



LFPO BATTERY SERIES

Energy Storage

Generator Start

Automobile Start-Stop Ignition

Light Electric Vehicleless

LFPO Overall Best-in-Class Battery

Why We Think You'll Agree

What is an LFPO battery?

A lithium iron phosphorous oxide (LFPO) battery is a type of rechargeable lithium-ion batteries that uses LFPO as the cathode material. Unlike the explosive lithium cobalt oxide or NMC batteries that often appear in the news, the single most important characteristic of LFPO batteries is that they DO NOT EXPLODE. Beyond their high level of safety, LFPO batteries display excellent high-rate discharge performance ($\geq 15C$ instantaneous discharge), rapid charging capability, outstanding temperature tolerance, and long-term stability. CAEC's LFPO batteries are built to emulate traditional VRLA batteries for seamless transition over a wide range of applications, such as energy storage systems (ESS), backup power supply, automotive ignition, and light electric vehicles, while offering lighter weight, smaller footprint, longer lifetime and greater operational savings.

Why Do We Say LFPO is the Overall Best-in-Class Battery?

No Risk of Explosion or Fire

LFPO batteries are not the explosive kind of lithium-ion batteries that you see on the news. Building from the most fundamental level, the LFPO material itself is non-explosive and non-flammable.

Non-Toxic, Non-corrosive RoHS compliant

Typical lead acid batteries release toxic, corrosive gases during recharge. Our LFPO batteries do not. They also contain no lead, mercury, cadmium, radioactive cobalt, or acid. Feel free to charge up indoors without worrying about your health or risk of getting acid burns on your skin.

Faster Charge and Deeper Depth of Charge

LFPO batteries charges over 80% faster than typical lead acid batteries and can discharge over 90% while maintaining its powerful depth of charge

Longer Life

Typical lead acid batteries run for about 300 cycles. Our LFPO battery will supply you with at least 3 times that.



Less Weight

LFPO batteries are 1/2 to 1/3 of the weight of a typical lead acid battery. Lighter to ship and easier on the technicians who do the installations.

Less Space

LFPO batteries occupy 2/3 to 1/2 the space compared to a typical lead acid battery, allowing users to make more productive use of the extra footprint.

High Temperature Tolerance

The effective capacity of a typical lead acid battery shrinks dramatically when the environment temperature goes higher than 25°C. In contrast, the most comfortable temperature for LFPO batteries ranges between 15°C and 35°C or even higher depending on the applications.

Trouble-Free Maintenance

The costs and risks associated with maintaining lead acid batteries are a thing of the past when you switch to LFPO batteries. Our batteries contain no acid and are practically maintenance-free. There is no need to “top-up” with LFPO batteries.

Patented State-of-The-Art Battery Balance System

Voltage Monitoring

Our patented integrated module control unit (IBCU) provides each single-pack with its own self-balancing system. Unlike typical sequential voltage monitoring systems, our IBCU gathers and delivers voltage information of all battery packs, detecting each cell’s voltage during charging and discharging.

