

SUNLIGHT

LI.ONES

Intelligent Energy
Storage Systems



SUNLIGHT
POWER IS KNOWLEDGE

As a member of a strong and developing business ecosystem, SUNLIGHT relies on its modern infrastructure, continuous innovation and its passion for excellence, to develop and supply reliable battery solutions.

Our manufacturing plant, located in Xanthi, Northern Greece, is a core element of our dynamic growth. We have systematically invested in the development of one of the **most modern industrial units**, in accordance with the strictest international standards. It covers **200.000m²**, with indoors areas of more than 60.000m².

The company has consistently invested in developing one of the one of the **most advanced industrial plants in the world**, running highly specialized production and assembly lines. The plant is fully compliant with the strictest international standards and is certified for Quality, Occupational Health & Safety and Environmental management systems.

The products are developed by **SUNLIGHT R&D team** which constantly designs and evaluates new innovative solutions to better meet market needs based on the latest technological trends, industry developments and market feedback. Advanced technology systems, comprising batteries such as Li-ion and Silver-Zinc with innovative electronics, have been developed and manufactured for over three decades to meet the highest of standards regarding safety and quality.



500+

clients in 100 countries



#1

plant worldwide with dynamic production of motive power batteries



Quality

in every step of the production lines



Innovation

based on experience

GREECE | ITALY | USA

Sunlight Li.ONESS series



Sunlight Li.ONESS series provide fully industrial, smart and cost effective solutions for the utmost importance matter of energy storage in a world that is running out of energy. Renewable energy storage systems are offered both for large scale on grid and stand-alone off-grid systems. Perfect product fit for telecommunication Base stations, remote premises and applications requiring uninterrupted power supply (UPS).

Product Principles



Specifications

Energy storage solutions

Nominal Voltage (LFP)	Capacity (Ah)	Dimensions (LxWxH) (mm)	Weight (kg)
51.2V	100 Ah	465 x 653 x 228	77 kg

Specifications		Lion ESS 48V/100
Cell Type		LFP
Nominal Voltage (V)		51.2
Capacity (Ah)		100
Voltage Range (V)		50.9 - 55.1
Energy (kWh)		5.12
BMS		Active
Standard Discharge 25°C	Max. Constant Current	75A
	Cut-off voltage	50.9V
Standard Charge 25°C	Charge Voltage	54.5V - 55V
	Max. Constant Current	75A
	Recommended Charging Current & Time	30A (0.3C) for 3.5 HRS
Dimensions (L*W*H in mm)		465*653*228
Weight (Approximate)		77 ±0.3Kg
Communication Ports		CAN 2.0
Round Trip Efficiency (%)		> 98%
Calendar Life 25°C		> 10 Years
Cycle Life (0.2C, 25°C)		4500 Cycles @ 80% DOD
Operating Temperature		Charging: 0°C - 45°C Discharging: -20°C - 45°C
Storage Temperature (Recommended Range)		-20°C to 45°C
Storage Time		1 Year

Li.ONESS module



Product Range

Five (5) different racks 16U, 22U, 32U, 42U, 47U are available as housing, each holding up to 1, 2, 4, 6 or 7 battery modules.

Complete Battery System	Dimensions							
Number of battery modules		1	2	3	4	5	6	7
SL 16U (1 module)	855 x 600 x 800mm (HxWxD)	•						
SL 22U (2 modules)	1120 x 600 x 800mm (HxWxD)	•	•					
SL 32U (3 - 4 modules)	1420 x 600 x 800mm (HxWxD)			•	•			
SL 42U (5 - 6 modules)	2000 x 600 x 800mm (HxWxD)					•	•	
SL 47U (7 modules)	2280 x 600 x 800mm (HxWxD)							•
TS Flex (energy as required)		Flexibly configure your system according to your requirements						
Energy [kWh]		5.1	10.2	15.4	20.5	25.6	30.7	35.8
Capacity [Ah]		100	200	300	400	500	600	700
Maximum output power		0.75C						
Weight [kg]		90	220	300	400	490	560	670
System		1-phase / 3-phase						
Protection class		IP 20 (up to IP55 upon request)						
System compatibility		Sunny Island SMA / Victron / Studer / Voltronic & others						

717V SYSTEMS									
71.6kWh (717V)		143.3kWh (717V)		501.8kWh (717V)		1.004MWh (717V)		5.012MWh (717V)	
Strings	1	Strings	2	Strings	7	Strings	14	Strings	70



Li.ONESS rack

Why Li.ONESS series?

