

# Danelec Marine

## Company profile and product presentation



*All information herein is confidential and of the ownership to Danelec Marine.*

# Agenda

- Company profile
- Market information and regulations
- Design criteria's & product information
- Installation & configuration
- Testing & type approval
- Highlights & “things to remember”

# Facts about Denmark

- Population of 5.5 Million
- Area: 42,394 sq km
- Member of EU and NATO
- Constitutional monarchy
- Liberal/conservative gov
- Capital is Copenhagen
- Modern and stable nation



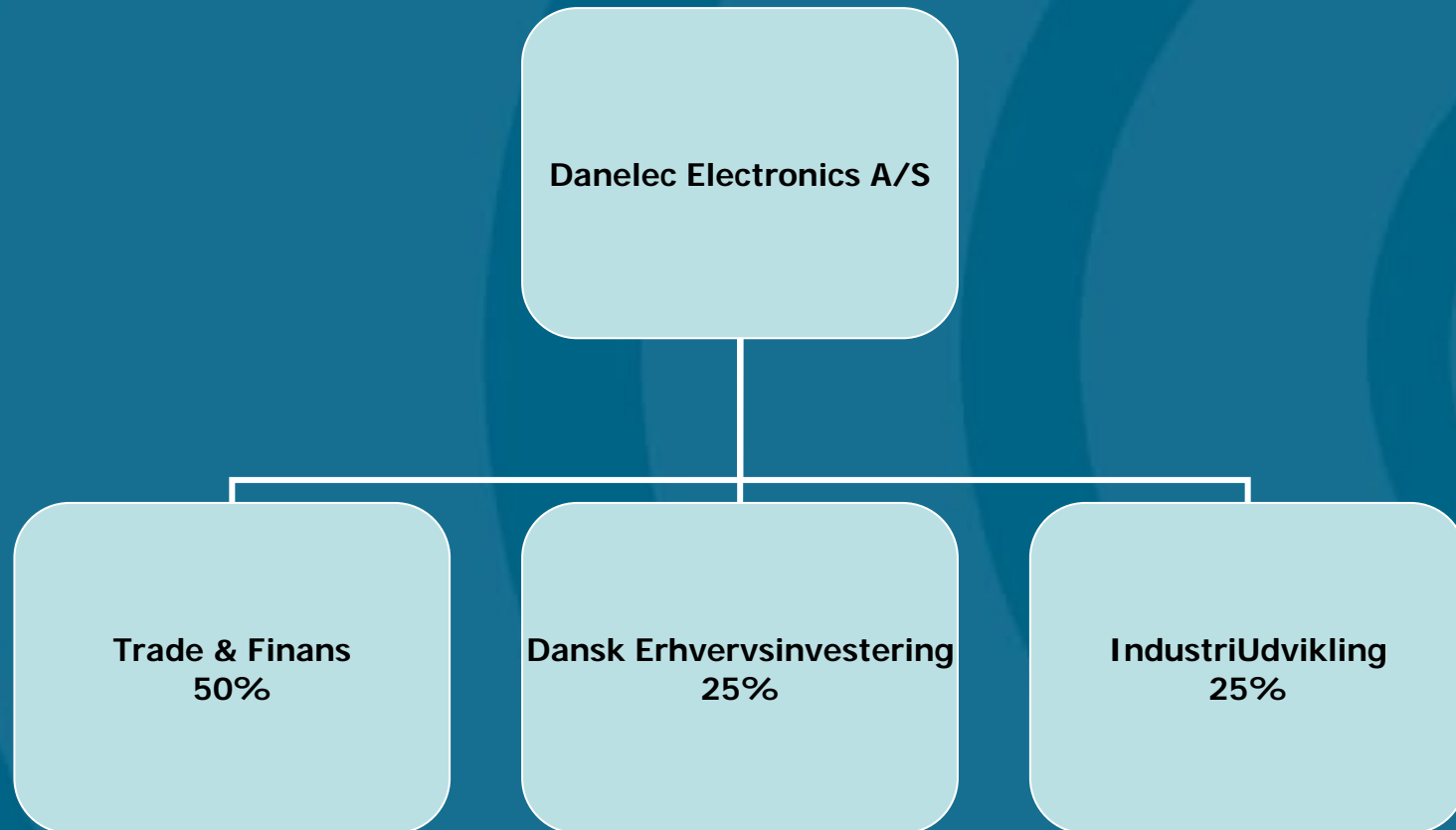
**Strong traditions in the maritime industry**

