# NAVAL COMMAND AND CONTROL SOLUTIONS

Trusted for Mission-Critical Environments


ST Engineering

# Transforming Naval Missions

Naval Ruggedised Solution unifies intuitive interfaces, logical integration and situational awareness for naval defence agencies to enhance information sharing and network connectivity for seamless ship-ship and ship-shore operations.

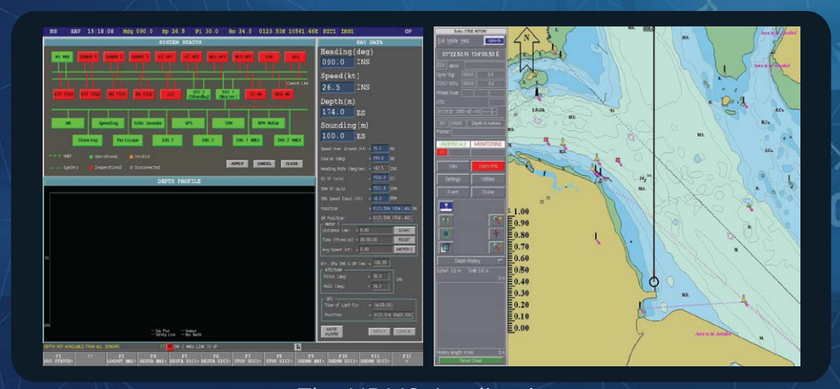
## Navigation and Data Management System (NDMS)

### Data Distributor and Protocol Converter

Designed to heavily reduce the complexity of integration with various external systems, this high-performance rugged NDMS decode, convert and package data from all input sources and sensors into standardised or customised protocols, before transmitting to various systems for processing or display navigation information through our customised applications. The NDMS connects to the various external systems such as Command and Control, Sensor/Weapon System, Navigation and Platform Management Systems. The rugged and tough NDMS meets military standards to withstand harsh environments.

### Key Features

- Supports conversion of different protocols received from sensors and transmit to various systems via multiple interfaces (e.g. Serial, LAN), and vice versa
- Modular concept design for scalability, maintainability and seamless integration of new sensor and system
- Designed with redundancy concept to increase system availability
- Various form factors can be customised for diversed platform requirements



The NDMS Application

**Customisable Various Form Factors**

### Technical Specifications

| | |
|---|---|
| **MIL Standards / Environmental** | |
| Temperature, Operating | MIL-STD-810G , 0°C to 45°C |
| Shock<br>Salt and fog | MIL-STD-810G , 30G<br>MIL-STD-108 |
| EMI / EMC | MIL-STD-461F |
| | |
| **Input Interface /Protocol** | 1. (Multicast Ethernet/ RS232 / RS422 / RS485) / NMEA 0183 or Other non-NMEA 0183 format (required by customer)<br>2. Syncho<br>3. NTP or IRIG-B, |
| | |
| **Output Interface** | 1. (Multicast Ethernet/ RS232 / RS422 / RS485) / NMEA 0183<br>2. Other non-NMEA 0183 |
| **Latency** | |
| Real time high priority loops | Internal Processing < 2 ms |
| Normal loops | |
| Low priority loops | |
| | |
| **Physical Features** | |
| Weight | 52kg or customised design |
| Dimensions | W 850 x D 450 x H 450 or customised design |
| Input Power | 115Vac or 220Vac (50/60Hz) |
| Power Consumption | Up to 500W customisable design |

# Ruggedised Server/Storage (RSS)

## Performance in Extreme Conditions

Built to withstand extreme heat, shock, dust and vibration, this cutting-edge MIL-STD qualified rugged server has no compromise in performance with Intel® Xeon® CPU 3rd Gen processors with memory of 16 DDR3 DIMM up to 512GB for powerful and reliable storage. This rugged server is compactly designed for space-constraint environments. Available in two chassis sizes – 2U and 3U – to meet your specific needs. The RSS has passed stringent noise tests according to ISO 3744 standards, great for underwater platform.

Equipped with high-performance processors and systems, the RSS has the capability to support various applications such as operator console, navigation systems, command and control systems, communications and networking systems to weapon control.