Advanced Product Characteristics



SAFETY

- System continuous monitoring up to Cell Level
- Temperature Control
- Short circuit protection
- High current fuse per string
- Electrical Isolation



CONNECTIVITY

- Wi-Fi connectivity for external communication
- Remote monitoring using CLOUD technology
- Bi-directional communication-Change of Rack parameters remotely



EFFICIENCY

- Active Balancing during Charging & Discharging
- No energy losses
- Each cell's full capacity used
- Modular design to ease serviceability
- Increased installation runtime

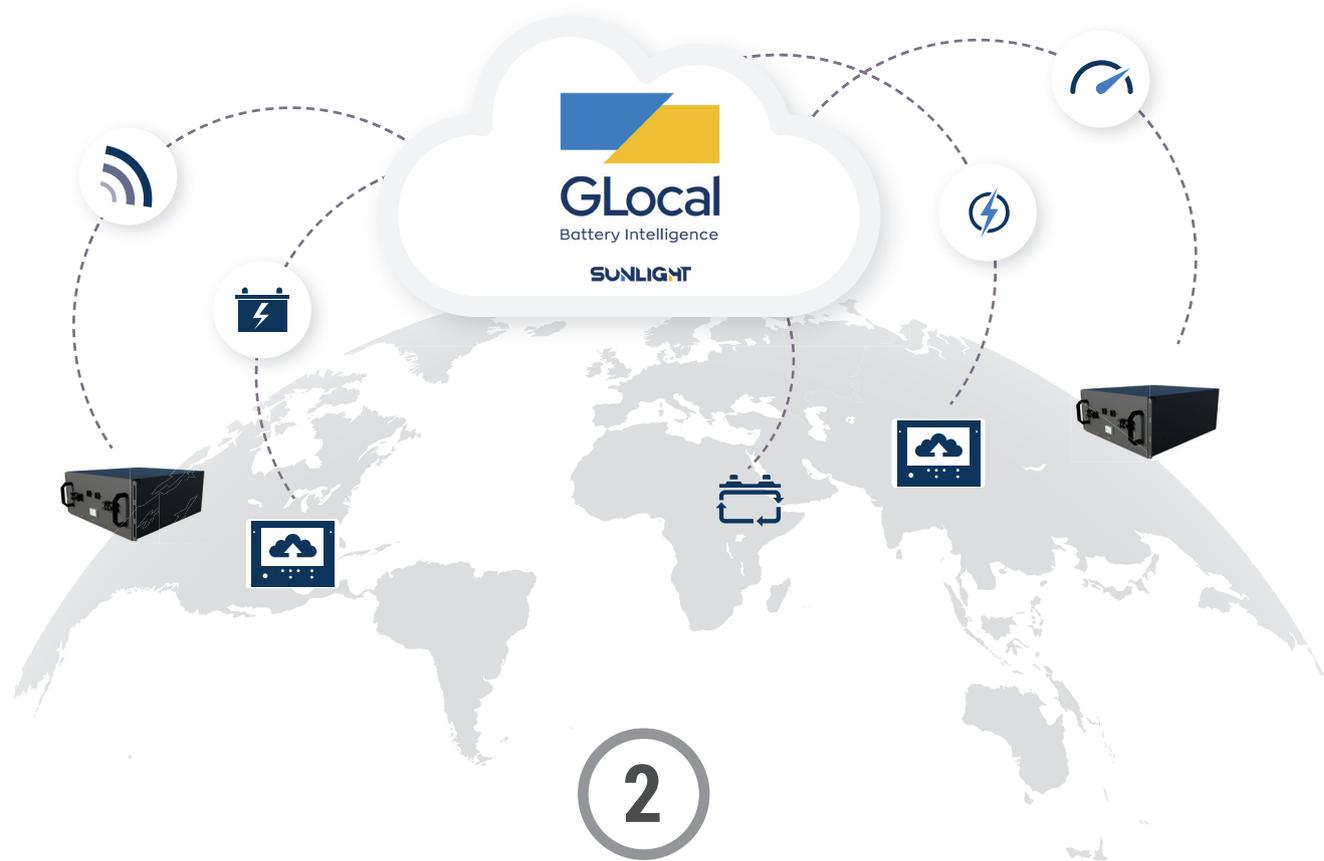


Why Li.ONESS Sunlight?

Innovation in Two Domains

1

Active BMS



2

24/7 Worldwide Remote Communication

Sunlight Innovative Active BMS

Battery Management System Functions

Active balancing method which enhances energy efficiency and extends battery life is applied by Sunlight BMS. Excessive energy of highest battery cell is not dissipated as heat to the environment promoting the faster aging of the cells as it is done in passive method. Active balancing creates energy transfer from higher cells to lower both during charge and discharge procedures making optimal use of the energy and extending cells lifecycle.



SUNLIGHT REVOLUTIONARY ACTIVE BALANCING METHOD

- HIGHER BATTERY LIFE
- SIGNIFICANT CHARGING ENERGY SAVINGS

Active Cell Balancing is performed during charge and discharge cycle.