# Welcome to Danelec - Headquarter

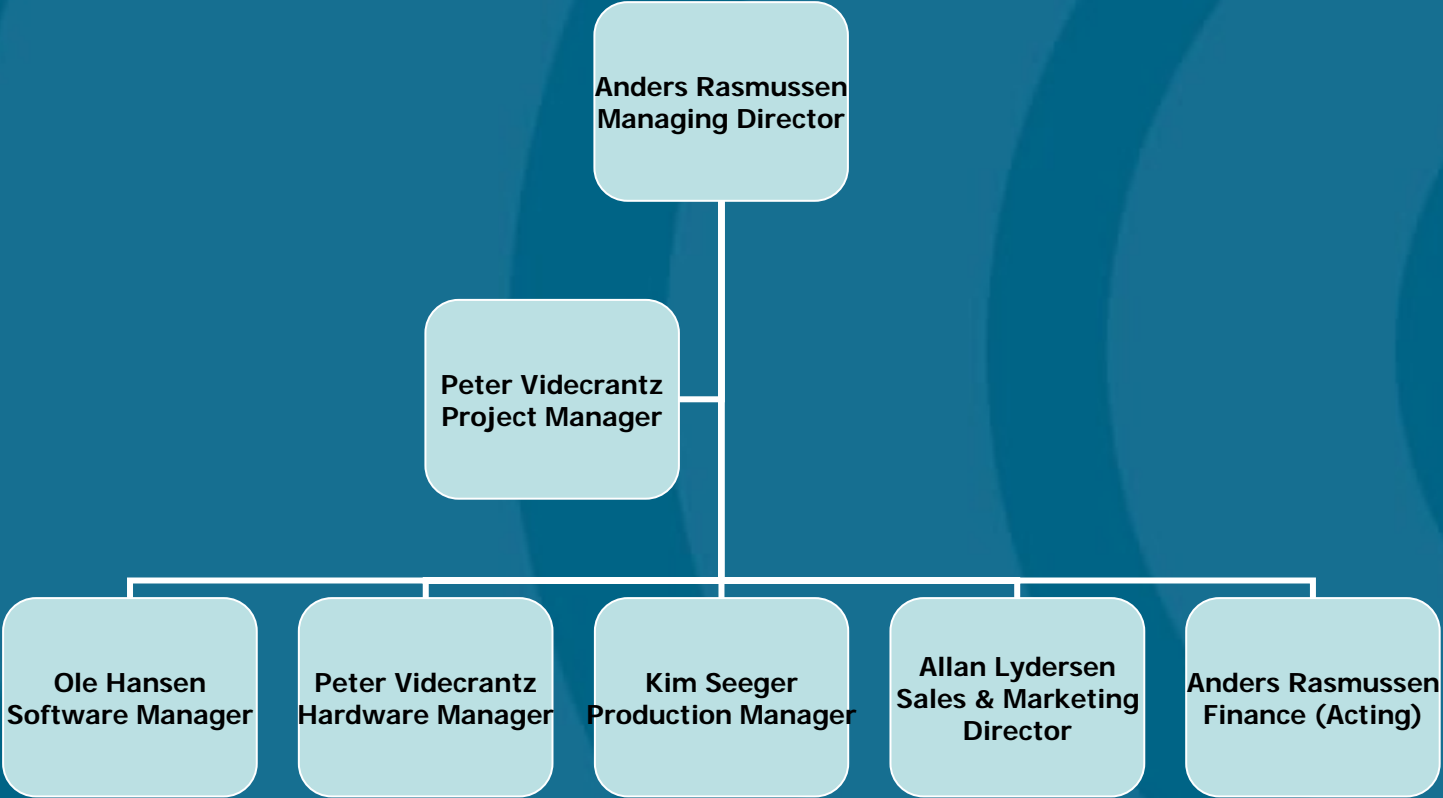


Design of electronic solutions for the maritime world.

# Company ownership



# Danelec Management/Organisation



# History and milestones

- Danelec was founded in 1981 as a technical distributor of industrial computer products (boards, systems, OS and S/W)
  - 1995: Management buyout. New business strategy decided
  - 1996: Involvement in various industrial, maritime and navy projects
  - 1998: Project Engineering Group established. Prototype of VDR build for the Danish Navy
  - 2001: Contracts signed with the Danish Navy for VDR, PDU and NAVCOM
  - 2001: VDR contract signed with Furuno Electric Co
  - 2003: BSH type approval of VDR granted. Mass production on-going
  - 2004: Design of S-VDR after IMO decision
  - 2005: BSH approval of S-VDR to be granted
  - 2005: S-VDR/ G2VDR contract signed with Sperry Marine
  - 2005: Sales and distribution of Danelec Marine branded products

## Main business areas

- **Maritime electronics**
  - VDR, S-VDR, G2VDR, Software, interface
- **Naval electronics**
  - VDR, Navigation Computers, PSU
- **Industrial electronics**
  - Process control, offshore.

**“ Mission critical applications in harsh environments”**

# Distribution network

## Europe

Denmark  
Norway  
Sweden  
Belgium  
Holland  
Germany  
France  
Italy  
Greece  
Portugal  
Spain  
Turkey

## Asia

Kina & HK  
India  
Indonesia  
Japan  
Korea  
Malaysia  
New Zealand  
Philippines  
Singapore  
Sri Lanka  
Taiwan  
Thailand  
Vietnam

## ME & Africa

Bahrain  
Egypt  
Kuwait  
Morocco  
Oman  
Qatar  
South Africa  
UAE

## Americas

Argentina  
Chile  
Panama  
Uruguay

# Distribution network

- Distributors are known with in the professional maritime market
- Development and optimizing of distribution network an ongoing process
- In excess or 50 engineers trained by Danelec Marine

# Danelec Marine Goals

## **Quality:**

It is our goal to have a high quality associated with our products and services.

***Danelec Marine = High quality***

## **After Sales service & support:**

After Sales Support is an extremely important parameter.

Swift and prompt response with high quality.

***2nd to none After Sales Service***

# Danelec Marine Goals

## **Price:**

It is our goal to provide a quality product at a reasonable price

***High Quality –  
competitive  
prices = Value for  
money.***

## **Delivery:**

It is our goal to provide short delivery time and provide reliable delivery information.

This is parameters where we can differentiate from Japanese manufactures.

***Short & reliable delivery  
times***



**Market information and  
Regulations**

VOYAGE DATA RECORDER  
DO NOT OPEN

REPORT TO AUTHORITIES  
DANELEC A/S DENMARK

# IMO regulations for New buildings



## Regulation 20 Voyage Data Recorder

To assist in casualty investigations, ships, when engaged on international voyages, subject to the provisions of regulation 1.4 shall be fitted with a Voyage Data Recorder (VDR)

**Ships, other than passenger ships, of 3,000 gross tonnage and upwards constructed on or after 1 July 2002.**

# IMO regulations for existing vessels

## Regulation 20 Voyage Data Recorder

To assist in casualty investigations, cargo ships, when engaged on international voyages, shall be fitted with a VDR **which may be** a simplified voyage data recorder (S-VDR)



# IMO regulations.

| IMO regulations (implementation)                        | Start date     | Deadline       |
|---|----------------|----------------|
| 20K GT and upwards<br><i>Approximately 8000 vessels</i> | July 1st, 2006 | July 1st 2009  |
| 3K to 20K GT<br><i>Approximately 12000 vessels</i>      | July 1st, 2007 | July 1st, 2010 |

- Existing cargo ships, engaged in international voyages and constructed before 2002
- Must retrofit S-VDR during 1st scheduled dry-dock during the above periods
- Can be exempted from S-VDR if vessel will be taken permanently out of service within 2 years