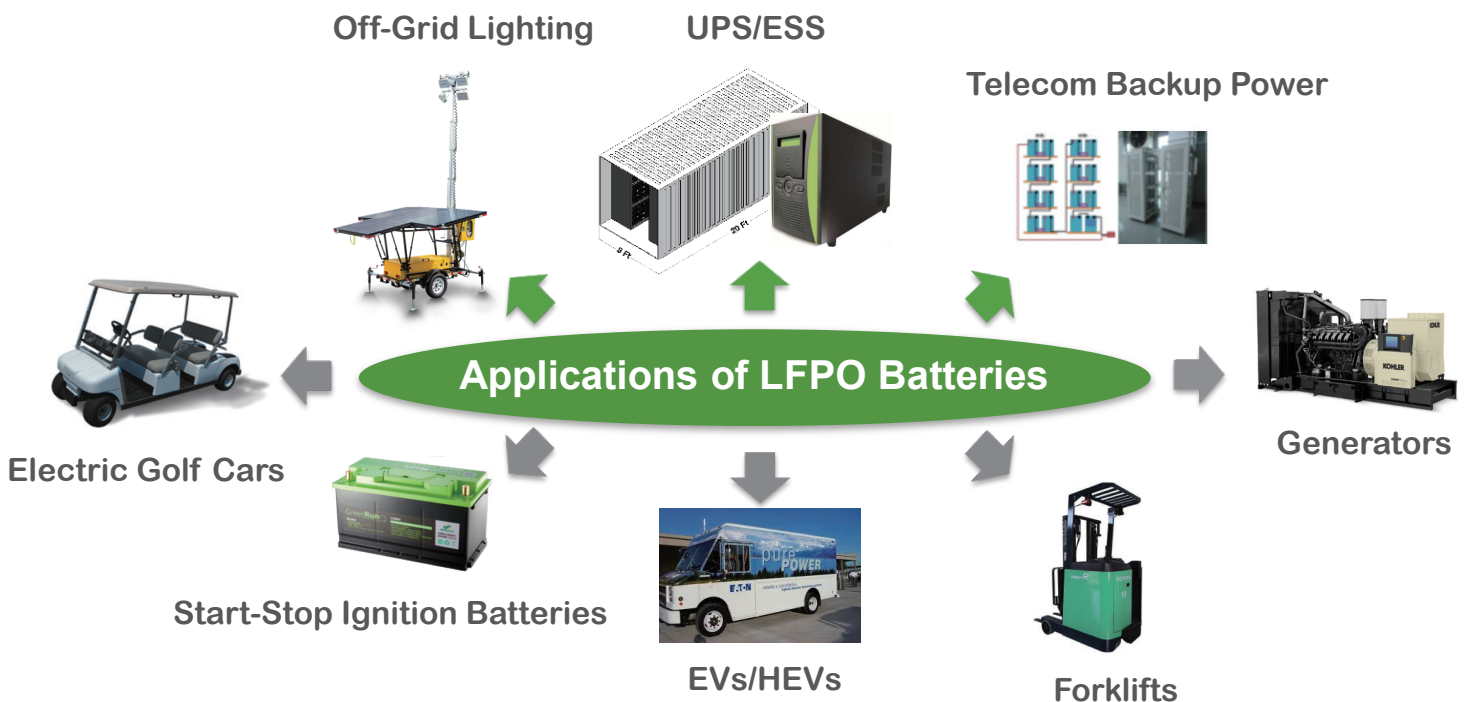
Benefits

Our IBCU adjusts voltage and capacity balance of each battery cell, thereby preventing any single cell from operating at a high voltage continuously. Our IBCU also maintains consistent voltage to each cell. By doing so, the durability of serial/parallel battery cell systems is significantly enhanced.

Safety Certifications

LFPO batteries comply with international safety and restricted substance standards, including UL1642, UN38.3, EMC and RoHS certifications.

Imagine buying a more sustainable, powerful, safe battery so long lasting that you simply forget all about it.



LEAD-ACID BATTERIES

LFPO BATTERIES

CORPORATE SOCIAL RESPONSIBILITY

SAFETY	Release acidic gases that are health risks to workers and hydrogen gases that are explosions hazards.	No safety risks. Even at high temp. will not undergo thermal runaway. No harmful or explosive gases.
ENVIRONMENT	Toxic heavy metals and acid are harmful. Batteries must be disposed by professional recycling agents.	Sustainable and environmentally friendly —Completely non-toxic and non-corrosive

PERFORMANCE

CHARGING	Minimum charging time of 6-8 hours with only 70-80% charging efficiencies. Often Requires charging time of at least 10 hours to reach 90% of full capacity. Exhibits high self-discharge rates.	Capable of 1-hour rapid charging. High charging efficiency of 95% supports with no memory effects. Batteries can be charged anytime, anywhere. Exhibits low self-discharge rates, enabling extra energy savings.
DISCHARGING	During high-rate discharge, voltage decreases over time, reducing output stability; one must increase capacity to overcome this issue.	LFPO battery's discharge characteristics enable stable discharge performance at low battery charge. Display significantly higher effective capacity than VRLAs. The power stability is kept with no need to increase capacity.
ENERGY DENSITY	Low power density: 40Wh/kg	2.5x higher energy density: 82-135 Wh/kg
POWER OUTPUT	Instantaneous output current of 2-3C.	Instantaneous output current (1 sec) at 15C.

