LiION

SAFE & GREEN ENERGY SOLUTIONS

Global Experts Innovative Lithium Ion Battery Solutions

- Portable Energy Storage Systems for Solar Street Lights
- Small Energy Storage Systems for Telecom & UPS
- Medium Energy Storage Systems for UPS & Hybrid Solar Systems
- Large Energy Storage Systems for Microgrid & MW Level Peak Shaving
- High Energy Batteries for Electric Vehicles

www.roshantechnologies.in

Global Experts

Guangzhou Great Power Energy & Technology Co. Ltd was founded in 2001 and is a leading manufacturer of Lithium Ion batteries in China. Their major products are: Lithium Ion battery types of Polymer, NCM, LFP & Primary Lithium battery for Energy Storage and EV applications.

Great Power established a R&D Center which consists of more than 400 research scientists in collaboration with Tianjin University. It has applied for 100 patents and has been awarded more than 50 patents on advanced Lithium Ion battery technologies.

Great Power has established 5 modern manufacturing facilities in Guangzhou, Zhuhai, Zhumadian, Changzhou & Fukui (Japan) and their products are being exported to more than 50 countries including USA, Europe, Canada, Britain & Japan.

Suzhou Chilwee New Energy Power Technology Co., Ltd is devoted to provide high-end professional Lithium battery solutions worldwide.

They specialize in research and manufacturing of Lithium Ion batteries for e-Bikes, e-Scooters, e-Motorcycles & Energy Storage Systems.

Great Power Energy & Technology Co. Ltd and Suzhou Chilwee New Energy Power Technology Co., Ltd have authorized Roshan Energy Technologies Pvt. Ltd., as exclusive business partner in India for promoting their Lithium Ion batteries (NCM & LFP) for Energy Storage and EV applications.

Rechargeable Lithium Iron Phosphate Battery (LiFePo4)

Why LFP Battery?

- Safest Lithium chemistry
- Moderate energy density 120-130 Wh/kg with 3.2 V/cell
- Efficient & long lasting up to 4000 cycles
- Good high temperature performance and excellent stability
- Plug & Play connectors at battery pack level for easy maintenance
- Battery pack assembled with protection circuit board (PCB)

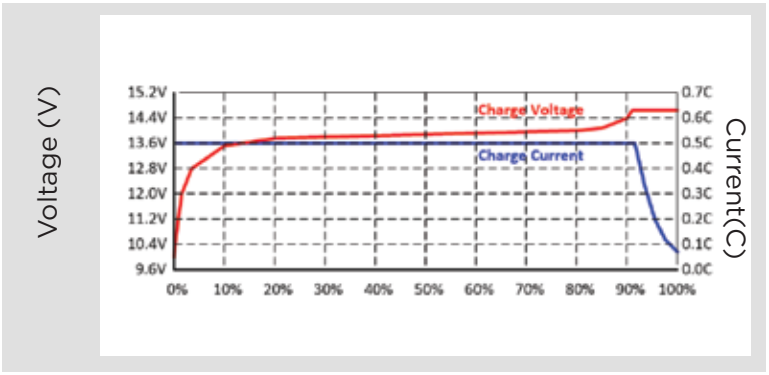
General Performance Characteristics of Li-Ion Batteries

Description	NCA	NMC	LFP	LTO
Nominal Voltage (V)	3.6	3.6	3.2	2.4
Operating Voltage/Cell (V)	3.00 - 4.20	3.00 - 4.20	2.50 - 3.65	1.80 - 2.85
Operating Temperature (°C)	0 to 45	0 to 45	0 to 55	-20 to 45
Specific Energy (Wh/KG)	200 - 260	150 - 220	100 - 120	70 - 80
Max. Charging Current	0.7 C (3 Hours Charging Time up-to 4.20V/Cell	1 C (3 Hours Charging Time up-to 4.20V/Cell)	1 C (3 Hours Charging Time up-to 3.65V/Cell)	5 C (1 Hour Charging Time up-to 2.85V/Cell)
Max. Discharge Current	1 C up-to 3.0V/Cell	1 C up-to 2.50V/Cell	1 C up-to 2.50V/Cell	10 C up-to 1.80V/Cell
Life Cycles @ 80% DoD @ 25°C	500	1000 - 2000	1000 - 3000	3000 - 5000

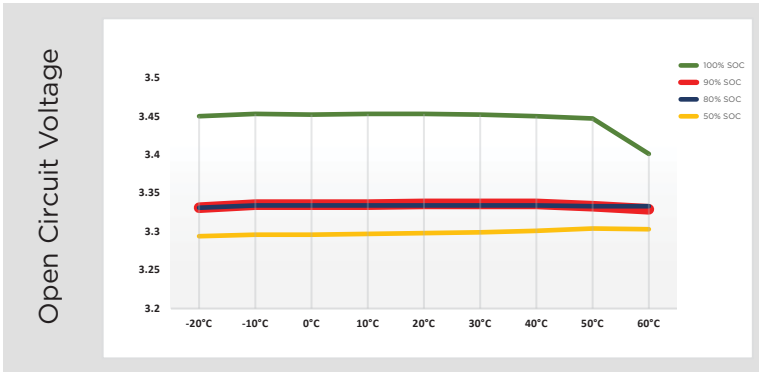
Note: LFP battery is safe and reliable at high temperatures for a long-life performance.