# IMO Requirements

## Mandatory requirements

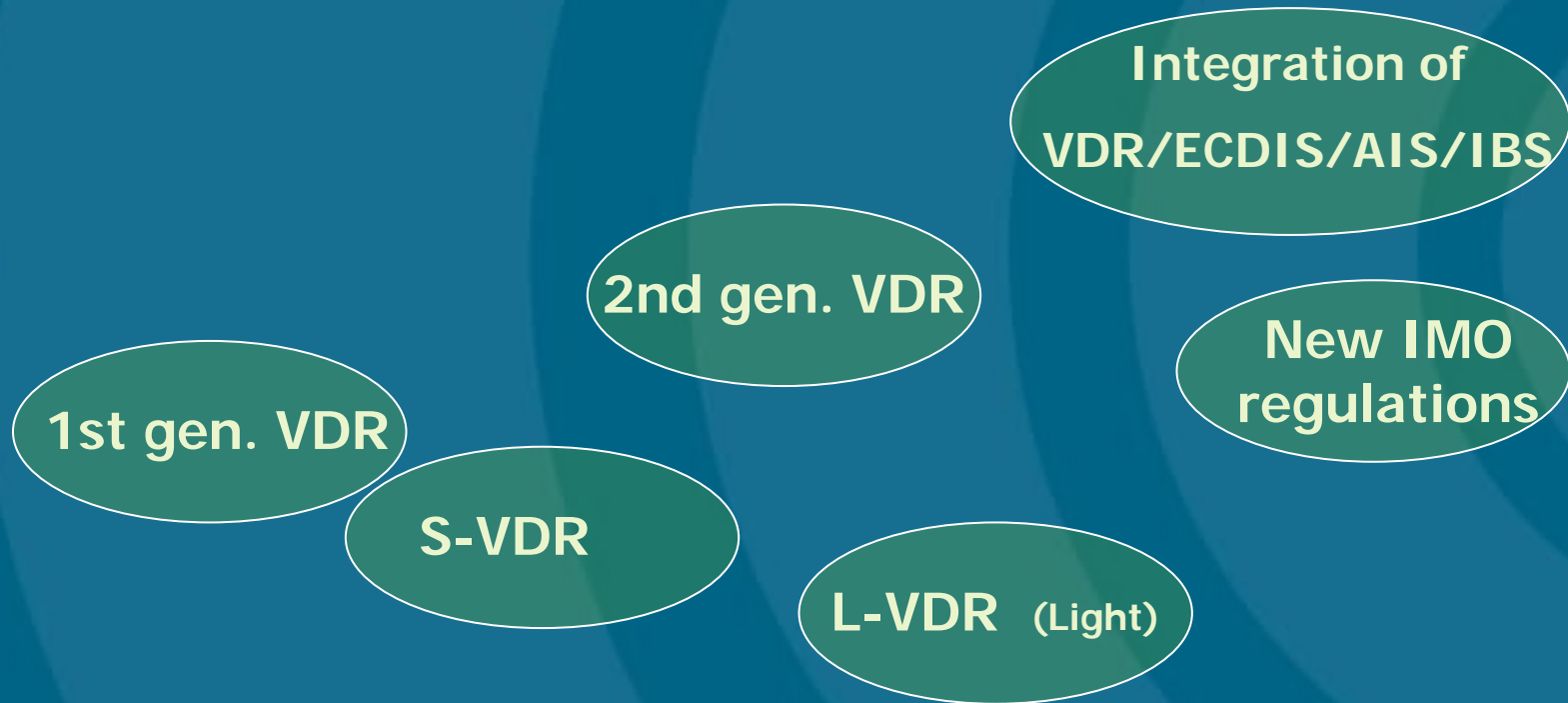
- Date and Time (GPS)
- Ship's Position (GPS)
- Speed (Speed Log)
- Heading (Gyro Compass)
- Bridge Audio & VHF Communications


- Radar display and/or AIS

## Required if NMEA signal available

- Echo sounder
- Wind speed and wind direction
- Main alarms (as required by class)
  - Steering alarms
  - Engine alarms
  - Fire detection alarms
- Rudder order and response
- Heading keeping information
- Engine order and response
- Ship control and indication status
- Hull openings – watertight and fire door status
- Acceleration and hull stress

# Technology roadmap for the VDR and S-VDR market.





**Design criteria's  
&  
Product information**

# Design criteria's for the S-VDR (1)

- **Price:**
  - The majority of ship-owners in this retrofit market will demand lowest cost
  - They will view it more as a 'kind of AIS product' than a downsized VDR
- **Installation & Service:**
  - Straightforward, logically and easy installation is crucial
  - Service at an absolute minimum and quick when needed
  - Highest possible level of maintenance free operation

# Design criteria's for the S-VDR (2)

- **Reliability:**
  - High MTBF value to secure high reliability
- **Functionality:**
  - Build-in flexibility to give added functionality if requested
- **Design:**
  - Must have a modern and industrial 'touch' to give quality image

