



## Outdoor DC UPS Power System Comprehensive Comparison Tables

\*\* The C-LiFePO4 Lithium battery manufacturers, each battery formulations and raw materials are not the same, so different manufacturers of lithium iron phosphate battery the battery output characteristics vary considerably, including high and low temperature tolerance and number of charge and discharge cycle life and charging and discharging efficiency will be significantly different.\*\*

No.	Item	Lead-acid Outdoor DC UPS	General Li-Ion Outdoor DC UPS	C-LiFePO4 Lithium Outdoor DC UPS	Remark
1	Size	Big	Middle	Small	In the same capacity, C-LiFePO4 Lithium Batteries size, less than the General Li-Ion battery 15% less than the Lead-acid battery 35%
2	Weight	Very Heavy	Heavy	Lift	In the same capacity, C-LiFePO4 Lithium Batteries weight, less than the General Li-Ion battery 30%,, less than the Lead-acid battery 50%
3	Battery management	Non	Yes, but only high level power system, general level is Non	Yes	Lead-acid battery cannot cell management charging & discharge General
4	Battery cycle life (for Indoor Used)	300~450 times, Left 50-60% Power capacity	500~1000 times, Left 80% Power capacity	>2000 times, Left 80% Power capacity	Real outdoor to test UPS of C-LiFePO4 Lithium Batteries after 1200 times are still have 95% power capacity
5	Service life (for Indoor Used)	1~1.5 years	1.5~2.5 years	>7 years	Outdoor UPS of C-LiFePO4 Lithium Batteries for indoor used, will have more battery cycle life
6	Battery cycle life (for Outdoor Used)	150~300 times, Left 50-60% Power capacity	300~600 times, Left 70% Power capacity	>1100 times, Left >80% Power capacity	At the time of system design, you want plus the power attenuation and doubled the capacity of the number and replacement of time and frequency
7	Service life (for Outdoor Used)	0.5~1 year (need replace 6 times in 3 years)	1~1.5 year (need replace 3 times in 3 years)	>3 year	Outdoor UPS of C-LiFePO4 Lithium Batteries real outdoor tested 3 years still 95%~ power capacity
8	Operation of high and low temperature	-0 ~ 45 °C (with Housing can support)	-5 ~ 45 °C (with Housing can support -20~55°C)	-20 ~ 70 °C (with Housing can support -30~75°C)	General Lithium batteries temperature 50°C operation easily damaged
9	Memory effect	Yes	No	No	C-LiFePO4 Lithium Batteries can fast charging and large current discharge



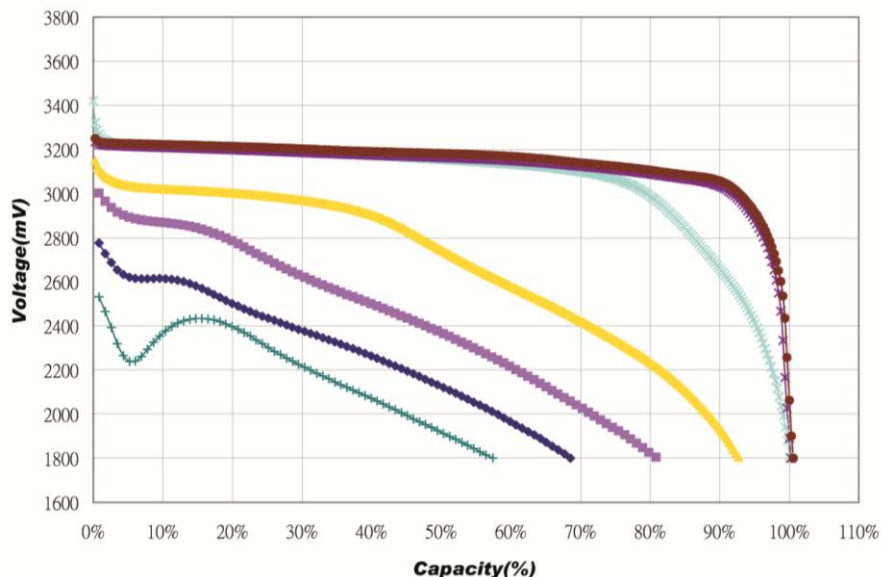
10	Security	Releasing toxic gas and explosion hazards	Have explosion hazards risk in 50~60°C	No explosion risk**	Outdoor UPS of C-LiFePO4 Lithium Batteries @short circuit conditions, maximum temperature up to 120~130°C, at the same time have the security design of the pressure relief valve, so no explosion risk (please see the test report)
11	Maintenance costs	Very higher	Higher	Lowest	General Li-Ion batteries for use in outdoor environments, will face 3 times in 3 years replacement cost ; While operation due to frequent battery replacement issues, resulting in low system properly rate
12	System cost	Cheap	Expensive	Expensive	Cost for 1 given to lead-acid battery < deep Lead-acid as 3 times< General Li-Ion as 4~5 times < C-LiFePO4 Lithium as 6~7 times
13	Green environmental protection (RoHS)	Lead pollution (No coincide)	Yes (Coincide)	Yes (Coincide)	2015 Lead Acid Battery will be disabled

**Note1: Outdoor DC UPS system normally taken facing outdoor high temperature of 55~70°C operating environment requirements, Lead-acid & General Li-Ion battery will be shorten cycle life, even have explosion risk.**

**Note2: Outdoor DC UPS system usually need to face deep discharge and high current charging cycle operational requirements, Lead-acid & General Li-Ion battery will be shortening cycle life and even will accelerated damage.**

### C-LiFePO4 Lithium Batteries different temperature and short circuit test report

C-LiFePO4 Lithium Battery 1C Discharge at Different Temperature(based on 25°C Cap.)



C-LiFePO4 Lithium Battery UL-1642 Short Circuit Test Cell#1

