenever you need it – wherever you need it.



**Danelec Systems – Solid • Safe • Simple**

**Solid Product Design**

- High quality application-specific product design
- 10-year service guarantee

**Safe Support**

- Worldwide service network
- 24/7 worldwide service

**Simple Installation and Maintenance**

- Remote access
- SWAP technology



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Danelec systems  
**Solid • Safe • Simple**

**DM100 VDR**  
**Voyage Data Recorder**



- **New 3rd generation with break-through SWAP technology**
- **IMO-Compliant with the 2014 VDR standard – and beyond**

Discover the Danelec difference...

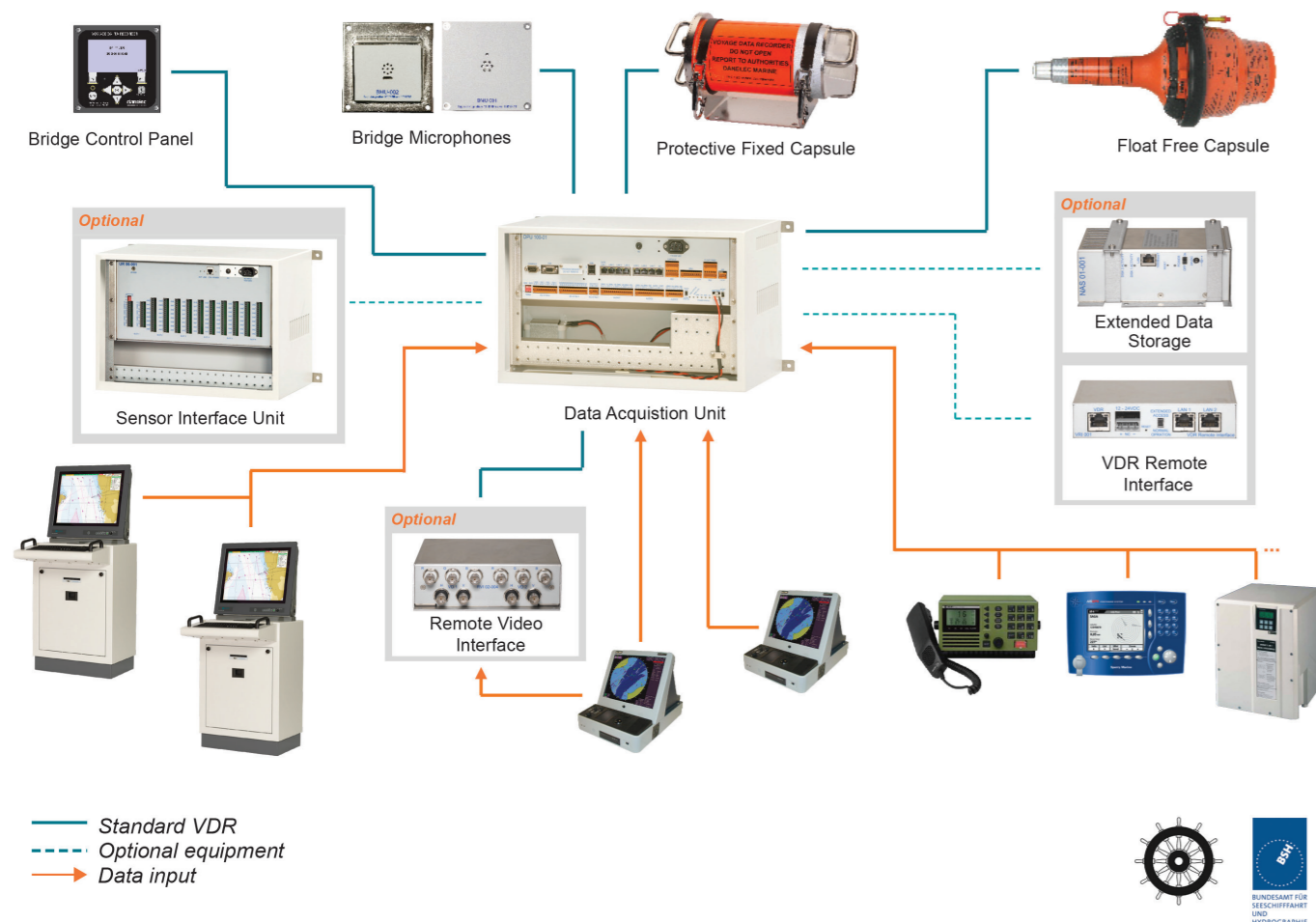
### About the New IMO VDR Performance Standards

In May 2012, the Maritime Safety Committee of the International Maritime Organization (IMO) adopted a revised recommendation on performance standards for Voyage Data Recorders (VDRs), effective as of July 1, 2014. The new requirements defined in MSC 333(90) state that for VDRs installed on or after July 1, 2014 on all passenger vessels or cargo vessels of 3,000 GT and above:

- Data shall be recorded in a float-free capsule, in addition to a fixed capsule
- Data shall be recorded for a minimum of 48 hours in both capsules
- Bridge audio shall be recorded using at least two tracks for indoor microphones and outdoor microphones shall be recorded on an additional separate track
- Images, charts and settings from the ECDIS shall be recorded
- Images from both radars on the vessel shall be recorded
- Data from the AIS shall be recorded
- Data from an inclinometer shall be recorded, if installed

### Is Your System IMO-Compliant? Ours Is.

Our 3rd generation DM100 VDR meets IEC 61996-1 Ed.2 and the MSC.333(90) performance standard. Danelec VDR systems are designed to record and store, in a secure and retrievable form, information concerning the ship's position, movement, physical status and command and control for the period leading up to and following an incident. Designed with a focus on reliability and functionality in maritime environments, our equipment offers an unmatched flexibility in a compact and lightweight, easy-to-install solution.