# Danelec Marine DM300 S-VDR



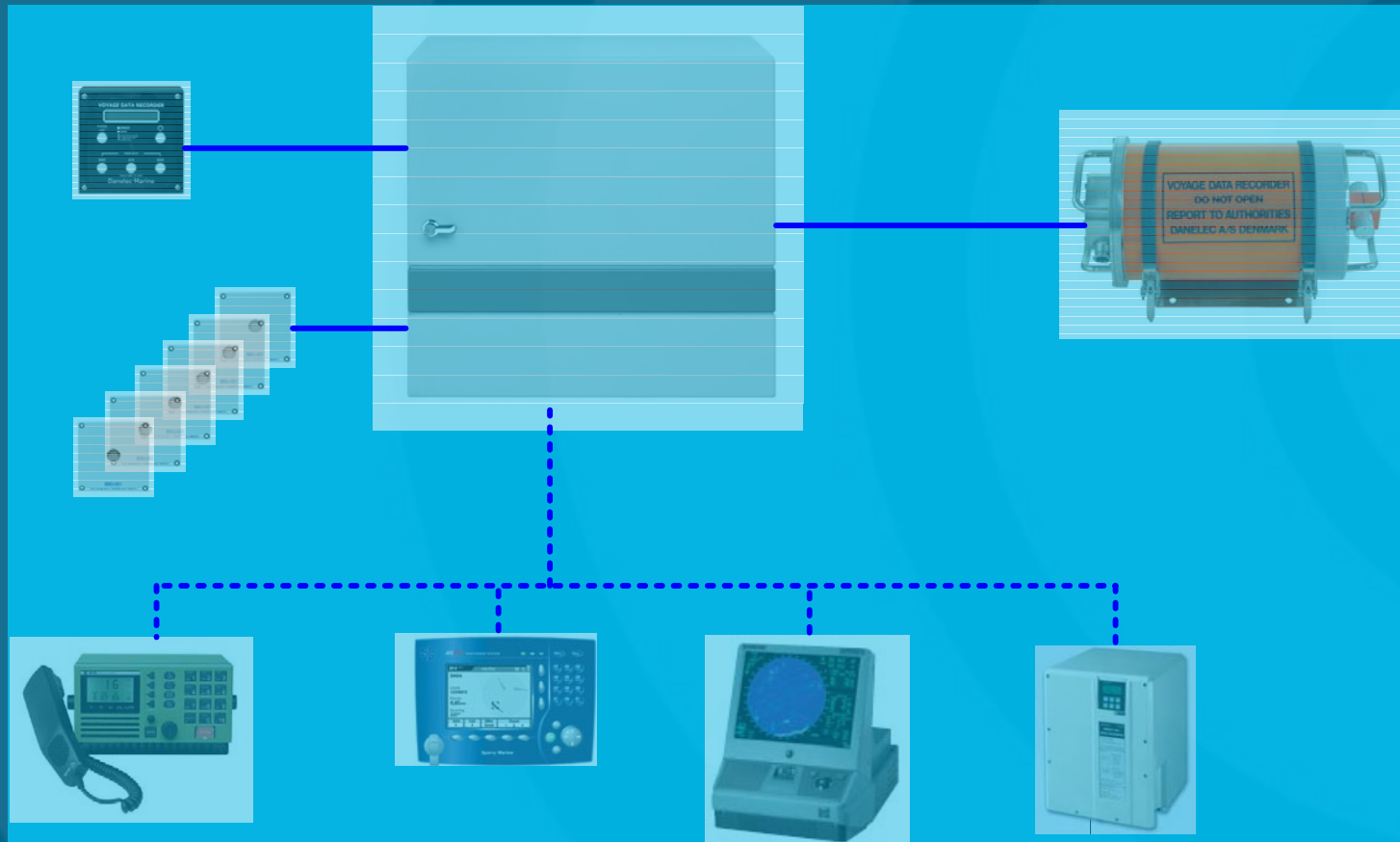
- Low cost
- Easy installation
- Service friendly
- High reliability
- Expandable
- Rugged design



# Danelec Marine DM300 S-VDR



Basic configuration:



# Danelec Marine DM300 S-VDR



## General information:

- **Completely new design optimised to meet the S-VDR market demands and requirement**
- **Designed for upgradeability to 2nd generation VDRs (DM500 G2VDR)**
- **Type approved Q4 2006**
- **Production Q1 2006**

# Danelec Marine DM300 S-VDR

## Standard configuration



- DCU – Data Collecting Unit
- FRM-FC – Fixed Capsule
- BMU-I – Bridge Microphone Unit, Indoor (2)
- BMU-O – Bridge Microphone Unit, Outdoor (2)
- BAP – Bridge Alarm Panel
- VDR Explorer – Playback Software

# Danelec Marine DM300 S-VDR

## DCU – Data Collecting Unit

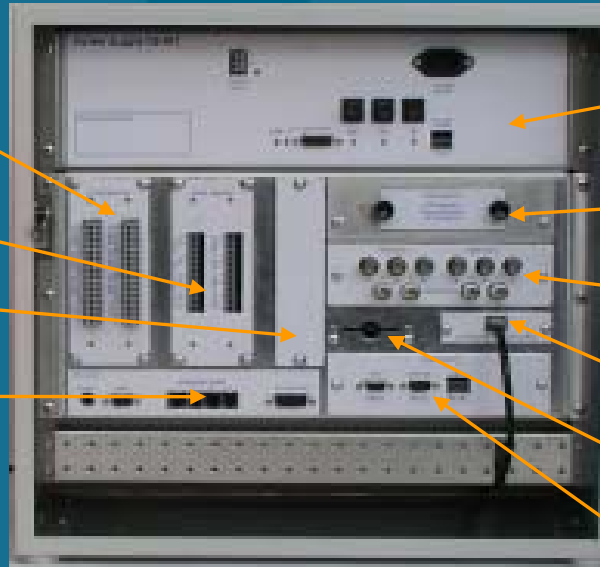


### DCU Specification:

- Dimensions 43x48x32 cm. (HxWxD) – 27 kg.
- Industrial computer for improved reliability
- UPS – 2 hours
- Removable Hard Disk Drive
- 8 channel Audio interface
- 8 channel Serial interface
- 2 channel Radar/Video

# Danelec Marine DM300 S-VDR

## DCU – Data Collecting Unit



Audio Interface module

Serial Interface module

Free Slot for 1/2 module

Ethernet Interface module

UPS, 90/240VAC, 18-32VDC

Removable HDD 80Gb

Radar/Video intf. 2-channel

Capsule Interface

CF module (configuration)

Comms module

# Danelec Marine DM300 S-VDR

## DCU – Data Collecting Unit



### DCU installation :

- Light weight and compact  
Dimensions 43x48x32 cm.  
(HxWxD) – 27 kg.
- Can be wall-mounted



