

## V-LFP48100

Vision Technology delivers safe lithium iron phosphate Battery solutions for Telecom application.

### Overview

The V-LFP48100 back-up lithium iron phosphate battery system is developed for backup of Telecom equipment. Under normal condition, grid AC power supply to rectifier module and the Telecom loads and charge battery pack; When the AC power fail, rectifier module stop power supply, the battery serves for Telecom equipment, to ensure the Telecom equipment runs normally; when the AC power is switched on again, power rectifier module for Telecom equipment recover to while charge the battery pack



### Features

- RS485 communication output for monitoring
- Built-in BMS with Charging current limitation
- Built-in automatic protection for over-charge, Over-discharge and over-temperature conditions
- State of charge and state of health indication
- Built-in battery control for efficient operation
- Internal cell balancing
- Compatible with standard Telecom rectifiers
- Maintenance free

| Specifications  |                                       | V-LFP48100                                 |
|---|---------------------------------------|--|
| Nominal Voltage   |                                       | 48 V                                       |
| Nominal Capacity (@25°C, 0.2C)                                    |                                       | 100 Ah                                     |
| Number of cell  |                                       | 15 cell                                    |
| Battery Weight (Approximate)                                      |                                       | 41.5 ±0.3Kg                                |
| Dimensions (W*D*H)  |                                       | Width*Depth* Height (440mm*480mm*177mm) ±2 |
| Energy  | Normal energy (@25°C, 0.2C)           | 4800Wh                                     |
|   | Volumetric energy density             | 128Wh/L                                    |
|   | Gravimetric energy density            | 112Wh/kg                                   |
| Cell  | Cell model                            | LFP36130200-100Ah                          |
|   | Cell Voltage (Nominal)                | 3.2 V                                      |
|   | Cell Capacity (Nominal)               | 100 Ah                                     |
|   | Gravimetric energy density of cell    | 160Wh/kg                                   |
| Internal Impedance @25°C  |                                       | ≤ 20mΩ                                     |
| Standard Discharge @25°C  | Max. constant current                 | 100A                                       |
|   | Cut-off voltage                       | 42V  |
| Standard charge @25°C   | Charging Voltage Limited              | 52V ~ 54V                                  |
|   | Max. constant current                 | 100A                                       |
|   | Recommended charging current and time | 20A(0.2C) for 5.2 hours                    |
| Discharge/Charge efficiency in Wh (Round trip efficiency) at 0.2C |                                       | ≥ 95%                                      |
| Design life   | 25°C                                  | ≥ 12 years                                 |
| Cycle life (@25°C, 0.2C)  |                                       | 80% DOD 4000 cycles                        |
| Operating temperature   |                                       | Charging: 0°C ~ 60°C                       |
|   |                                       | Discharging: -20°C ~ 60°C                  |
| Storage temperature   |                                       | Recommended range: 0°C ~ 45°C              |
| Operating humidity (@40±2°C, %RH)                                 |                                       | 5% ~ 95%                                   |
| Counting function of working time when over temperature           |                                       | YES  |
| Maintain port   |                                       | YES (Option)                               |
| Anti-theft  |                                       | Customization screw (Option)               |

## BMS Parameters.

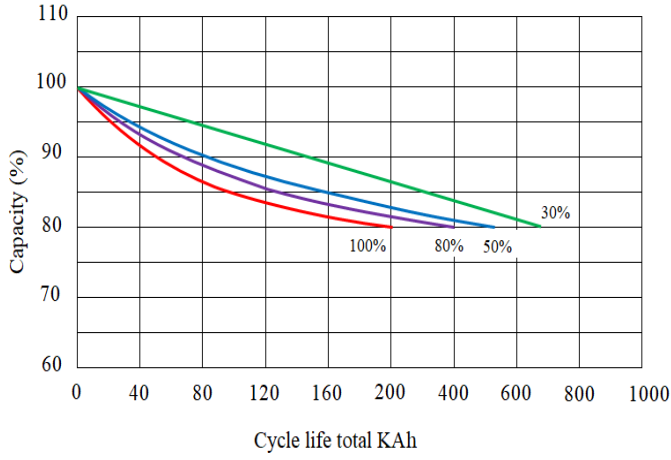
| N O. | Type         |           | Function   | Setting Value   | Remarks   |
|------|--------------|-----------|--|---|---|
|      |              |           |  | V-LFP48100  |   |
| 1    | Voltage      | Charge    | Cell Voltage Protection  | 3.7V Alarm/3.8V Protection  | Recover at 3.6V   |
| 2    |              |           | Total Voltage Protection   | 56V Alarm/57V Protection  | Recover at 54V  |
| 3    |              | Discharge | Cell Voltage Protection  | 2.9V Alarm/2.8V Protection  | Recover at 3.1V   |
| 4    |              |           | Total Voltage Protection   | 43.2V Alarm/42V Protection  | Recover at 45V  |
| 5    | Current      | Charge    | Normal   | $\leq 100A$   |   |
| 6    |              | Discharge | Normal   | $\leq 100A$   |   |
| 7    |              |           | Over Current Protection 1  | Alarm $> 101A$ /<br>Protection $> 120A$   | Delay 20s ,recovery in every 1min   |
|      |              |           | Over Current Protection 2  | $> 150A$ and $< 300A$   | Delay 3s ,recovery in every 1min  |
| 8    |              |           | Short Circuit Protection   | $\geq 300A$   | Delay 300uS   |
| 9    | Temp         | Cell Temp | Low temp protection  | Charging $< -10^{\circ}C$<br>Discharging $< -20^{\circ}C$   | Delay 1~2S  |
| 10   |              |           | High temp protection   | Charging: Alarm $> 65^{\circ}C$<br>/70 $^{\circ}C$ Protection<br>Discharging: Alarm $> 70^{\circ}C$<br>/75 $^{\circ}C$ Protection | Delay 1~2S  |
| 11   |              | PCB       | High temp protection   | Alarm $> 90^{\circ}C$ /<br>115 $^{\circ}C$ Protection   | Recovery at 85 $^{\circ}C$  |
| 12   | Cell Balance | Balance   | Make all cells be balance during charging process.<br>Current: 150mA | $V_{Max} \geq 3.40V$ and $V_{Max} - V_{Min} \geq 40mV$ , Start balance  | All cell voltages $< 3.4V$ or $V_{Max} - V_{Min} \leq 40mV$ , or discharge Stop balance |