Active cell balancing increases:

- battery life cycle up to 30%
- system run-time
- charging efficiency

DISCHARGING ⚡ PROCESS



+ Energy transfer

CHARGING ⚡ PROCESS



- + Energy transfer
- + **Each cell full capacity used**

PASSIVE BALANCING METHOD

Passive Balancing is performed during charging.

Battery's capacity is limited from the weakest cell during charge and discharge.

DISCHARGING ⚡ PROCESS



- Unused capacity

CHARGING ⚡ PROCESS



- Energy loss
- Battery temperature increasing
- Cell cycle life is affected

Sunlight Global Communication and via Cloud->Glocal

Sunlight Li.ONESS series provides absolute remote control to a system that is most of the times stand-alone or far away from service centers. Product owner can constantly control his systems through his laptop or mobile device, receive alarms & warnings and arrange for service only when necessary.

Bidirectional Communication:

All parameters/limits of the BMS are fully adjustable (by Sunlight or dealers) via cloud. This feature allows troubleshooting or fit on different applications (high demanding working periods, extension of DOD etc.)

Communication in 3 access levels

① **User** ② **Service or Dealer** ③ **Sunlight**

Bidirectional via Wi-Fi or/and M2M communication



Revolution in Lithium Ion batteries



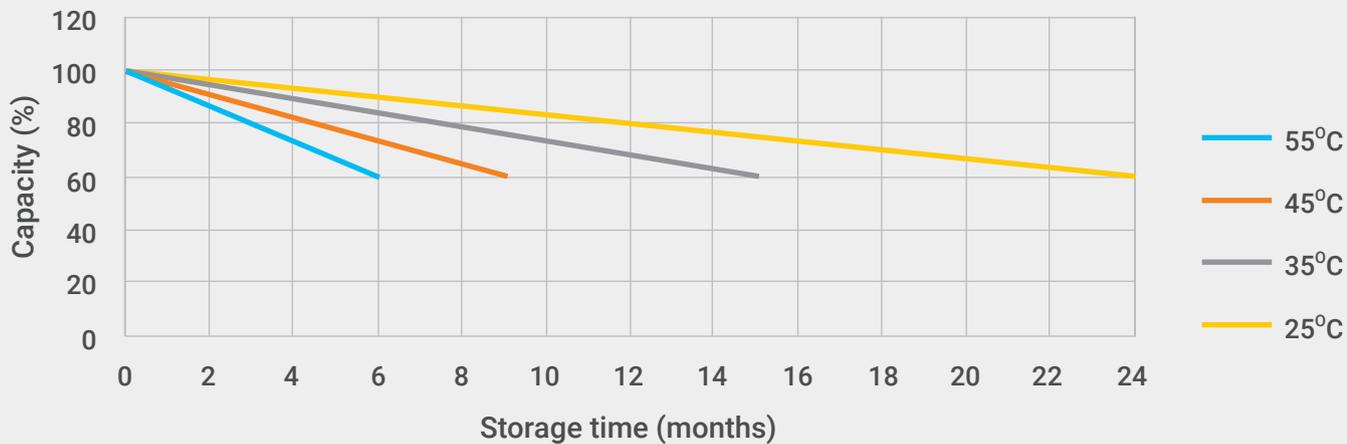
Special Functions (provided only by SUNLIGHT):