LiFePo4 Performance Curves

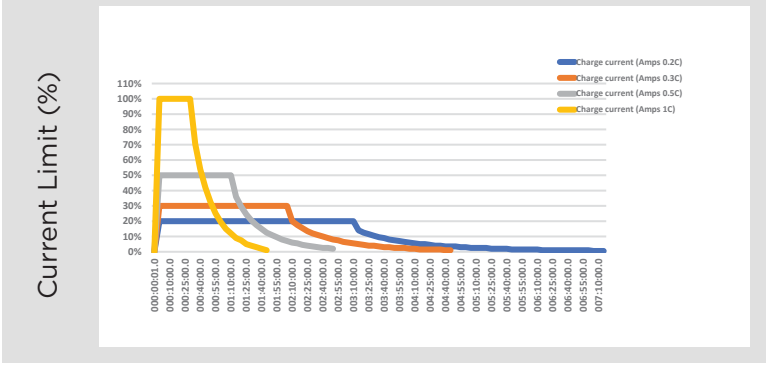
$LiFePO_4$ Charge Voltage vs. SoC



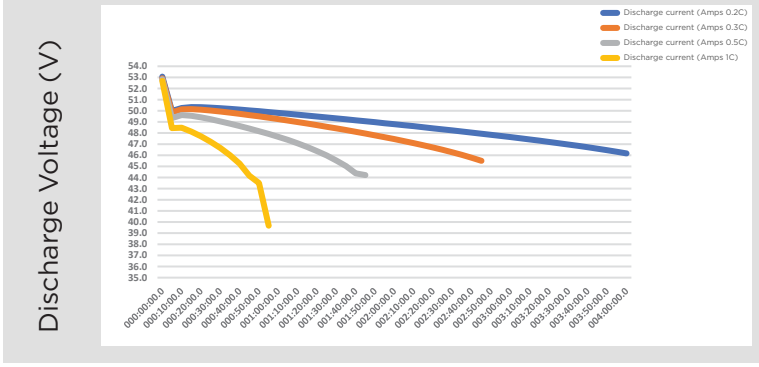
Voltage & SoC of $LiFePO_4$ at Different Temperatures



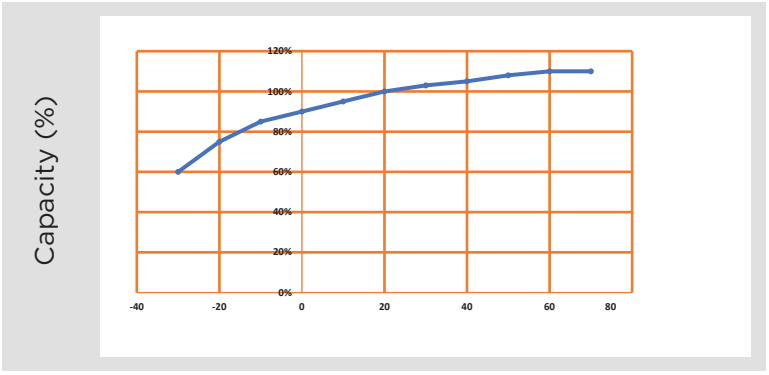
Charging Duration at Different Current Limits



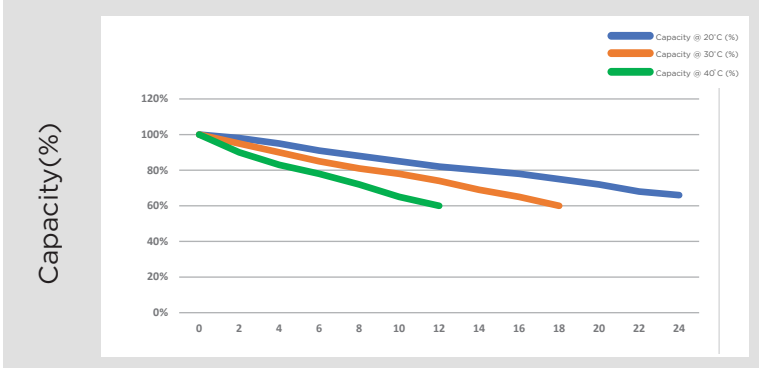
Discharge Voltage at Different Load Currents



