

# Battery Monitoring System

WBMS S 52

Wireless Solutions for Newbuild and Retrofit



# Wireless Battery Monitoring

The well proven Wireless Battery Monitoring System S 52 is the central measuring and evaluation system for main batteries aboard submarines.

It continuously and directly indicates the most important data on the condition of the batteries and consequently supplies decision aids for operational and tactical intents. Featuring new wireless technology the S 52 system measures voltage, acid temperature and acid level of every battery cell and calculate all relevant data of the complete battery bank of the submarine such as battery power, discharged capacity and status of all battery cells. The wireless layout of the sensors reduces the cabling and mounting effort of units in the battery room for new building and refit.

The Battery Monitoring System consists of a main control unit for monitoring and calculation, a number of compact RF battery cell sensors and RF transceivers to transfer the data from each

battery cell to the main control unit. The onboard system configuration of cell sensors and transceivers can be individually adapted to the amount of battery cells, battery rooms and redundancy requirements. A mixture of conventional sensors with wireless sensors is possible, making the S 52 Battery Monitoring System well suited for customized retrofit purposes.

## BENEFITS AT A GLANCE

- Current and complete battery status at all times
- Acid level measurement
- Directed maintenance indication
- Decision aids for operational intents
- Tremendously reduced cabling and installation effort
- Reduced repair cycle time per sensor
- Easy to integrate during overhaul

FT transceiver



Battery cell top



RF Battery cell sensor





## MANAGING THE BATTERY

Raytheon Anschutz Battery Monitoring Systems provide continuous health check of the battery, enhancing decisions on mission profile, boats safety and battery maintenance.

The following relevant values of each battery cell are monitored:

- Voltage
- Acid temperature and acid level

Measured values of every partial battery:

- Shunt current

The measured data is processed and battery status and system status are displayed on the control unit. The graphical user interface indicates prioritized battery data as well as warnings and guides the operator through status and information menus. Based on integrated data processing, advanced calculations are performed providing reliable information on relevant battery parameters.

Depending on the actual power or a predicted power supply, the system is able to estimate the residual charge/discharge time and the residual capacity. All relevant measured and calculated data can be called up on the display. In addition, data analysis in form of graphs and tables can be displayed. The serial interface can transfer data logs e.g. to printer and battery log-PC stations.

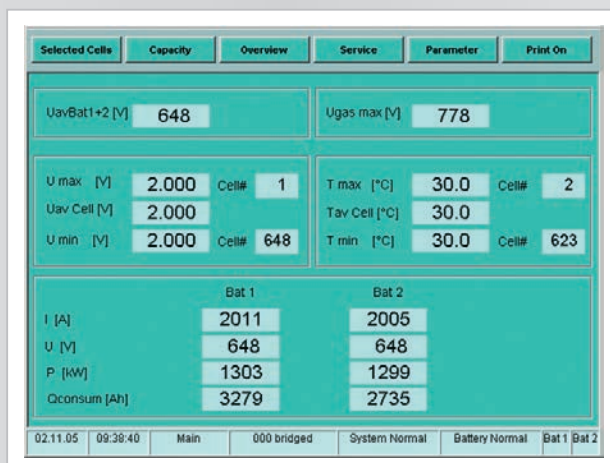
## SOLUTIONS AND SUPPORT

Raytheon Anschutz has years of experience in battery monitoring, having proofed its system's accuracy and reliability on many submarines. We understand naval customer's requirements and experienced engineers guide you from project outline and specification through realisation to setting in operation.

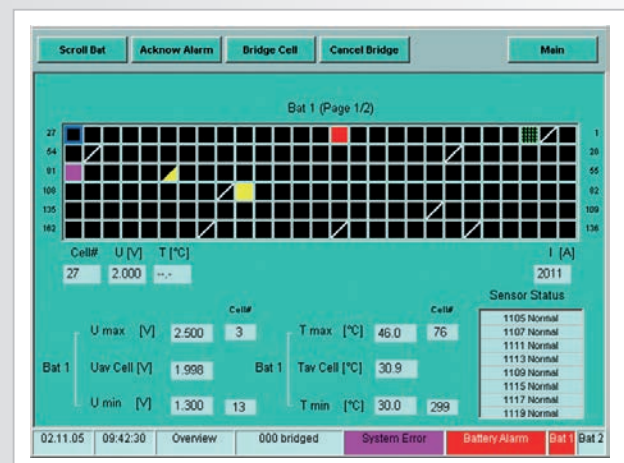
Independent on your need for a newbuild or retrofit solution, Raytheon Anschutz' Wireless Battery Management System S 52 is the choice to fulfill your requirements of a flexible, reliable and future orientated system.

