LiVAULT

SAFE STORAGE AND CHARGING OF LITHIUM BATTERIES

RAMBSS

RACLAN

Modular Safety System for Charging and Storage of Lithium-Ion Batteries

TYPE APPROVED





GAS
FIRE & GAS CERTIFIED

UL 1487
UL 9540 A

EXPLOSION CERTIFIED

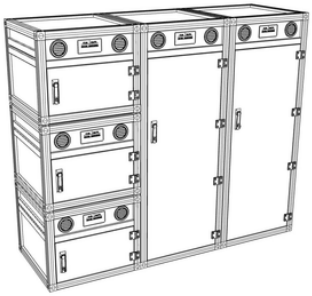
TÜV NORD M22/02

RAMBSS

RACLAN Maritime Battery Storage & Safety System

PHILOSOPHY

RAMBSS is an integrated lithium-ion battery storage, charging and safety system, purpose-engineered for the demanding requirements of the marine industry. Designed to manage the risks associated with lithium-ion battery storage and charging, RAMBSS combines active monitoring, automatic electrical isolation, gas management, ventilation, cooling and integrated fire suppression within a robust, explosion-protected enclosure.



INDEPENDENTLY TESTED, VERIFIED & CERTIFIED **SYSTEM & COMPONENTS**

TYPE APPROVED
In accordance with MGN 681 (M) Amendment 1.
Cert. Number: LR26434348SF
Utilizing selected principles of UL 1487 & UL 9540 A (thermal runaway propagation, fire and gas evaluation)

TEST PROTOCOL M02/22
Cert. number: 8125084364-200 v1
Test Protocol: M02/22
Thermal runaway certification parameters: **Explosion**

Test number: P127755a
Testing according to UL 1487, UL 9540 A
Thermal runaway test parameters: **Explosion, Fire, Explosion, Gas Management**

KEY FEATURES

Integrated Battery Charging
Dedicated internal sockets allow lithium-ion batteries to be charged within the protected enclosure.

Continuous Temperature Monitoring
Internal temperature monitoring provides continuous surveillance of operating conditions and identifies abnormal temperature increases.

Smoke Detection
Integrated smoke detection provides early warning of potential battery failure or developing thermal events.

Automatic Charging Isolation
Charging power is automatically disconnected when elevated temperatures or smoke detection indicate a potential safety event.

Active Ventilation
Forced ventilation manages internal airflow and supports the controlled removal of hot air during charging.

Integrated Fire Suppression
Automatic flooding using freshwater and certified coolant provides rapid cooling and suppression within the enclosure.

Battery Off-Gas Treatment
Integrated catalytic treatment manages hazardous battery off-gases, including hydrogen (H_2), hydrogen fluoride (HF) and volatile organic compounds (VOCs).

Touchscreen Control Interface
An integrated touchscreen provides system status, monitoring information, alarms and operational control.

Audible Alarm
An integrated 80 dB audible alarm provides local notification of system faults and safety events.

Visual Alerts
Visual warning indicators provide immediate notification of abnormal operating conditions.

Vessel Alarm Integration
Connectivity to the vessel's fire alarm system and Alarm Monitoring and Control System (AMCS) allows RAMBSS alerts to be incorporated into onboard monitoring.

Redundant Safety Components
Critical safety functions incorporate backup components to improve operational resilience and system availability.

Uninterruptible Power Supply (UPS)
An internal backup battery maintains essential monitoring and safety functions in the event of loss of the primary power supply.

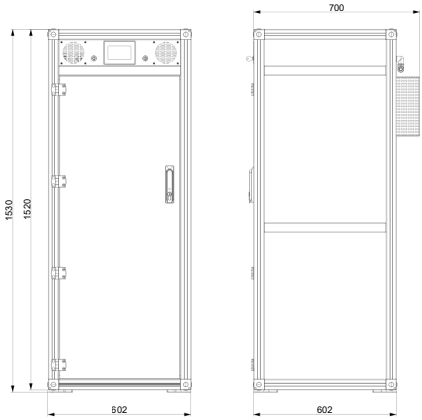
A60 and Ballistic Construction
Robust enclosure construction incorporates A60 fire-resistance and ballistic protection requirements.

Frame-in-Frame Explosion Protection
A reinforced frame-in-frame construction is engineered to withstand internal explosion pressures and provide additional protection against the consequences of battery failure.

Explosion damper (Patented)
Engineered to regulate and relieve internal explosion pressures, helping prevent structural failure and limiting the release of hazardous gases and flame.

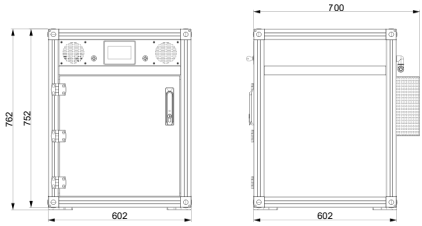


Module 1500:
602 x 700 x 1520 mm
(internal: 520 x 520 x 1300 mm)
Weight: 174 kg



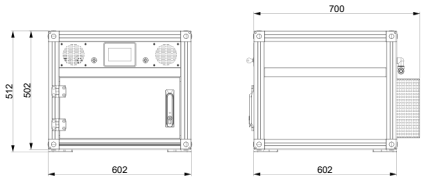


Module 750:
602 x 700 x 752 mm
(internal: 520 x 520 x 532 mm)
Weight: 100 kg





Module 500:
602 x 700 x 502 mm
(internal: 520 x 520 x 280 mm)
Weight: 85 kg



Custom heights available on request

Certified battery capacity
5.2 kWh of Lithium-Ion Batteries

Power supply
100-230 V / 50-60Hz

Alarm
Local alarm + AMCS/FAS signalling

Freshwater supply
Minimum 2 bar pressure for each series of connected modules

Internal back up battery
24 V Lead Acid

Cooling agent
Trident BJD

PREVENTATIVE

25ºC Internal temperature
Response: - Ventilation fans on

50ºC Internal temperature
Response: - Charging disconnected
- Local alarm

ACTIVE RESPONSE

90ºC Internal temperature
OR
Smoke Detection
Response: - Local alarm
- AMCS/FAS Alarm
- Coolant flooding begins



store & charge





LiVAULT
WWW.LIVAULT.COM
PALMA DE MALLORCA, SPAIN