# APL 48-50 LFP Lithium-ion Battery

***Datasheet***



The Lithium Ferro Phosphate (LFP) batteries (APL-48) are small, efficient, maintenance free, rugged batteries operating at high temperatures for optimal performance in the field. They are designed in Australia and are made to complement the charging characteristics of the FXM series UPS. Each battery is fitted with a battery management system (BMS) which provides protection from over voltage, under voltage, over temperature, over current, over charging as well as managing internal cell balancing. The BMS also reacts to any fault condition and automatically resets once the fault is cleared.

Traditional lead acid systems can be replaced with the APL batteries boasting LFP technology which can deliver more cycles and greater DoD. LFP systems are designed to offer more service cycles with smaller capacity and still yield the same useable storage as lead acid systems; lead acid storage cannot exceed 75% DoD.

The APL-48 batteries work most efficiently when connected in parallel. Each module includes a capacity gauge and circuit breaker for individual isolation of each module before removal.

**Alpha Power Systems**
Unit 18, 30 Heathcote Road
Moorebank NSW 2170
Australia

**T** (02) 9602 8331
**F** (02) 9602 9180
**E** admin@alphapower.com.au
**W** www.alphapower.com.au

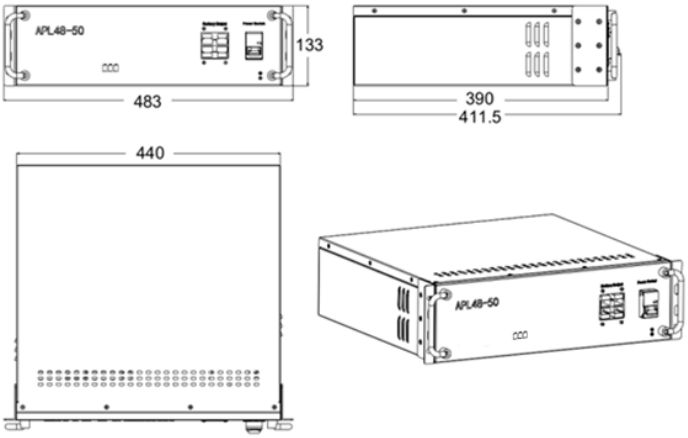
## Some key features include:

- Longer life with increased charge cycles
- Zero emissions
- Fully recyclable
- Light weight
- Rated up to 60°C
- Possible 100% DoD each cycle
- Australian engineered & designed
- Built-in batttery management system (BMS)
- Non-toxic; no lead, heavy metals or leaks
- Simple Anderson quick release connector system
- Two thirds less weight than equivalent lead acid batteries
- Bluetooth and CAN communication

## Benefits include:

- Light weight & compact for ease of handling
- 4 x longer cycle life therefore cheaper maintenance & less replacements
- All materials are recyclable & accepted by commercial recyclers
- The LFP compound results in no expansion, emissions or heat generation
- BMS protects cells; great for constant demand from critical systems
- Utilities available sunlight from PV panels
- Provides more than 2000 cycles compared with 1000 cycles for lead acid batteries
- Bluetooth access to battery data without opening the cabinet