Temperature Effect on Capacity



Self Discharge Characterstics



Compact **LiION**

12V Energy Storage Systems for :

Office Equipment Medical Equipment Solar Street Lighting

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Max Charging Voltage (V)	Max Discharge Current (A)	Dimensions (LxWxH) mm
COMPACTLiION 012015	12.8	15	192	14.6	15	150 x 102 x 73
COMPACTLiION 012020	12.8	20	250	14.6	20	150 x 140 x 75
COMPACTLiION 012030	12.8	30	380	14.6	30	210 x 145 x 75
COMPACTLiION 012080	12.8	80	1020	14.6	80	215 x 175 x 145

High Energy Batteries for:

e-Scooters, e-Bikes & e-Rickshaws

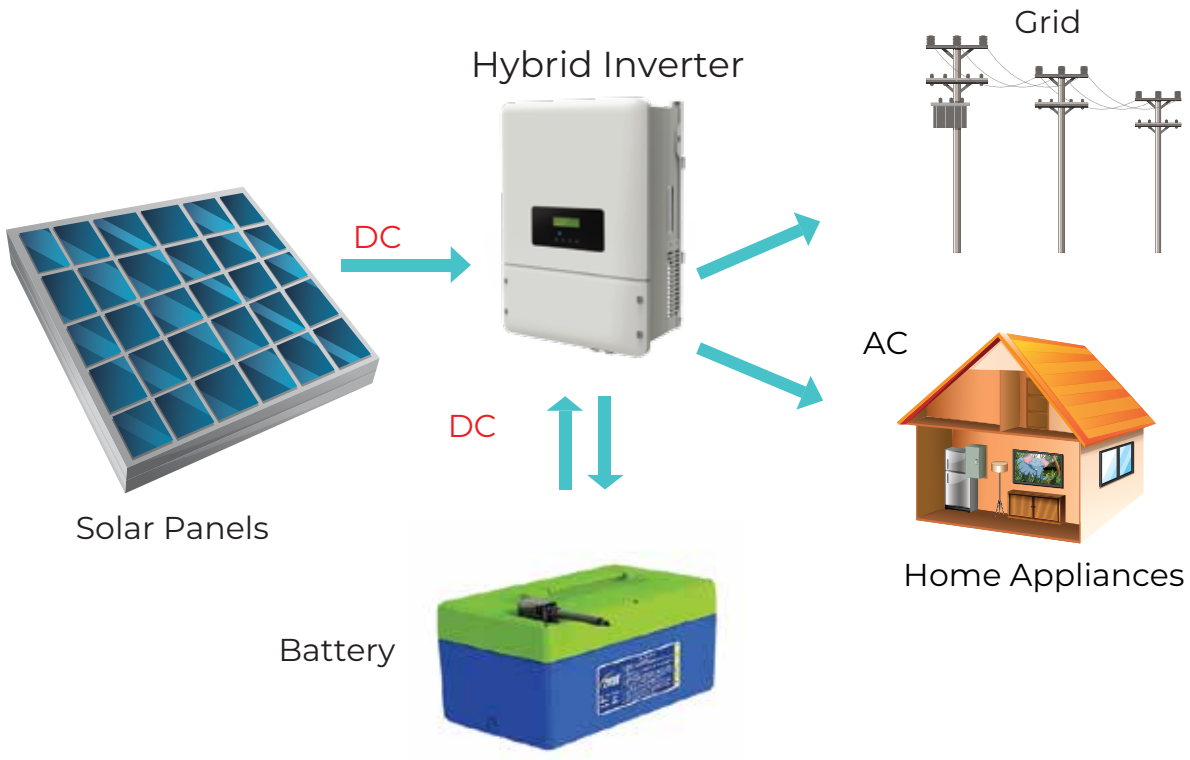
Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Dimensions (LxWxH) mm
EVLiION 4820	48	20	960	290 x 190 x 80
EVLiION 4825	48	25	1200	250 x 140 x 180
EVLiION 4830	48	30	1440	290 x 170 x 170
EVLiION 7220	60/72	20	1440	230 x 180 x 170
EVLiION 7250	48/60/72	50	3600	320 x 290 x 220
EVLiION 4880	48	80	3840	425 x 290 x 170

Medium Energy Storage Systems for:

UPS & Hybrid Solar System Applications

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Max Charging Voltage (V)	Max Discharge Current (A)	Dimensions (LxWxH) mm
UPSLiION 096060	102.4	60	5760	116.8	60	600 x 600 x 1145
UPSLiION 192060	204.8	60	11520	233.6	60	600 x 600 x 1145

48V Small Energy Storage Systems for :

