

### 48 V 210 Ah Iron Phosphate (LiFePO4) Li-ion Battery

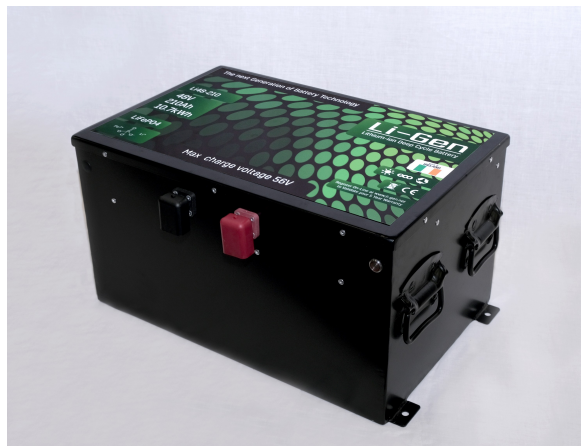
**PN: Li48-210**

#### Features

- ◆ Drop-in compatible for lead acid golfcart battery, maintenance free
- ◆ 300 A discharge; charges in 2 hours
- ◆ Safe: Lithium Iron Phosphate cells, no hazardous gases
- ◆ Thousands of cycles, to 100% DOD, under normal conditions
- ◆ Built-in protector BMS with cell balancing: over-charge, over-discharge, over-current and over-temperature
- ◆ Wide temperature range:-20 °C– 60 °C
- ◆ Five-year limited warranty
- ◆ Some battery components may be recycled or repurposed

#### Applications

- ◆ UPS
- ◆ Mobility
- ◆ Electric Vehicle, E-bike, E-Rickshaw etc.
- ◆ Lighting
- ◆ Leisure and Marine

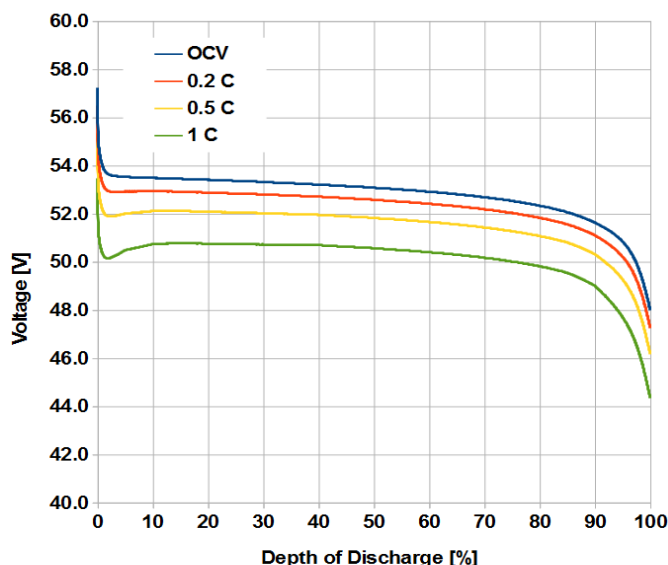


| Product specifications |                       |   | Min             | Nom  | Max  |           |
|------------------------|-----------------------|---|-----------------|------|------|-----------|
| Electrical             | Voltage               | Open circuit, 2 hour relaxation                                   | 48.0            | 53.2 | 57.6 | V         |
|                        | Capacity              | 1/20 C  |                 | 210  |      | Ah        |
|                        | Energy                | 1/20 C  |                 | 10.7 |      | kWh       |
|                        | Internal resistance   | 25 °C   |                 | 12   |      | mΩ        |
|                        | Cycle life            | 0.5C charging/discharging, 25 °C, to 90% of nominal capacity      |                 | 2000 |      | Cycles    |
|                        | Self discharge        | 25 °C   |                 |      | 3.5  | % / month |
| Mechanical             | Dimension LWH         |   | 534 x 347 x 294 |      |      | mm        |
|                        | Connection            |   | M8 Stud         |      |      | -         |
|                        | Mass                  |   |                 | 82   |      | Kg        |
|                        | Ingress protection    | Powder-coated steel enclosure                                     | IP55            |      |      | -         |
| Operating conditions   |                       |   | Min             | Nom  | Max  |           |
| CCCV charging          | Constant current      | CC stage ("bulk")   |                 |      | 105  | A         |
|                        | Peak current          | 10 s max  |                 |      | 130  | A         |
|                        | Constant voltage {CV} | CV stage ( "absorption"), until current drops below 5 A, 2 hr max | 54.8            | 55.2 | 57.6 | V         |
|                        | Float voltage         |   |                 | 53.6 | 54.0 | V         |
|                        | Temperature           |   | -10             |      | 45   | °C        |
| Discharging            | Continuous current    |   |                 |      | 210  | A         |
|                        | Peak current          | 10 s max  |                 |      | 325  | A         |
|                        | Cut-off voltage       |   |                 | 44.8 |      | V         |
|                        | Temperature           |   | -20             |      | 75   | °C        |
| Environmental          | Humidity              |   | 35              |      | 75   | %         |