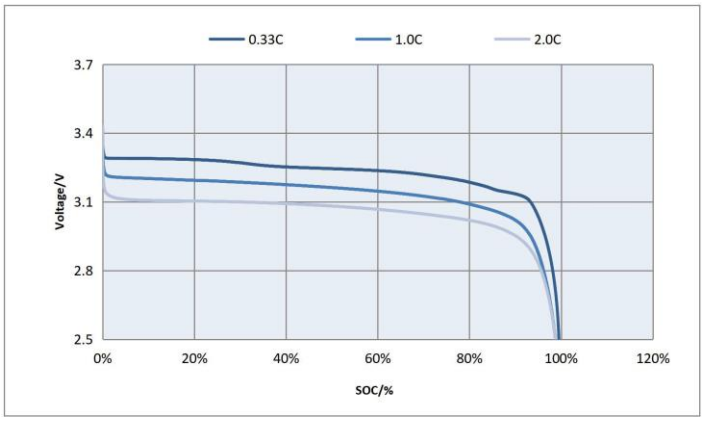
# APL48-50LFP Battery Module

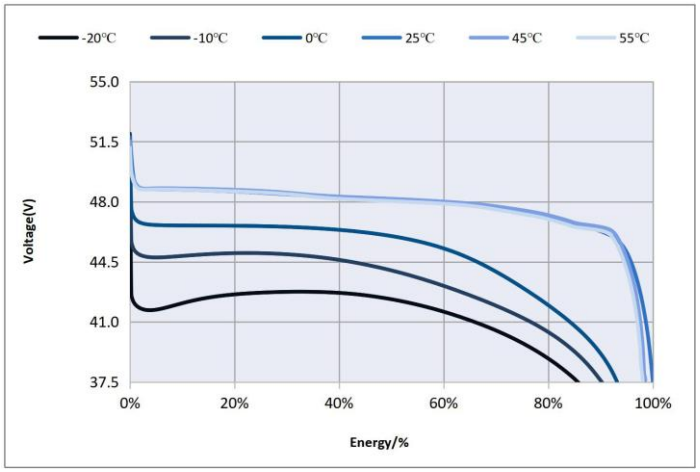

## Product Specifications

| Model No. | APL48-50LFP |
|---|---|
| Nominal Voltage | 48V$_{DC}$ |
| Nominal Capacity @25±2°C 0.2C | 50Ah |
| Number of Cells | 15 cells |
| Nominal Charging / Discharging Current | 10A / 10A |
| Max. Continuous Charging / Discharge Current | 50A / 50A |
| Limited Charge Voltage | 54V |
| Discharge Cut-off Voltage | 42V |
| Operating Temperature | Charging: 0°C – 45°C<br>Discharging: -20°C – 60°C |
| Humidity | 5% – 90% |
| Case Dimensions W x D x H | 440mm x 390mm x 132mm (3U) |
| Installation Cabinet Size | 19” |
| Terminal Connection | 50A - Anderson quick release |
| Communication | Bluetooth, CAN |
| Weight | 27kg (±2kg) |
| Discharge Time | Approx. 2hr @ 0.5C |
| Composition | Lithium Ferro Phosphate (LiFePO$_4$) |
| Casing | Galvanised steel |
| Coating | Polymer powder coat |
| Certification | ROHS, C Tick, CE |

## Discharge Performance




Constant Current Discharge Curve of APL-LFP @25℃




Discharge Curve of different temperature of APL-LFP @1.0C

Constant Current Discharge Table(25℃)

| Current(A) / Time (H) / End voltage (V) | APL48-50LFP | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | 0.1C | 0.2C | 0.25C | 0.3C | 0.4C | 0.5C | 0.6C | 0.8C | 1.0C |
| | Hours | | | | | | | | |
| 39.0 | 10.11 | 5.05 | 4.04 | 3.36 | 2.51 | 2.00 | 1.66 | 1.24 | 0.99 |
| 40.5 | 10.09 | 5.00 | 4.00 | 3.33 | 2.49 | 1.98 | 1.65 | 1.23 | 0.98 |
| 42.0 | 10.08 | 4.96 | 3.97 | 3.31 | 2.47 | 1.96 | 1.64 | 1.21 | 0.96 |
| 43.5 | 10.00 | 4.92 | 3.94 | 3.27 | 2.45 | 1.94 | 1.62 | 1.19 | 0.95 |
| 45.0 | 9.91 | 4.85 | 3.88 | 3.22 | 2.40 | 1.90 | 1.58 | 1.17 | 0.92 |

Constant Power Discharge Table (25℃)

| Power (W) / Time (H) / End voltage (V) | APL48-50LFP | | | | | | |
|---|---|---|---|---|---|---|---|
| | 240W | 480W | 730W | 960W | 1200W | 1440W | 1680W |
| | Hours | | | | | | |
| 37.5 | 10.25 | 5.06 | 3.36 | 2.50 | 1.99 | 1.65 | 1.41 |
| 39.0 | 10.21 | 5.05 | 3.35 | 2.50 | 1.99 | 1.64 | 1.41 |
| 40.5 | 10.19 | 5.00 | 3.31 | 2.48 | 1.97 | 1.63 | 1.40 |
| 42.0 | 10.18 | 4.96 | 3.29 | 2.46 | 1.95 | 1.62 | 1.39 |
| 43.5 | 10.10 | 4.92 | 3.26 | 2.43 | 1.93 | 1.60 | 1.36 |
| 45.0 | 10.01 | 4.85 | 3.20 | 2.38 | 1.88 | 1.56 | 1.33 |