Cabling through bottom of cabinet

Support beam for proper shipscables

Holes for wall mounting



# Danelec Marine DM300 S-VDR FRM-FC Fixed Capsule



## FRM-FC Capsule:

- Dimensions 27cm (H), 50cm (L) – 25 kg.
- Meets IMO IEC 61996
- 12 hours memory capacity
- "Quick release mechanism"
- Supplied w/ 50 meters "Zero Halogen" CAT5 cable as standard

# Danelec Marine DM300 S-VDR BAP – Bridge Alarm Panel



## BAP Specifications:

- Dimensions 144x144 mm
  - Panel cutout 100x100mm
- Alpha numeric LCD display
- LED indicators and buzzer
- Save / Incident function
- Interface: serial RS422
  - Cable 3x twisted pair
  - Connected to Comms. Module in DCU



# Danelec Marine DM300 S-VDR BAP – Bridge Alarm Panel



- Serves two purposes
  - Alarm display
  - Means for initiating back-up
- Alarm display
  - The S-VDR will generate an alarm message if an error is detected. Alarms and warnings are indicated (visually and audible)
- Back-up
  - The system is only guaranteed to record data for 12 hrs. Crew on bridge must initiate the back-up procedure following an incident. Press the "SAVE" button to initiate the back-up.
  - The system is capable of storing 3 incidents



# Danelec Marine DM300 S-VDR

## BMU-I Bridge Microphone Unit Indoor



### BMU-I Specifications:

- Dimensions:
  - 84x84x84 mm
- Connected to Audio module in DCU
  - Powered from Audio module
- Records audio on the bridge. Built-in buzzer for self-testing



# Danelec Marine DM300 S-VDR

## BMU-O Bridge Microphone Unit Outdoor



- **BMU-O Specifications:**
- Dimensions:
  - 96x96x84 mm
- Watertight IP67
  - Dust proof, protected from temporary immersion in water 1 meter deep for 30 minutes
- Connected to Audio module in DCU
  - Powered from Audio module
- Records audio on the bridge-wings. Built-in buzzer for self-testing

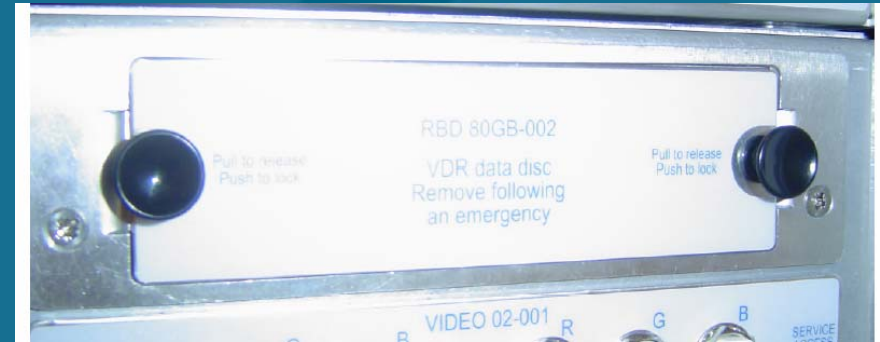


# Danelec Marine DM300 S-VDR Hard Disk Drive (HDD)

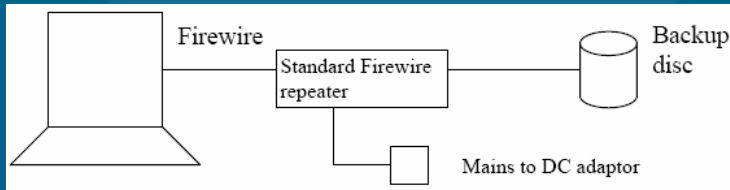


## HDD specifications:

- 80Gb HDD
- Capture video/radar 2 channel
- Firewire (6 pin with power)