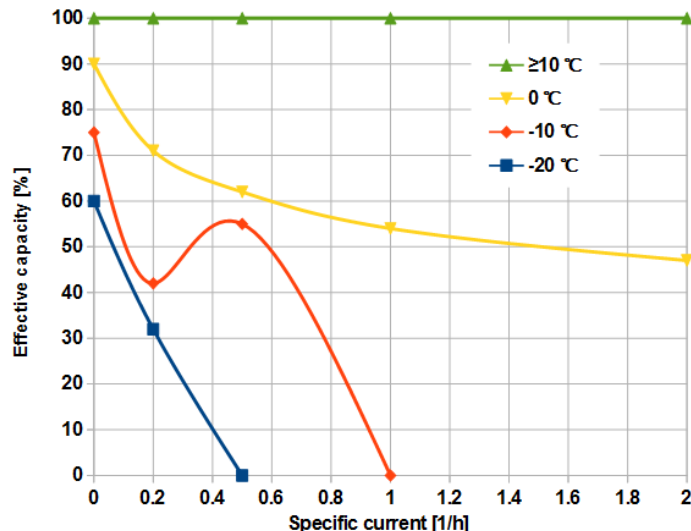
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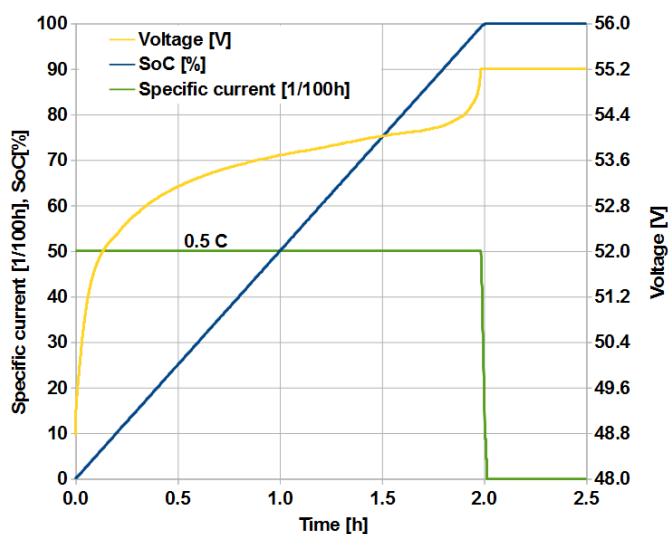
Discharge curves at various currents, 25 °C



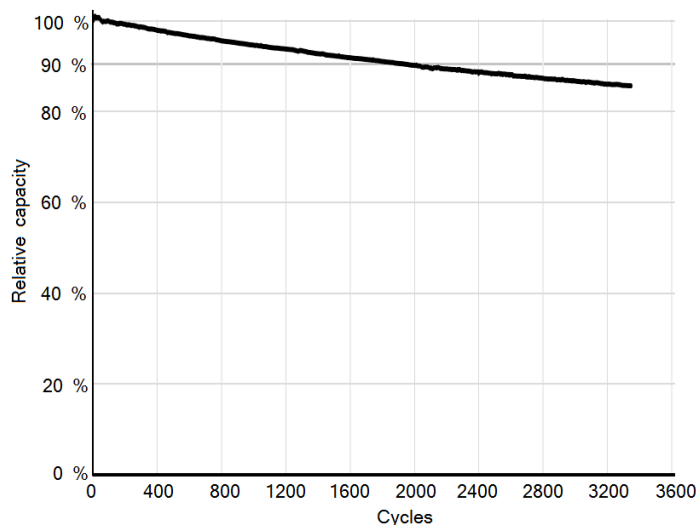
Effective capacity at various temperatures, currents



CCCV charge curve, @ recommended settings, 25 °C



Cycle life, 25 °C, 0.5 C



### Battery care

- ◆ Storage:
  - ◆ Bring to ~50 % charge, then store in a cool, dry place
  - ◆ Do not drop
- ◆ Charging:
  - ◆ A CV stage that lasts too long degrades the battery rapidly
  - ◆ Stand-by applications: exceeding {CV} V degrades the battery
  - ◆ Charging is disabled below freezing; warm the battery first
  - ◆ Maximize capacity by regularly charging to the specified voltage
- ◆ Discharging:
  - ◆ If no voltage, the battery is off; charge it to wake it up

### System design

- ◆ Though it may oriented in any direction, upright use is preferable
- ◆ Connect no more than 4 Batteries in Parallel.
- ◆ Do Not Connect in Series.

Refer to user manual for complete information.

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| Performance specifications* |                       |  | Min  | Nom | Max     |       |
|-----------------------------|-----------------------|--|------|-----|---------|-------|
| Electrical                  | Energy storage        | 1-hour discharge, new                          | 8.9  |     |         | kWh   |
|                             |                       | 10-hour discharge, new                         | 11.1 |     |         | kWh   |
|                             |                       | Derating, 1 cycle per day                      |      |     | -0.0164 | %/day |
|                             |                       | Derating, 1 cycle every 2 days                 |      |     | -0.0123 | %/day |
|                             |                       | Derating, 1 cycle every week                   |      |     | -0.0094 | %/day |
|                             |                       | Derating, not cycled                           |      |     | -0.0082 | %/day |
|                             | Round-trip efficiency | 1-hour discharge, 2-hour charge, new           | 96.5 |     |         | %     |
|                             |                       | Derating, 1 cycle per day                      |      |     | -0.0055 | %/day |
|                             |                       | Derating, 1 cycle every 2 days                 |      |     | -0.0041 | %/day |
|                             |                       | Derating, 1 cycle every week                   |      |     | -0.0031 | %/day |
|                             |                       | Derating, not cycled                           |      |     | -0.0027 | %/day |
|                             | Self discharge        | Powered off, 100 % SoC to 0 % SoC, new         |      | 2.3 |         | years |
|                             |                       | Powered on, no load, 100 % SoC to 0 % SoC, new |      | 23  |         | days  |