• PBT FUNCTION:

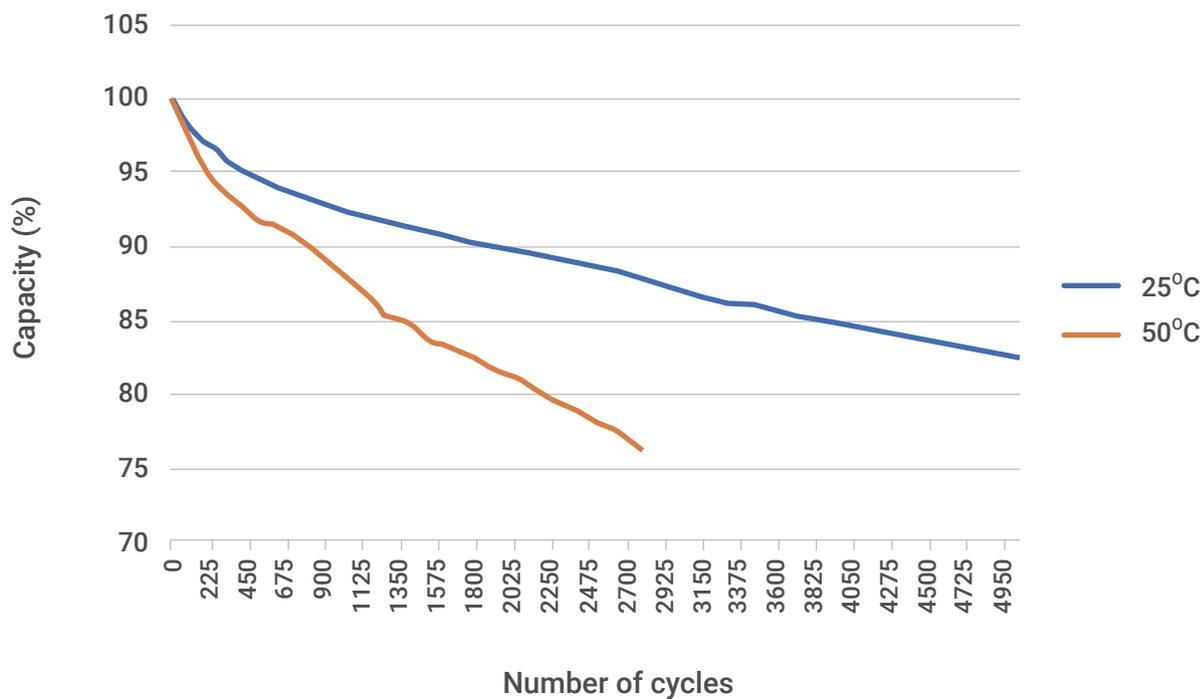
Remotely we go into the battery, we take off one module and the customer is able to use the battery until the service person arrives and replaces the defected module.