### FACT SHEET

#### Dimensions

#### Specifications

##### Data Acquisition Unit

W: 495 mm  
H: 250 mm  
D: 242 mm  
W: 11 kg  
30 days of recording capacity on built-in SSD  
10 inputs for bridge audio and VHF  
12 inputs for serial data (IEC 61162-1, IEC 61162-2 and Modbus)  
7 inputs for IEC 61162-450 network data Ethernet (100BASE-T)  
AC power (110-230V, 50-60Hz)  
Built-in UPS utilizing environmental-friendly NiMh batteries

#### STANDARD EQUIPMENT



##### Protective Fixed Capsule

W: 360 mm  
H: 195 mm  
D: 208 mm  
W: 8 kg  
48 hours of recording capacity  
90 days acoustic underwater beacon  
Supplied with 50 meters cable  
Ethernet (100BASE-TX) interface  
Powered from Data Acquisition Unit (PoE)



##### Float-free Capsule

W: 240 mm  
H: 545 mm  
D: 221 mm  
W: 4.4 kg  
48 hours of recording capacity  
Built-in COSPAS-SARSAT EPIRB  
Supplied with 50 meters cable  
Ethernet (100BASE-TX) interface  
Powered from Data Acquisition Unit (PoE)



##### Bridge Control Panel

W: 144 mm  
H: 144 mm  
D: 64 mm  
W: 1.1 kg  
Interface for Operational Performance Test  
Built-in graphical color TFT LCD display  
Ethernet (100BASE-TX) interface  
Powered from Data Acquisition Unit (PoE)



##### Bridge Microphone (Outdoor / Indoor)

(Outdoor / Indoor)  
W: 96 / 84 mm  
H: 96 / 84 mm  
D: 60 / 30 mm  
W: 0.5 / 0.1 kg  
Built-in buzzer for self-test  
Built-in amplifier and filters  
IP66 water resistant (outdoor only)  
Powered from Data Acquisition Unit



##### Sensor Interface Unit (Compact / Modular)

(Specifications for standard configuration)  
(Compact / Modular)  
W: 525 / 525 mm  
H: 342 / 342 mm  
D: 169 / 336 mm  
W: 12 / 23 kg  
8 inputs for serial data (IEC 61162-1, IEC 61162-2 and Modbus)  
8 inputs for analog data  
64 inputs for digital data (in compact version)  
48 inputs for digital data (in modular version)  
1 free slot (in modular version)  
AC power (110-230V, 50-60Hz)

#### OPTIONAL EQUIPMENT



##### Remote Video Interface (Analog: BNC / Digital: DVI-I)

W: 149 mm  
H: 49 mm  
D: 206 mm  
W: 0.5 kg  
2 inputs for video recording  
RGBHV (in analog version) or DVI-D / DVI-A (in digital version)  
Ethernet (100BASE-TX) interface  
Powered from Data Acquisition Unit (PoE)



##### Remote Audio Interface (4 / 8 channels)

W: 149 mm  
H: 49 mm  
D: 256 mm  
W: 0.5 kg  
4 / 8 inputs for bridge audio and VHF  
Ethernet (100BASE-TX) interface  
Powered from data acquisition unit (PoE)



##### Extended Data Storage

W: 61 mm  
H: 172 mm  
D: 116 mm  
W: 1.1 kg  
Up to 6 months of recording time  
Marine approved (IEC 60945)  
SSD and HDD versions  
Storage capacity: 256GB, 512GB or 1TB  
Ethernet (100BASE-T) interface  
AC power (110-230V, 50-60Hz) through AC adaptor



##### VDR Remote Interface

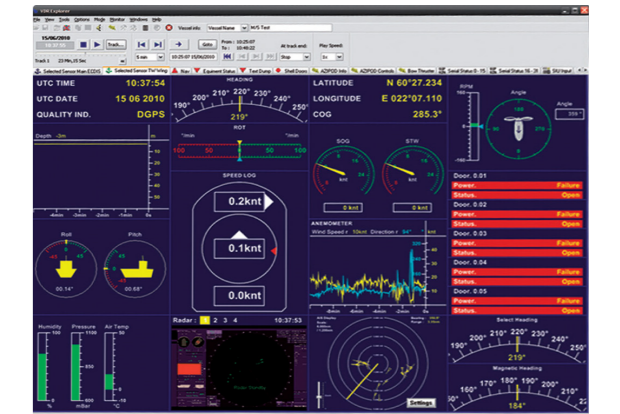
W: 123 mm  
H: 26 mm  
D: 81 mm  
W: 0.2 kg  
DIN rail mountable or standalone  
1 x Ethernet (100BASE-TX) port for the VDR  
2 x Ethernet (100BASE-TX) ports for the ship's LAN networks  
24V DC power input  
AC power (110-230V, 50-60Hz) adaptor supplied with the unit



### Danelec Marine VDR Explorer

All our products are supplied with the VDR Explorer playback software as standard. The software runs from a PC and can provide real-time monitoring and replay recorded data.

The recorded data can be presented in a large variety of both graphical and numerical ways, and is extremely easy and user friendly to operate.



- Windows based application for playback
- Intuitive user interface
- Customizable conning page
- Export data to Windows applications for playback onboard or ashore

Danelec Marine VDR Explorer meets the requirements of IMO Resolution MSC.333(90), mandatory from July 1, 2014 for data output, download and playback software.

### Danelec Marine Remote Access

Our remote access solution between ship and shore allows extremely easy and efficient data transfer without being limited by satellite capacity onboard vessels. Remote access provides a wide range of benefits concerning control, safety and optimization without the need of physical attendance to the vessel.

- Operational control
- Safety and compliance
- Maintenance and cost optimization