Raytheon Anschutz offers a wide variety of services throughout the whole program, from early customer consulting and customized designs up to obsolescence management and world-wide maintenance during operation. For all solutions, a large worldwide service network is available for maintenance, repair and spare part logistics.

Main menu



Service menu





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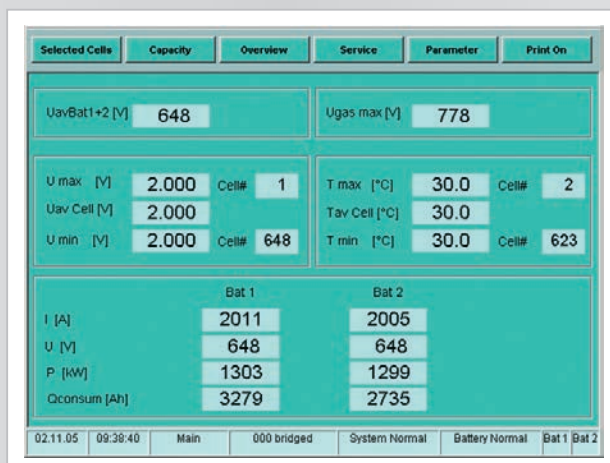
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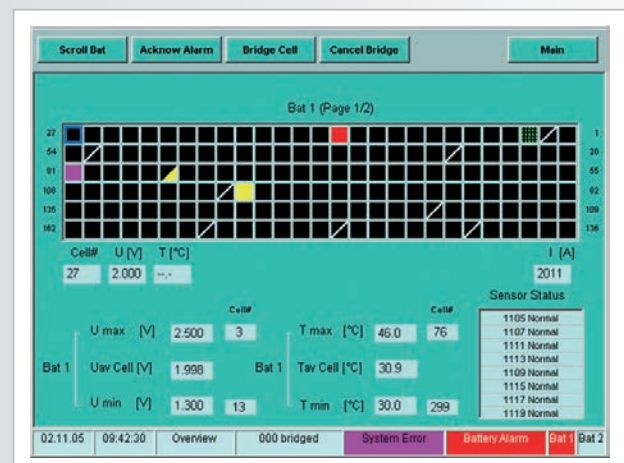
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## TECHNICAL DATA

### Control Unit

Power supply & power consumption

- 115 V AC 1/3 phase, optional 300-600V DC
- 450 VA

Dimensions (WxHxD)

- 670 x 325 x 300 mm

Protection category

- IP 23

### Wireless Battery Sensors

Dimensions, U,T,L - sensor

- Ø 67 x 56 mm,
- Probe length 190 mm

Dimensions (WxHxD), I - sensor

- 100 x 60 x 100 mm

Power supply & power consumption

- 1 ... 3 V (using cell voltage)
- 100 mW passive
- 200 mW during transmission

Protection category

- IP 67 (U,T,L - sensor)
- IP 66 (I - sensor)

Explosion category

- ATEX Zone 1

### RF Unit

Dimensions (WxHxD)

- 210 x 95 x 140 mm

Power supply & power consumption

- 1,5 – 3 V DC from Control Unit
- 200 mW

Protection category

- IP 66

Explosion category

- ATEX Zone 1

System operating temperature

- 0 ... 55 °C;
- maximum humidity: 95%

Components in the battery room

- -5 ... 55 °C;
- maximum humidity: 95%

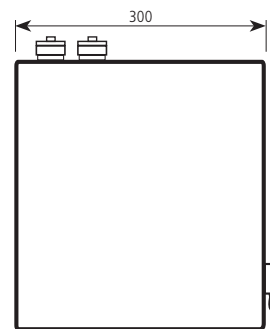
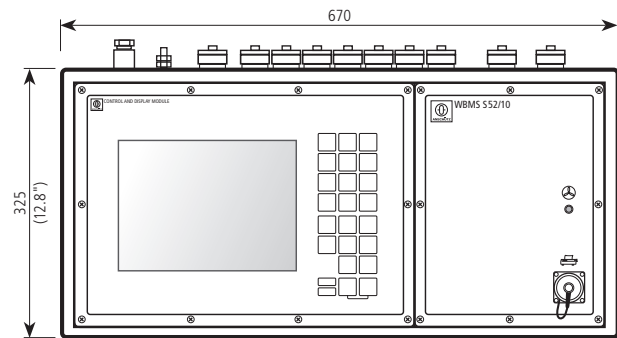
Shock

- BV 0430

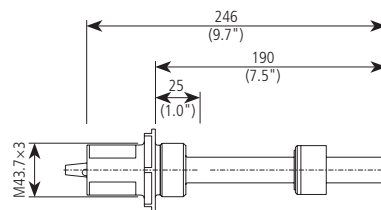
EMC

- MIL-STD-461 E

### Control Unit



### Wireless Battery Sensors



### RF Unit