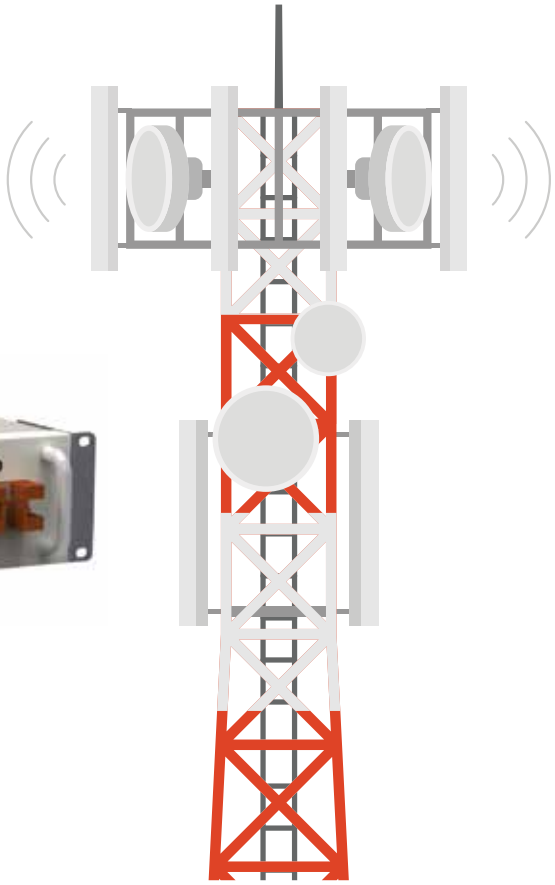


UPS & Hybrid Solar System Applications

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Max Charging Voltage (V)	Max Discharge Current (A)	Dimensions (LxWxH) mm
UPSLiION 048060	51.2	60	2980	58.4	60	600 x 190 x 443
UPSLiION 048120	51.2	120	5800	58.4	120	600 x 600 x 720
UPSLiION 048240	51.2	240	11500	58.4	240	600 x 600 x 1167
UPSLiION 048480	51.2	48	23000	58.4	48	600 x 600 x 1620

Reliable LiION

48V Small Energy Storage Systems for :



Telecom and UPS Applications

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Max Charging Voltage (V)	Max Discharge Current (A)	Dimensions (LxWxH) mm
RELIABLELiION 048020	51.2	20	960	58.4	20	440 x 316 x 88
RELIABLELiION 048050	51.2	50	2400	58.4	50	440 x 440 x 88
RELIABLELiION 048075	51.2	75	3600	58.4	75	540 x 440 x 176
RELIABLELiION 048100	51.2	100	4800	58.4	100	482 x 397 x 177

Large Energy Storage Systems for:

Distributed Microgrid & MW Level Peak Load Shaving Applications

Model	Nominal Voltage (V)	Nominal Capacity (Ah)	Energy (Wh)	Max Charging Voltage (V)	Max Discharge Current (A)	Dimensions (LxWxH) mm
BESSLiION 500240	256	240	120	292	240	As per site conditions.
BESSLiION PH-ESS-1.05	700 (571 – 744)	1430	1005	820	1430	As per site conditions.

Note : Battery Energy Storage System will be designed as per customers requirement and site conditions.

Safety of Li-Ion Batteries:

Safety Recommendations:

- The SOA of Lithium Ion cells is bound by current, temperature and voltage.
  - LFP cells may get damaged and may burst into flames if over charged above a recommended voltage.
  - LFP batteries may get damaged if allowed to be discharged below a recommended cut-off voltage.
  - LFP batteries lifetime may get drastically reduced if operated beyond recommended temperature range.
  - LFP batteries lifetime may get reduced if discharged at too high current or charged too fast.

- LFP battery safety BMS is must:
  - To prevent the voltage of any cell exceeding the limit
  - To prevent the temperature of any cell exceeding the limit
  - To prevent voltage dropping of any cell below a certain limit
  - To prevent the charging current from exceeding the limit
  - To prevent the discharging current from exceeding the limit

A BMS is essential when using a LFP battery to control voltage, current and temperature within the recommended limits.

Why LiION ?

Professional Management:

Prof. Ashok Shukla :

An emeritus professor from IISc with 40 years research experience on specialized batteries, published about 350 technical papers and holding about 20 patents.

Dr. Fu Zhao :

A PhD. from South China University, specialized in Lithium batteries and fuel cells.
Established 3 Lithium battery companies in China and holding more than 20 patents.

Mr. S.A. Gaffoor :

An Electrical Engineer with more than 30 years' industrial experience in establishing battery technologies and manufacturing units. Holding more than 10 patents including 3 from USA. Promoted and business established for one of the leading battery manufacturing companies successfully for about 20 years.

Vision

LiION's vision is to gain confidence of customers and to expand our business to cell manufacturing with refined technology from Premier Indian Research Institutes by the year 2021.

Mission

LiION's mission is to provide reliable and total energy solutions for Indian operating conditions.

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