## Charge/Discharge Modes and Conditions

Charge Modes and Conditions

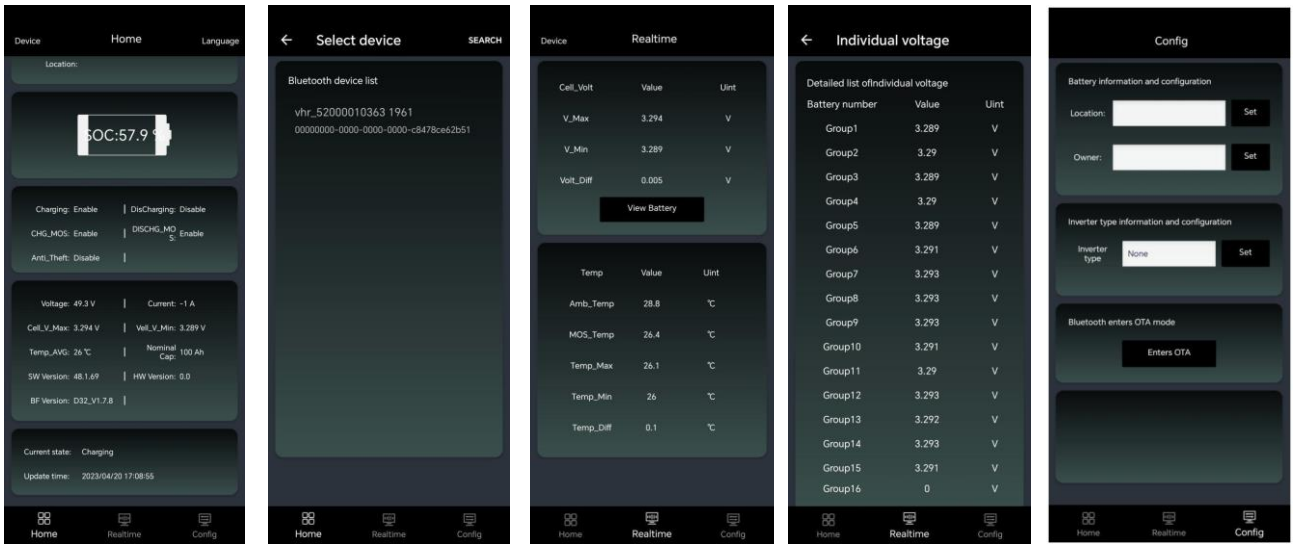
| Cell Temperature | Standard Charge | Fast Continuous Charge | Boost Charge(5s) |
|---|---|---|---|
| ＜0℃ | No Charge Allowed | No Charge Allowed | No Charge Allowed |
| 0℃~ 5℃ | Charge Current: 0.1C | No Charge Allowed | No Charge Allowed |
| 5℃~10℃ | Charge Current: 0.1C | Charge Current: 0.2C | No Charge Allowed |
| 10℃~25℃ | Charge Current: 0.2C | Charge Current: 1.0C | No Charge Allowed |
| 25℃~50℃ | Charge Current: 0.5C | Charge Current: 0.75C | 1C Charge is allowed when voltage < 3.65V |
| 50℃~60℃ | Charge Current: 0.1C | | |
| ＞60℃ | No Charge Allowed | | |

Discharge Modes and Conditions

| Cell Temperature | Standard Discharge | Rate Continuous Discharge | Boost Discharge(5s) |
|---|---|---|---|
| ＜-40℃ | No Discharge Allowed | No Discharge Allowed | No Discharge Allowed |
| -40℃~-20℃ | Discharge Current: 0.1C | No Charge Allowed | No Charge Allowed |
| -20℃~0℃ | Discharge Current: 0.1C | Discharge Current: 0.5C | Discharge Current: 1C |
| 0℃~60℃ | Discharge Current: 0.2C | Discharge Current: 1.0C | Discharge Current: 1C |
| ＞60℃ | No Charge Allowed | | |

# BMS (Bluetooth Communication)

## Battery Managing System BMS by Mobile App




### Instructions:

1. Download the BmsManagement App from Google Play.
2. Turn on Bluetooth of your mobile device.
3. Open the App and Search and Select the batteries from the list (you can find the battery number on the front of your battery).
4. Your battery is now connected to the App.
5. Click Home or Realtime to see different battery status and other data.

Scan to download

### Note:

1. Your mobile device must support Bluetooth 4.0 BLE.
2. Measuring distance up to 15m.
3. Real-time remotely monitor battery status.

### Features:

- Battery pack voltage
- Cell voltage
- Current
- State of charge (SOC)
- Charge or discharge State
- Average temperature
- Battery number
- Update time
- Battery detail configuration