Stationary PC w/ 6-wire FW interface



Laptop PC w/ 4-wire FW interface

Option: External 80 Gb HDD in peli-case

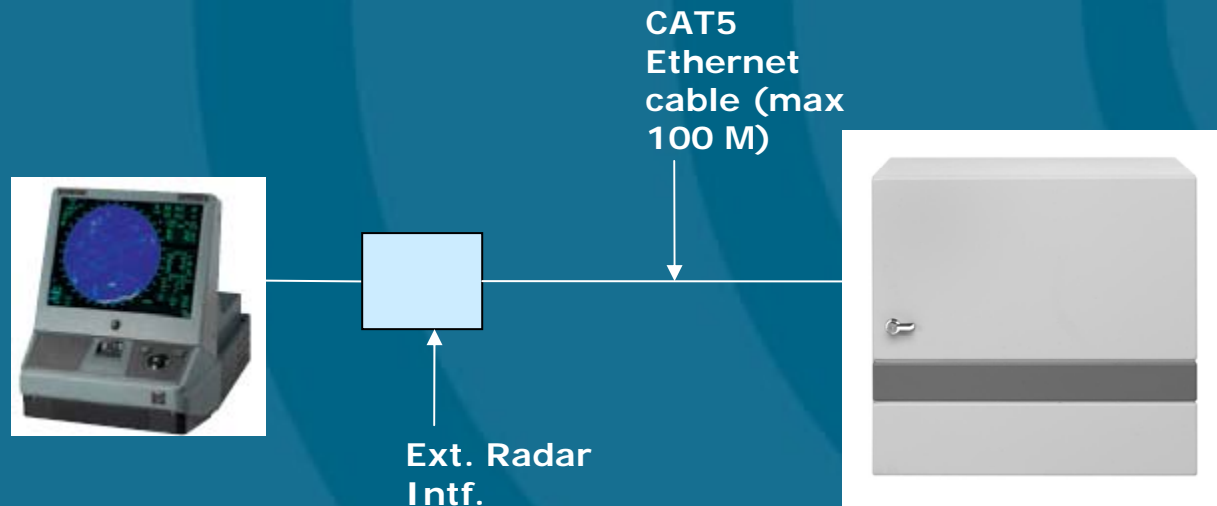


# Danelec Marine DM300 S-VDR and DM500 G2VDR



## Options and accessories:

- **RIE Radar Interface External**



# VDR Explorer Replay Software

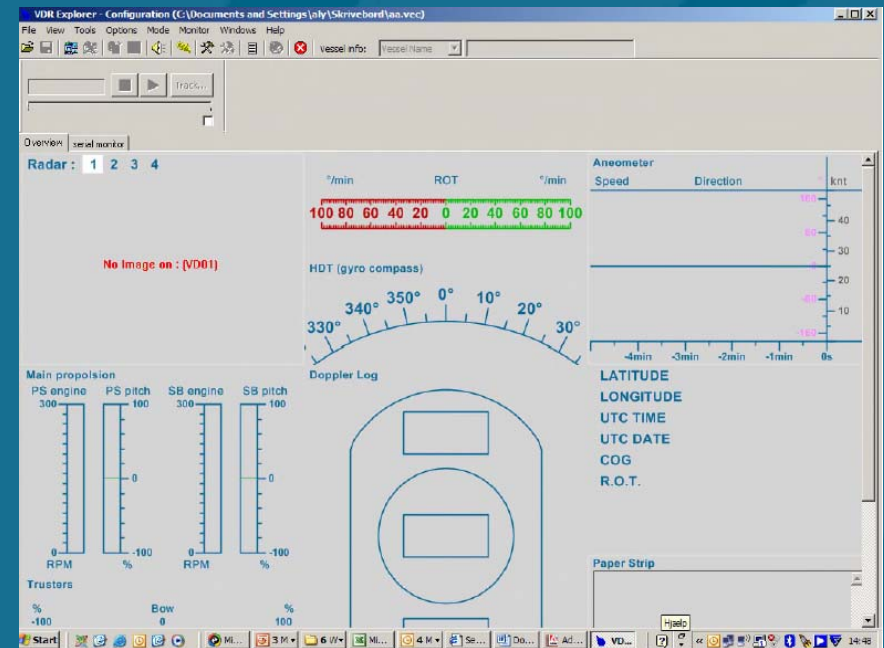


VDR Explorer.Ink

- **VDR Explorer Replay software supplied as standard**
- **Display data currently being recorded**
- **Playback of data previously recorded**
- **Easy to use and flexible**

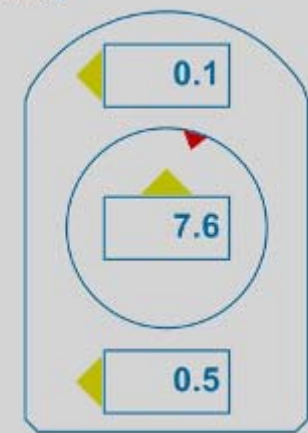
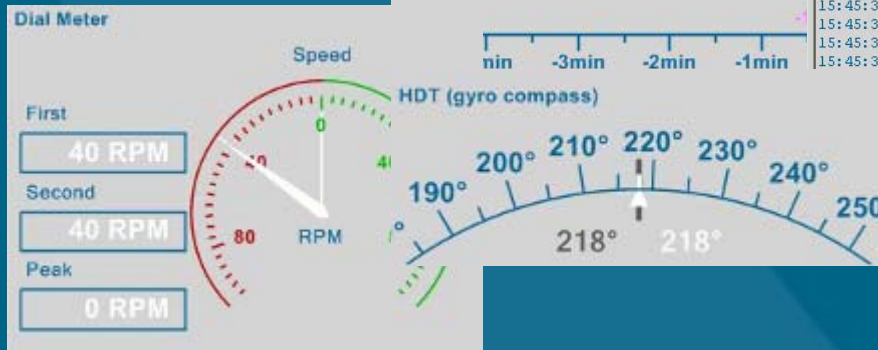
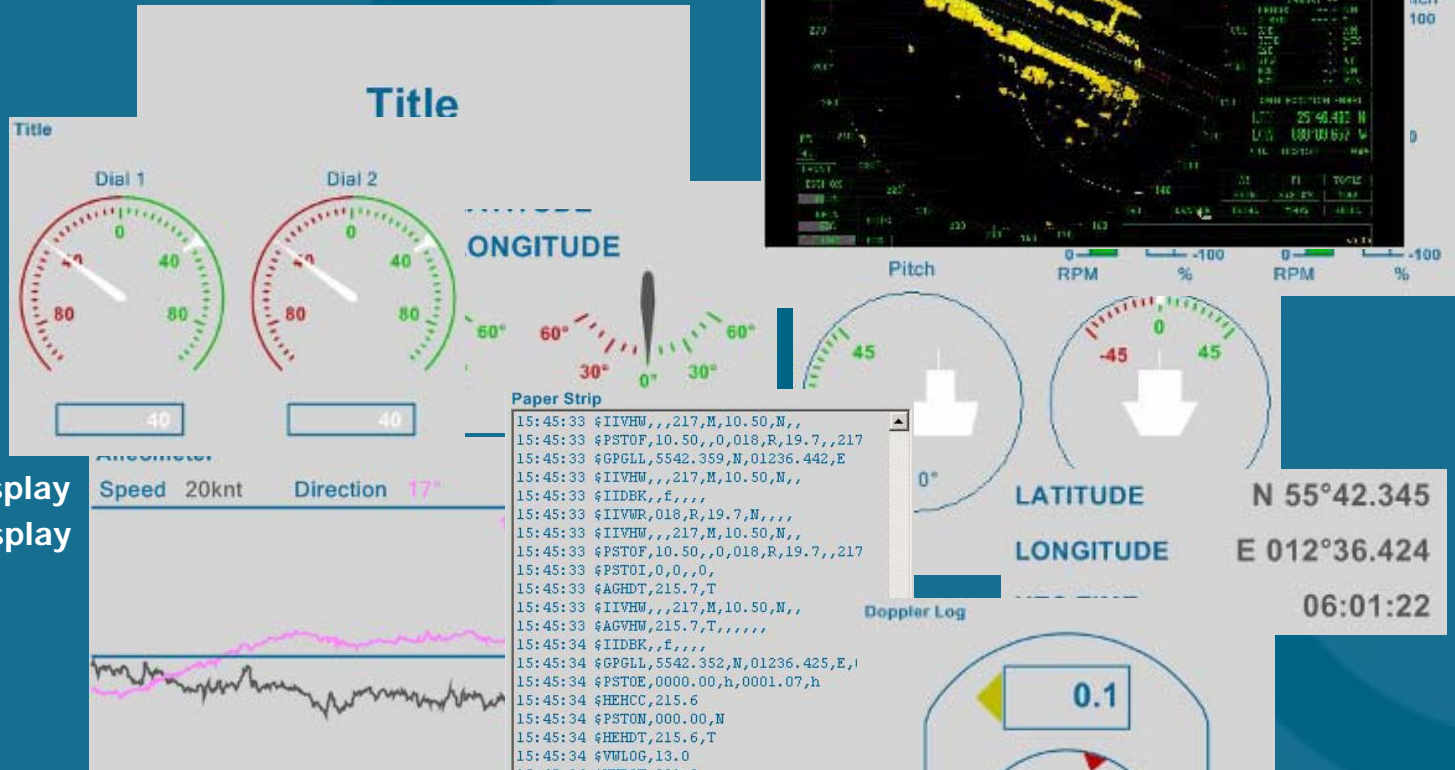
# VDR Explorer Playback software

