

Synerion[®] 24P

High power lithium-ion module 24 V – 4 kW

Synerion 24P module is suited for applications with high power capability and short duration cycles.

Built with proven Saft Li-ion technology Synerion 24P provides maintenance-free storage in a reduced volume, combining high operational reliability over thousands of cycles with outstanding energy efficiency. Its modular design allows adaptation of the battery configuration through serial or serial/parallel connection to reach energy levels up to hundreds of kWh in one functional entity.



Applications

- Short duration UPS
- Grid services: frequency regulation, voltage regulation, spinning reserves, power quality
- Data centers

Features

- Compact module integrating VLP Li-ion cells, module supervision and cell balancing
- Advanced industrial design offering highest reliability and robustness
- 20 years design life
- Well suited for highly dynamic charge/discharge profiles from any state of charge
- State of charge and state of health indication through BMM (Battery Management Module)
- Saft's system design experience in high tech industry markets stands for safe, reliable and durable product solutions

Benefits

- Compactness
- Best energy efficiency of all available energy storage systems
- Easy system integration and upscaling (19" rack)
- High operational reliability
- Smart energy management and remote supervision capability
- Preventive but not premature replacement at end of life

Nominal characteristics at + 25°C/+ 77°F

Voltage (V)	24
Capacity (C/5) (Ah)	56
Rated energy (C/5) (Wh)	1400
Volumetric power density (W/l)	290
Gravimetric power density (W/kg)	270

Mechanical characteristics

Width (mm)	448
Height (mm)	131
Depth (mm)	293
Weight (kg)	18.5

Electrical characteristics at + 25°C/+ 77°F

Voltage (V)	21 to 28
Maximum continuous discharge current (A)	160
Maximum continuous discharge power (W)	4000
Peak discharge power in 5 s (W)	9600
Maximum continuous recharge current (A)	120
Maximum continuous recharge power (W)	3000
Peak recharge power in 5 s (W)	9600
Recharge time (h)	1
Module consumption (active mode)	5 V – 0.45 W
Insulation resistance (1000 V DC)	>100 MΩ
Dielectric	3 kV rms

Operating conditions

Operating temperature	– 20°C/+ 60°C (– 4°F to + 140°F)
Cycle efficiency	96% to 99%
Self-discharge	<5% per month
Calendar lifetime at + 25°C/+ 77°F	>20 years
Cooling	Natural convection



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System capability

- Saft BMM included in any system configuration
- Series connection of up to 36 modules plus one BMM for string management and interfacing
- Multi-string paralleling up to 36 strings with Saft MBMM (Master Battery Management Module)

Functional characteristics

Saft energy storage module technology contains VLP cells with advanced nickel-based lithium-ion technology:

- Outstanding calendar and cycle life and reliability
- Stable internal resistance
- High energy density cells

Mechanical & electrical interface

- Vertical or horizontal implementation
- Stackable up to 8 modules
- Optional 3U rack-mount brackets
- Power connectors on the front panel
- Installation in dedicated cabinets or containers with adequate mechanical design and ventilation

BMM communication

- 2 communication connectors on front panel
- CAN Open bus communication protocol carrying:
 - State of charge (SOC)
 - State of health (SOH)
 - Alarms
 - Operating conditions (voltage, temperature, identification number)
 - Operating limits (maximum voltage and current values in charge and discharge)
- Black box registering alarms (overcurrent, overvoltage, high temperature etc.) and the number of charge and discharge cycles.

Safety

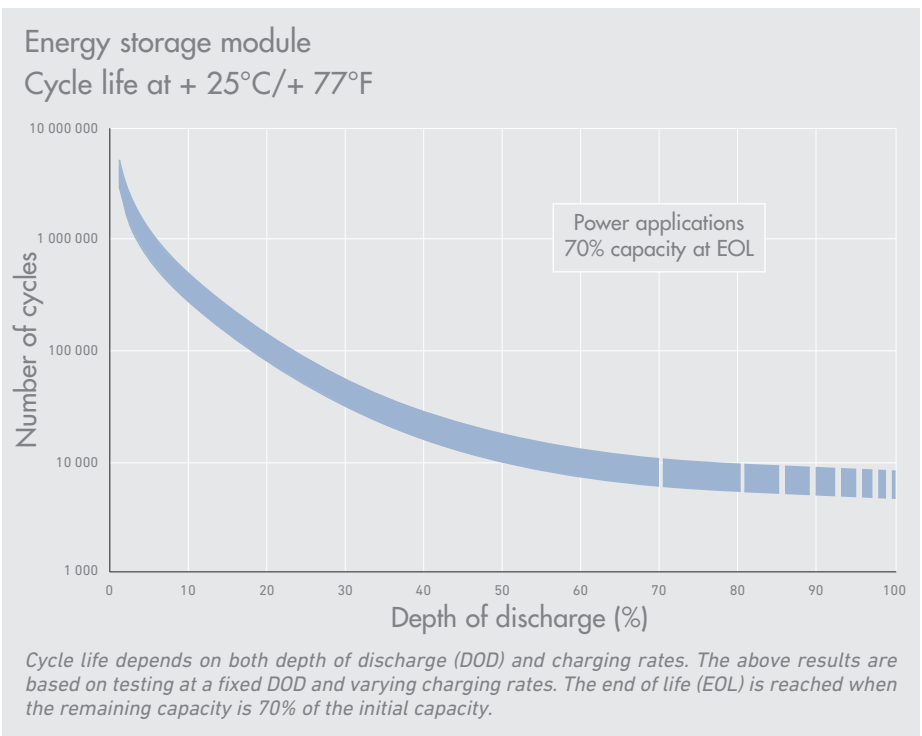
Safety driven design for cells, modules and systems guarantees safe behaviour in case of abuse usage or component failure. This includes:

- Stringent design rules and qualification processes
- Implementation of redundant safety features at cell level (e.g. shutdown effect separator, mechanical vent), at module level (e.g. electronic board, voltage and temperature monitoring, balancing), and at battery level (e.g. electronic board, power switch, current sensor)

Storage conditions	
Storage temperature	- 30°C/+ 70°C (- 22°F to + 158°F)
Storage time	6 months
Maximum altitude	3000 m above sea level
Maximum relative humidity	95% (non condensing)
Compliance to standards	
Cell safety	UL 1642
Module safety	EN 50178 / IEC 60950 / CSAus 60950
EMC (module in cabinet)	IEC 62 040-2 Cat C1 and C3
Protection class	IP 20 (indoor controlled conditions)
Environment	IEC 62093 (indoor controlled conditions)
Transport classification	UN 3480 – Class 9
Transport regulation compliance	UN 3480 - ST/SG/AC.10/11 Rev 5 § 38.3
Directives	RoHS, Reach, WEEE

The Synerion 24P module has been developed and qualified along IEC 61508/SIL2 standards to suit the demanding requirements of performance and operational reliability of our customers, who are manufacturing or operating high-value, long life equipment.

Manufacturing plants comply with the legislation in force in each country and with international quality and environment standards (ISO 9001, QS 9000, ISO 14000).



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