

# Intensium® Mini

## Flexible lithium-ion energy storage system from 78 to 480 kWh

Intensium® Mini is an advanced outdoor energy storage solution, offering a wide range of energy and power combinations suitable for renewable integration, industrial customers, utility, commercial and microgrid applications.

Built with proven Saft Li-ion technology, Intensium® Mini is a fully integrated storage system composed of 56 Synerion® modules, providing high operational reliability over thousands of cycles with excellent energy efficiency. The system is based on Synerion® 24E (Energy), 24M (Medium Power), 24P (High Power) modules. Its modular design allows a wide range of energy capacities and different power to energy ratios by paralleling up to 4 units. From 78 to 480 kWh of energy capacity and from 220 to 1520 kW of power.

### Applications

- Renewable integration
- Microgrids
- Frequency regulation
- Voltage control
- Capacity support
- Grid resiliency / blackout management
- Self-consumption
- Demand response / peak demand reduction

### Features

- Field-proven Li-ion technology (20 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
- High charge retention
- Thermal management system based on air conditioning unit and fans (heat exchanger as an option)
- Modbus interface (CAN open optional)
- Optional PLC for data logging, data conversion and external communication

### Benefits

- Flexibility to provide both power and energy functions
- Optimized system integration with most power conversion systems, with option to supply power internally (BMS) and externally (PCS) when utility voltage is not present
- Minimum auxiliary consumption
- Low maintenance
- Effective troubleshooting with user-friendly diagnostic tool
- Quick and easy site installation (cabinet shipped fully populated)



Electrical characteristics at + 25°C	E	M	P
Voltage (V)	700	700	700
Minimum Voltage (V)	588	588	588
Maximum Voltage (V)	790	790	790
Capacity (C/5) (Ah)	174	168	113
Energy (C/5) (kWh)	120	112	78
Continuous discharge power (kW)	220	235	380
Continuous charge power (kW)	61	120	170
Maximum continuous discharge current (A)	360	360	540
Maximum continuous charge current (A)	90	164	240
Insulation resistance (1000 V – OC)	>100 MΩ	>100 MΩ	>100 MΩ
Dielectric	3 kV rms	3 kV rms	3 kV rms
Mechanical characteristics			
Width (mm)		2450	
Height (mm)		1580	
Depth (mm)		1030	
Weight (kg)		1950	
Operating conditions			
Operating temperature	-10°C to +45°C (+14°F to +113°F)		
Typical cycle efficiency (roundtrip)	>97%		
Self-discharge	<=5% per month		
Calendar lifetime at + 25°C/+ 77°F	>20 years		
Air conditioning consumption	2 kW		
Heater consumption	1.5 kW		
BMS consumption when ON	35 W		



## Battery Management System

Sophisticated battery management system based on one Master Battery Management Module (MBMM) and 2 Battery Management Modules (BMM) per Intensium® Mini 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
- State of Charge (SOC) balancing between modules
- Alarm and fault management
- Indication of State of Health (SOH) of the system integrating cycling and calendar aging

## 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. Cell balancing. Structural protection to avoid heat propagation
  - String level : BMM with short-circuits, over-currents, over-temperature and over-voltages protection
  - System level : Fire Suppression System (FSS), emergency stop and door status monitoring. Lightning protection is also available for DC bus and auxiliary lines.
- Stringent qualification processes
- Safe handling of battery modules during maintenance because of low voltage modules (24 V)

Storage conditions	
Storage temperature	- 30°C to + 60°C (- 22°F to +140°F)
Storage time at 50%SOC and BMS in OFF mode	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	IP55 / NEMA3R
Environment	IEC 62093 outdoor non conditioned
Transport classification	UN 3480 - Class 9
Transport regulation compliance	UN 3480 - ST/SG/AC.10/11 Rev 5 § 38.3
Marking	CE in progress
Directives	ROHS, REACH, WEEE
Manufacturing plants	ISO 9001, QS 9000 and ISO 14000

