# Intensium® Smart 52M – Indoor

## Medium power lithium-ion energy storage system

Saft's Intensium® Smart 52M is a Li-ion energy storage system providing 52 kWh of energy and 100 kW of power and is designed for smart grid applications in commercial, tertiary and industrial buildings.

Built with proven Saft Li-ion technology, Intensium® Smart is a fully integrated storage system, providing high operational reliability over thousands of cycles with excellent energy efficiency. Its modular design based on 50 kWh /100 kW storage units allows scaling up the system size to 300 kWh / 600 kW.

### Applications

- Self-consumption (PV, CHP)
- Energy management optimization
- Participation in remunerated Demand Response programs
- Black-out management

### Features

- Field-proven Li-ion technology (15 years' experience)
- Advanced industrial design offering highest safety and robustness
- Long life under dynamic cycling conditions
- Outstanding power capability
- Best energy efficiency of all electrochemical technologies (above 95% roundtrip)
- High charge retention

### Benefits

- Flexibility to provide both power and energy functions
- Optimized system integration with main power conversion systems in the energy storage market
- Prompt and flexible response to any power demand
- Real-time energy management enabled by transmission of all relevant battery parameters through BMS
- Low maintenance
- Effective troubleshooting with user-friendly diagnostic tool

| Nominal characteristics at + 25°C/+ 77°F | |
|---|---|
| Voltage (V) | 624 |
| Capacity (C/5) (Ah) | 84 |
| Energy (C/5) (kWh) | 52 |
| Continuous discharge power (kW) | 100 |
| Continuous charge power (kW) | 54 |
| **Mechanical characteristics** | |
| Total Width (mm) | 1800 |
| Height (mm) | 1586 |
| Depth (mm) | 647 |
| Weight for 3 cabinets (kg) | 965 |
| **Electrical characteristics at + 25°C/+ 77°F** | |
| Minimum Voltage (V) | 546 |
| Maximum Voltage (V) | 728 |
| Maximum continuous discharge current (A) | 160 |
| Maximum continuous recharge current (A) | 82 |
| Discharge time at nominal power (h) | 0.5 |
| Recharge time at nominal power (h) | 1 |
| Insulation resistance (1000 V – OC) | >100 MΩ |
| Dielectric | 3 kV rms |
| **Operating conditions** | |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Cycle efficiency (one way) | >95% |
| Self-discharge | <=5% per month |
| Calendar lifetime at + 25°C/+ 77°F | >20 years |
| Cooling | Fans at 230 V, 96 W |

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## Battery Management System

Sophisticated battery management system based on one Battery Management Module (BMM) per storage unit and Safety Monitoring Units (SMU) in all Synerion® 24 M modules providing the following functions:

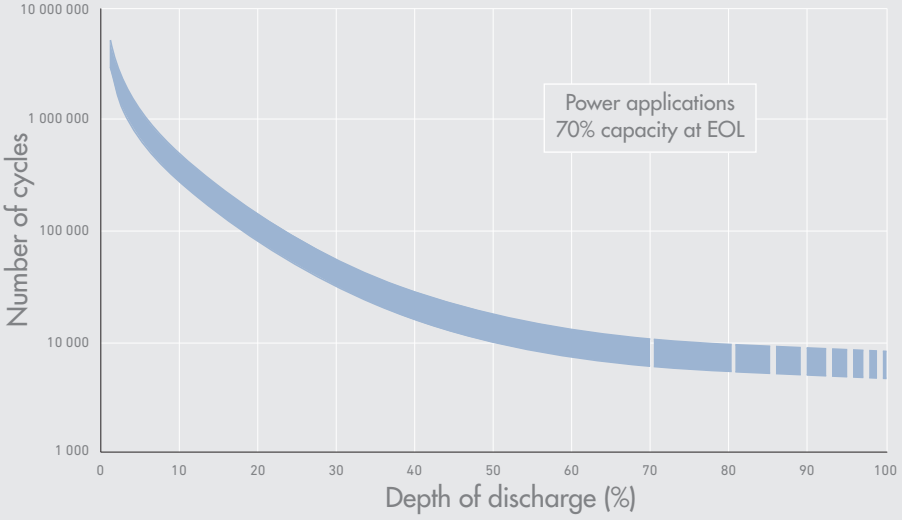
- Monitoring and control of voltage and temperature at cell level
- Real time calculation of charge and discharge current limits
- Real time calculation of SOC using temperature, aging, voltage and currents
- Balancing of State of Charge (SOC) between modules
- Alarms and faults management
- Indication of State of Health (SOH) of the system integrating cycling and calendar aging
- Black box registering alarms and number of cycles

## Safety

- Safety driven design guarantees safe behavior in case of abuse usage
  - cell level : shutdown effect separator, mechanical venting to release gases, materials selected to resist high temperatures
  - module level : electronic board for voltage and temperature monitoring, cells balancing and structural protection to avoid heat propagation
  - string level : BMM with both circuit breaker and contactor to manage short-circuits, over-currents, over-temperature and over-voltages
- Stringent qualification processes
- Safe handling of battery modules during maintenance because of low voltage modules (24V)

| Storage conditions | |
|---|---|
| Storage temperature | – 30°C to + 70°C (– 22°F to +158°F) |
| Storage time | 6 months |
| Maximum altitude | 2000 m above sea level |
| Maximum relative humidity | 95% (non condensing) |
| **Compliance to standards** | |
| Cell safety | UL 1642 |
| Module safety | EN 50178 / IEC 60950 |
| EMC | IEC 62 040-2 Cat C1 and C3 |
| Cabinet protection class | IP 20 |
| Vibrations and shocks | IEC 60721-3-3 (class 3M4 and 3M2 respectively) |
| Seismic | IEEE 693 high level |
| Environment | IEC 62093 (indoor conditioned) |
| Transport classification | UN 3480 - Class 9 |
| Transport regulation compliance | UN 3480 - ST/SG/AC.10/11 Rev 5 § 38.3 |
| Marking | CE |
| Directives | ROHS, REACH, WEEE |
| Manufacturing plants | ISO 9001, QS 9000 and ISO 14000 |

Energy storage module
Cycle life at + 25°C/+ 77°F




*Cycle life depends on both depth of discharge (DOD) and charging rates. The above results are based on testing at a fixed DOD and varying charging rates. The end of life (EOL) is reached when the remaining capacity is 70% of the initial capacity.*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Doc No.: 21873-2-0815
Edition: August 2015