- Customizable conning page
- Radar Screen pop-up window
- Alarm Panel monitoring
- Export data do Windows applications
- Password protected
- Surveyor toolkit
- Help menu



# VDR Explorer Object Templates

- Radar Image
- Dial Meter
- Dual Dial Meter
- Compass
- Vertical bar
- Horizontal Bar
- Horizontal Ruler
- Graph
- Small Numeric Display
- Large Numeric Display
- Doppler Log
- Pitch and role
- Rudder
- Title





**Installation  
&  
Configuration**

VOYAGE DATA RECORDER  
DO NOT OPEN

REPORT TO AUTHORITIES  
DANELEC A/S DENMARK

# Danelec Marine DM300 S- VDR



## Installation - Cables

| DATA TYPE                                     | SPECIFICATI<br>ON | DESCRIPTION  |
|---|-------------------|--|
| NMEA 0183/IEC61162                            | 2X2X0.5           | Twisted pair with overall shield.<br>Two pair per cable. <b>Local supply</b>   |
| Audio, VHF Recording and Buzzer<br>Activation | 3x2x0.5           | Twisted pair with an overall shield.<br>Three pair per cable. <b>Local supply.</b>   |
| Radar Video Recording                         | RG59              | 75 Ohm coaxial cable. The actual<br>number of cables will vary<br>depending on the type of video.<br><b>Local supply</b>                   |
| TCP/IP  | Category 5E FTP   | The Ethernet interface is a 10/100<br>base FTP (shielded twisted pair),<br>category 5 with flammability per<br>IEC 95. <b>Local supply</b> |
| Power for Main Cabinet                        | 3x1.5             | 220-240VAC – 50/60Hz   |
| Power for Interfaces                          | 2x2.5             | 24VDC  |

# Danelec Marine DM300 S- VDR



## Installation – Where to install

- DCU Data Collecting Unit
    - Converter room
    - Bridge maybe inside forward bridge console
- Note: Light weight and can be wall mounted*
- BAP Bridge Alarm Panel
    - To be installed on the bridge either in console or bulkhead mounted.
  - BMU Bridge Microphone Units
    - To be installed on the bridge (console, Ceiling or bulkhead mounted. Watertight (IP67) microphones on the bridge wings

# Danelec Marine DM300 S- VDR



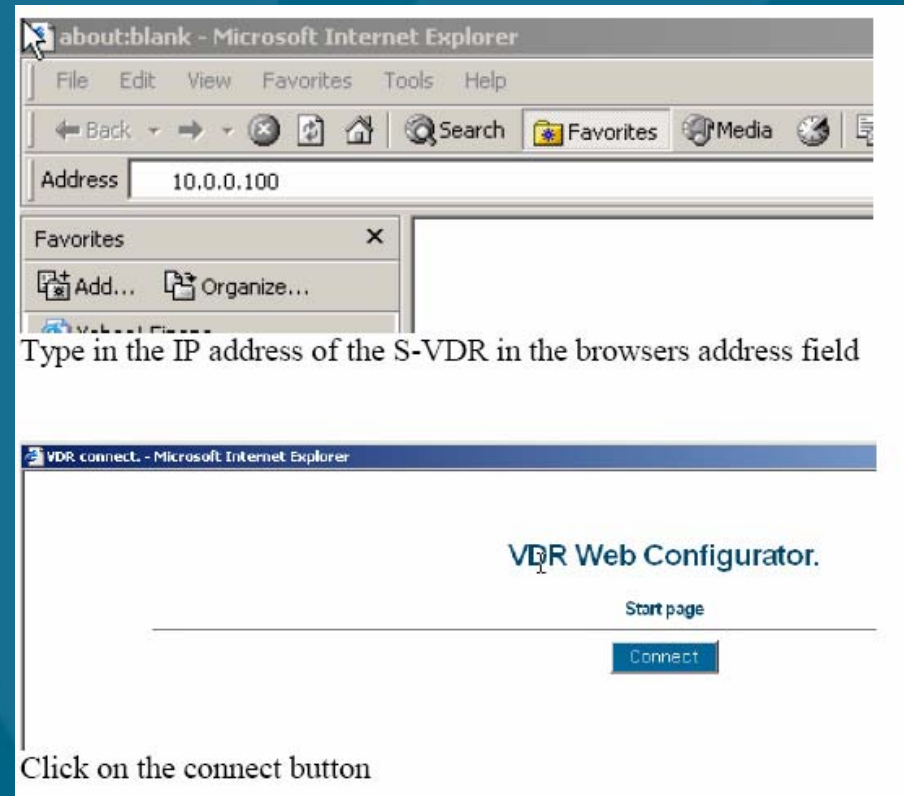
## Annual Survey

### **SOLAS V Regulation 18**

**“The voyage data recorder system, including all sensors, shall be subjected to an annual performance test. The test shall be conducted by an approved testing or servicing facility to verify the accuracy, duration and recoverability of the recorded data. In addition, tests and inspections shall be conducted to determine the serviceability of all protective enclosures and devices fitted to aid location. A copy of the certificate of compliance issued by the testing facility, stating the date of compliance and the applicable performance standards, shall be retained on board the ship.”**