CERTIFICATE



Certificate of Registration

BTTE13028-00

This is to certify that the Environment Management System of

CHANGS ASCENDING ENTERPRISE CO., LTD.
GREENERGY ENTERPRISE CO., LTD.

for
Scope : Design and Manufacture of Battery Materials and Battery Modules.

at
Audit address:
No.9, Keya E. Rd., Situn District, Taichung City 40763, Taiwan
has complied with the requirements of

ISO 14001:2015(CNS 14001:2016)

ORIGINAL DATE OF CERTIFICATION 05-JUL-2018
DATE OF ISSUE 05-JUL-2018
DATE OF EXPIRY 04-JUL-2021



Tim Lin
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Certification Manager
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Bellicert Asia

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CERTIFICATE



Certificate of Registration

BTTQ13028-00

This is to certify that the Quality Management System of

CHANGS ASCENDING ENTERPRISE CO., LTD.
GREENERGY ENTERPRISE CO., LTD.

for
Scope : Design and Manufacture of Battery Materials and Battery Modules.

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UL1642



TRANSPORT SAFETY CERTIFIED

SPECIFICATIONS

LFPO Battery for Energy Storage

LLR2450

26.4V 50Ah



PRODUCT FEATURES

- Lead-acid emulator design for seamless transition
- Applicable for a variety of power systems, such as UPS, energy storage systems, and DC banks
- Safe, reliable, and environmentally friendly
- 20-Year design life
- Operational over a wide range of temperatures
- Featuring CAEC's Integrated Battery Control Unit (IBCU) capable of cell-balancing and error-reporting
- Equipped with LED fault indicators for easy visual identification
- Compatible with VRLA and lithium battery monitoring systems (Optional)
- Small, light, and low maintenance
- Flexible battery augmentation allowing for partial replacement and capacity expansion
- Full IP-protection with over 20 US patents from materials all the way to management systems

SPECIFICATIONS

Nominal Voltage

LLR2450

26.4 V

Nominal Capacity (@0.2C)

50 Ah

Impedance (ACIR)

< 20 mΩ

CHARGING AND DISCHARGING

Recommended Charging Voltage

27.5V

Recommended Charging Current

15 A (0.3C)

Cutoff Voltage

21.5 V

WEIGHT AND DIMENSIONS

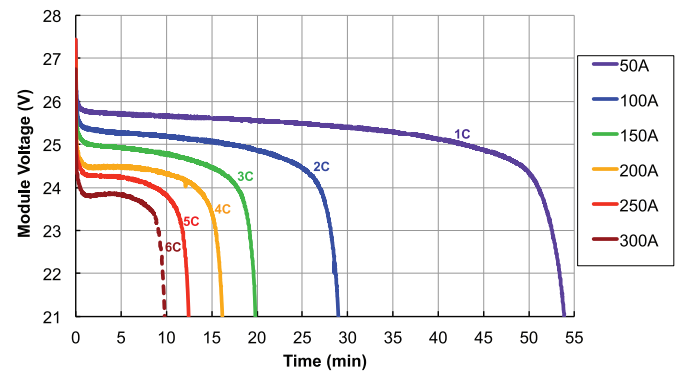
Weight

16.5 Kg

Dimensions (W x D x H, mm)

260 x 170 x 266

Discharge Characteristics: Voltage (V) vs. Time (min)



LFPO Battery for Generator Startup

LLR2450G

26.4V 50Ah



PRODUCT FEATURES

- Lead-acid emulator design for seamless drop-in replacement
- Safe and reliable—no thermal runaway, no explosion
- Green and completely non-toxic
- Small, lightweight, and low maintenance
- ≥3-5x the instantaneous power output of equivalent VRLA battery
- Operational over a wide range of temperatures
- Featuring CAEC's Integrated Battery Control Unit (IBCU) for internal cell-balancing
- Full IP-protection with over 20 US patents from materials all the way to management systems

SPECIFICATIONS

Nominal Voltage

LLR2450

26.4 V

Nominal Capacity (@0.2C)

50 Ah

Impedance (ACIR)