## Key Features

- Equipped with multiple network ports, 4 Gigabit LAN ports with option for additional 4 Gigabit LAN ports
- Allows different combinations of serial ports (RS232 or RS422) - up to 9 serial ports
- Supports multiple PCI expansion slots i.e. Video Frame Grabber, BNC HD-SDI and DVI-I video input for RSS-3U type
- Supports dedicated graphic card for RSS-3U type
- Supports AC or DC power
- Monitors time elapsed and internal ambient temperature via centralized monitoring unit or host computer to identify hotspots online and rectify them immediately
- Supports Remote Sensor Interface – which remotely initiates RSS Start/Stop operations and reads RSS environment status

## Technical Specifications

| **Applications** | **Server** | **Client, Storage** |
|---|---|---|
| **Benefits** | Ruggedised Server unit that can be used to host various applications | |
| **Mechanical** | 2U | 3U |
| Height | 88 mm | 132 mm |
| Width | 431 mm | 431 mm |
| Depth | 385 mm | 385 mm |
| Weight | 13kg | 15kg |
| **CPU** | Intel® Xeon® CPU | |
| **Expansion** | Multiple PCIe slots | |
| **Memory** | 16 DDR3 DIMM up to 512GB | |
| **Power Supply** | 500W ATX PSU | |
| | Input: 130-380 Vdc, 90-264 Vac<br>EN 60950 Certified | |
| **MIL Standards / Environmental** | | |
| Temperature, Operating | MIL-STD-810 , 0°C to 50°C | |
| Temperature, storage | MIL-STD-810 , -30°C to 70°C | |
| Shock | MIL-STD-810 , 30G | |
| Humidity | MIL-STD-810 | |
| Drip-proof | MIL-STD 108 | |
| Salt and fog | MIL-STD-810 | |
| EMI/EMC | MIL-STD-461 | |
| Safety | EN60950 | |
| Structure borne Noise | ISO 3744, Specification No 65 | |
| Air Borne Noise | ISO 3744, Specification No 65 | |
| **Cooling** | Dual 100cfm cooling fan with removable air filter from front panel | |
| **Software Compatibilty** | Windows / Windows 7 Embedded / Redhat Linux /<br>Support Virtualisation (Microsoft / VMWare / Redhat) | |

# Ruggedised Multi-Function Console (MFC)

## Multi-Touch, High-Resolution Display for Mission-Critical Environments

Sleek and yet extremely rugged, this Multi-Function Console is designed to meet the harshest naval and maritime environment based on US military standards (Mil-Std) and/or European standards (EN). Equipped with interactive touch displays, the MFC provides greater control and flexibility with this multi-touch technology to meet the demands of today's multiple mission requirements. With fine dimming controls and anti-glare coating, the MFC delivers clear display even in extreme low and bright lighting conditions, suitable for operations on the bridge of a ship.

This highly versatile console has the capability to support a wide array of applications and management systems - such as Command and Control, radar and weapon control - for land, air, offshore or moving vehicles. It can also be integrated and configured with different input or output systems such as communication unit, trackball and joystick to meet individual customer requirements.

## Key Features

- Equipped with multiple IO ports to allow flexible configuration to integrate different input and output devices
- Flexible location for MFC Client processor (local or remote)
- Designed with direct video input to connect to the operator to enhance situational awareness
- Ready API to detect and control lighting for Firing Control Hard-Key

## Technical Specifications

| **Key Features** | SOCC-Lite | Commander Console |
|---|---|---|
| Construction | Aluminium | |
| Display/s | Multi-Touch Displays | Multi-Touch Large Format Displays |
| Desk Layout | Customisable | |
| Optional Ancillaries/Peripherals | Customisable | |
| | | |
| **BUILT-IN-TEST** | Built in test for Console | |
| | | |
| **MIL Standards / Environmental** | | |
| a) Temperature, Operating | MIL-STD-810G , 0°C to 45°C | |
| b) Shock | MIL-STD-810G , 20G | |
| c) Drip-proof | MIL-STD-108E | |
| d) EMI/EMC | MIL-STD-461F | |

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