# Danelec Marine DM300 S-VDR Configuration

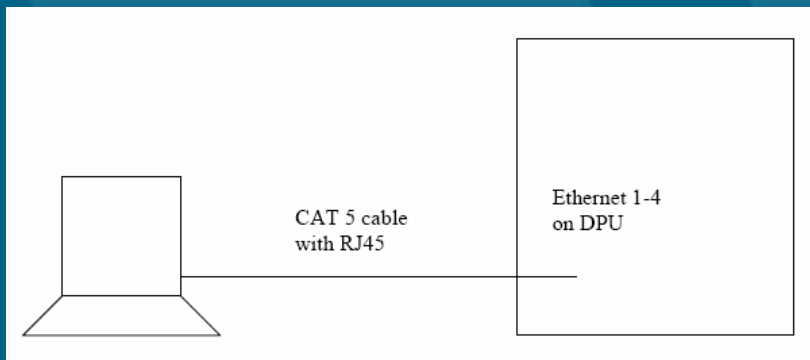
- Configuration by PC/Internet Explorer 6.x and an Ethernet interface



The screenshot shows two browser windows. The top window is titled 'about:blank - Microsoft Internet Explorer' and has the address bar set to '10.0.0.100'. The bottom window is titled 'VDR connect. - Microsoft Internet Explorer' and displays the 'VDR Web Configurator' interface. The interface includes a 'Start page' link and a 'Connect' button.

Type in the IP address of the S-VDR in the browsers address field

Click on the connect button



Connected to the Ethernet interface Module in DCU – using standard Ethernet cable



**Danelec Marine DM300 S-VDR  
Testing and Approval**

# Danelec Marine S-VDR/G2VDR Capsule

## High fire and Burn test:

- Capsule exposed to temperature of 1100° for one hour
- Status: Passed.



# Danelec Marine S-VDR/G2VDR Capsule

## Pressure test:

- Capsule exposed to Pressure of 600 bar (= 6 km depth) for 24 hours
- Danelec Marine capsule was tested at 600 bar for 48 hours
- Status: Passed.



# Danelec Marine S-VDR/G2VDR Capsule

## Shock, vibration and penetration test:

- A steel element of 250 kg was dropped directly to the capsule from 3 meter height.
- Status: Passed.



# Danelec Marine DM300 Type Approval



- DM300 Approved  
December 2005
- VDR (G2)  
expected to be  
approved  
September 2006

 **Bundesrepublik Deutschland**  
Federal Republic of Germany

 **Bundesamt für Seeschifffahrt und Hydrographie**  
Federal Maritime and Hydrographic Agency

**Baumusterprüfbescheinigung**  
type examination certificate no.

**Nr. BSH/46162/0020148/05**

Die Navigationsausrüstung/ The navigation equipment:  
**Vereinfachter Schiffsdatenschreiber**  
Simplified Voyage Data Recorder

mit der Typbezeichnung **DM300 S-VDR**  
with the type designation

zusätzliche Handelsnamen **Sperry Marine VoyageMaster II S-VDR**  
additional trade names

des Herstellers **Danelec Electronics A/S**  
of the manufacturer **Blokken 44, 3460 Birkerød, Danmark**

ist nach den folgenden Normen/Standards geprüft worden  
has been type-tested in accordance with the following standards

| Norm/Standard                          | Prüfnorm/Test standard                      |
|--|---|
| IMO Maritime Safety Committee 163 (78) | IEC/Pas 61996-2 (Voyage Data Recorder 2004) |
|  | Part 2: Simplified Voyage Data Recorder     |
|  | IEC 60945 (Environmental Conditions 1996)   |
|  | IEC 61162 (Serial Interface 2000)           |

und wird für den Antragsteller  
and has been approved for the applicant  
**Danelec Electronics A/S**  
für den nachstehenden Verwendungszweck zugelassen:  
for the following application:  
**Vereinfachter Schiffsdatenschreiber**  
Simplified Voyage Data Recorder

Die Zulassung berechtigt zur Anbringung der Baumusternummer (Nummer der Baumusterprüfbescheinigung).  
With the approval it is granted, that the equipment can be labelled with the type approval number (number of the type approval certificate).

Ausgabedatum: 13.12.2005  
Date of issue

Ausgegeben durch: **Bundesamt für Seeschifffahrt und Hydrographie**  
Issued by: **Bernhard-Nocht-Str. 78, 20359 Hamburg**  
Germany

Ablaufdatum: 12.12.2010  
Expiry date

   
Im Auftrag  
on behalf  
Jochen Ritterbusch

Diese Baumusterprüfbescheinigung besteht aus 2 Seiten.  
This Type examination certificate consists of 2 pages.



Highlights  
&  
"things to remember"

# Danelec Marine DM300 S-VDR



## Key Selling Features:

- **Competitive (low) pricing.**
- **2 unit solution**
  - Easy and cost effective installation
- **Small & light weight system**
  - Total weight – only 52 kg.
- **DCU can be wall mounted**
  - Easy installation and service.
- **Configuration and Replay via Ethernet/HTTP (browser)**

# Danelec Marine DM300 S-VDR



## Key Selling Features:

- **Modular design of DCU**
  - Makes the system very service friendly – modules can be easily replaced.
- **“Hot Swap”**
  - Modules can be easily replaced for service, while the system is running and in operation.
- **Up to 100 meters between DCU and Capsule**
  - Using standard CAT5 Ethernet cable.
  - Supplied as standard with zero-halogen cable (50 meters).
- **Upgradable by adding Remote Junction Box**

## “Things to remember”

- To consider all components required (i.e. interfaces ect)
- To consider installation cost
  - Minimum number of “boxes” to install = minimum of installation cost
- To consider the “cost of life” on the equipment
  - Service and maintenance

Danelec Marine  
DM-300

**Questions?????**