< 20 mΩ

CHARGING AND DISCHARGING

Maximum Charging Voltage

< 29 V

Recommended Floating Voltage

27.2 – 27.5 V

Maximum Charging Current

50 A (1C)

WEIGHT AND DIMENSIONS

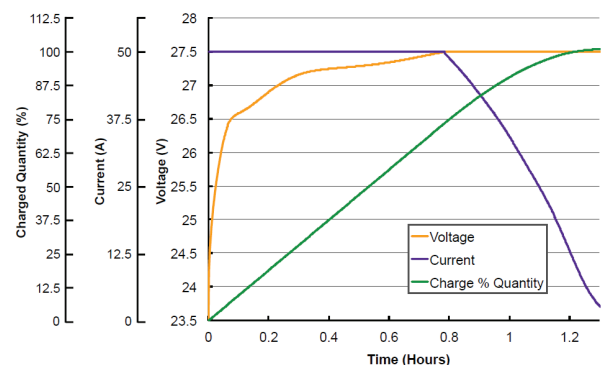
Weight

16.5 Kg

Dimensions (W x D x H, mm)

260 x 170 x 316

Battery Charging Curves (50A, 1C)



LFPO Battery for Light Electric Vehicles

LLR2450E LLR24200E

26.4V50Ah

26.4V200Ah

LLR2480E LLR48100E

26.4V80Ah

52.8V100Ah



PRODUCT FEATURES

- Lead-acid emulator design for seamless transition
- Suitable for use in light electric vehicles (LEVs), including golf carts, forklifts and pallet jacks
- Safe, reliable, and environmentally friendly
- Operational over a wide range of temperatures
- Featuring CAEC's Integrated Battery Control Unit (IBCU) for internal cell-balancing
- The control box accessory is capable of overcharging (OC) and over-discharging (OD) protection
- Small, light, and low maintenance
- Flexible battery augmentation allowing for partial replacement and capacity expansion
- Full IP-protection with over 20 US patents from materials all the way to management systems

SPECIFICATIONS

	LLR2450E	LLR2480E	LLR24200E	LLR48100E
Nominal Voltage	26.4 V	26.4 V	26.4 V	52.8 V
Nominal Capacity (@0.2C)	50 Ah	80 Ah	200 Ah	100 Ah
Impedance (ACIR)	< 20 mΩ	< 20 mΩ	< 20 mΩ	< 20 mΩ
CHARGING AND DISCHARGING				
Recommended Charging Voltage	27.5V	27.5V	27.5V	27.5V
Max. Continuous Charging Current	50 A (1C)	80 A (1C)	200 A (1C)	100 A (1C)
Cutoff Voltage	22 V	22 V	22 V	44 V
WEIGHT AND DIMENSIONS				
Weight	16.5 Kg	20 Kg	38 Kg	38 Kg
Dimensions (W x D x H, mm)	260 x 170 x 266	270 x 150 x 376	286 x 170 x 546	286 x 170 x 546

LFPO Green Run 2 Battery for Automobile Ignition

SS1250 SS1280

13.2V50Ah

13.2V80Ah



PRODUCT FEATURES

- Drop-in replacement for your VRLA battery
- No voltage sag with stable power output
- ≥3x the instantaneous discharge current of VRLAs
- Low self-discharge rates
- No memory effect
- Lightweight, low maintenance and green
- Full IP-protection

SPECIFICATIONS

	SS1250	SS1280
Nominal Voltage	13.2 V	13.2 V
Nominal Capacity (@0.2C)	50 Ah	80 Ah
Impedance (ACIR)	< 10mΩ	< 10mΩ
CHARGING AND DISCHARGING		
Maximum Charging Voltage	14.8 V	14.8 V
Pulse Cranking Amps, PCA	1529 A	1807 A
Room Temp. Cranking Amps, RCA	1117 A	1449 A
Cold Cranking Amps, CCA	448 A	655 A
WEIGHT AND DIMENSIONS		
Weight	8.5 Kg	9.5 Kg
Dimensions (W x D x H, mm)	276 x 175 x 191	276 x 175 x 191 353 x 175 x 191

About AMPOWER

AMPOWER has been a premier supplier for integrated emergency power system for more than 20 years. We committed to provide customers with reliable and cost-effective power solution system to eliminate their worries of electricity instability and outage.

For more information, please visit our website: <http://www.ampower.com.tw/>



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