• BATTERY SLEEP MODE TO AVOID UNNECESSARY SELF DISCHARGE

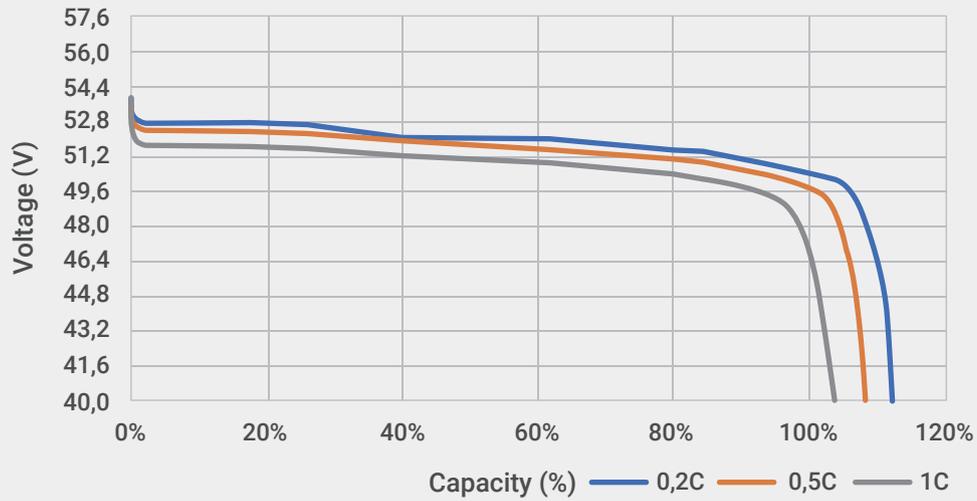
Self discharge curve at different temperature



Cycle life at 80% DoD



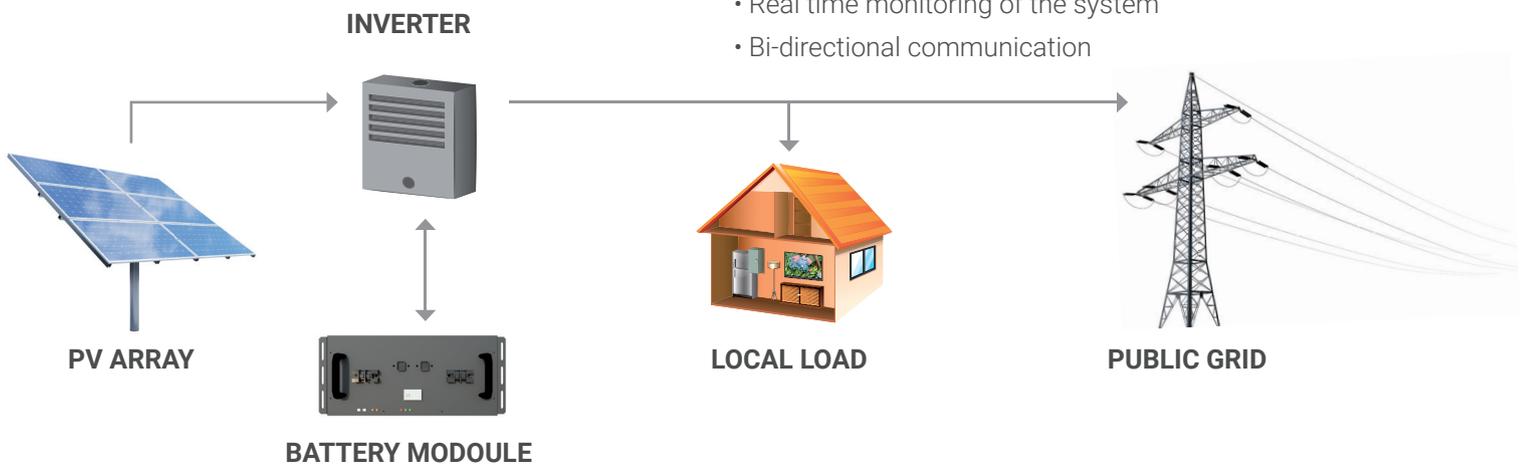
Discharge Curve in Different Rate



Variety of Applications

Energy Storage Systems

- Modular design concept, gives expandability
- Easy installation, simple connectors and outdoor compatibility (upon customer request)
- BMS compatible with most inverters
- Flexible operating voltage range from 51.2VDC to 1000VDC
- Rack mounted or container solution system configuration
- Real time monitoring of the system
- Bi-directional communication



Telecommunications Application

Powers telecom applications in off-grid or remote areas

UPS Applications

Contact Us
www.systems-sunlight.com