## Battery Status.

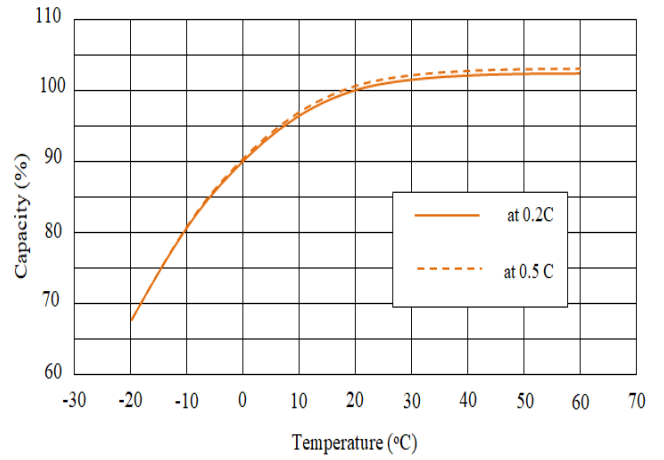
- Stop/Transport Mode.** In working mode, press Start/Stop button, Battery will go to STOP mode with low self-discharge. In STOP mode, charging MOS and discharging MOS are open, battery cannot charge, discharge or communicate.
- Working Mode.** In STOP mode, connect the battery to SMPS, press Start/Stop button, battery will go to working mode. In working mode, BMS will monitor battery voltage, current, and temp, and communication is available, charging MOS and discharging MOS are closed, Battery will operate as the settings.
- Sleep Mode.** After turn on the battery, if the battery voltage below low voltage protection, BMS will go to sleep mode in 1 minute. In sleep mode, charging MOS and discharging MOS are closed, BMS will check the current in every 1 min, if there is charging current connecting, battery will turn to working mode.
- Error Mode.** In working mode, if there is: ①. Battery cells,  $\Delta U > 1V$ , or ②. Any cell voltage  $> 3.9V$  or  $< 2.3V$ , or ③. Battery temp is  $< -20^{\circ}C$  or  $+75^{\circ}C$ . BMS will go to error mode, ALM will bright and other LED will shut down, and go to STOP mode, charging MOS and discharging MOS are open. Need to make troubleshoot.

## Performance Curve.

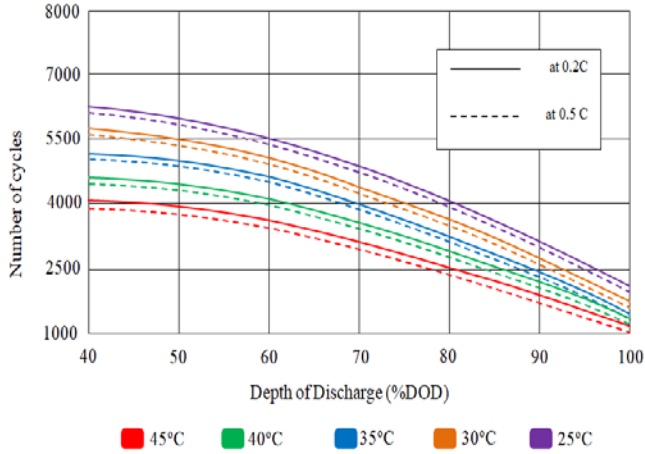
Cycle life total capacity with DOD at 25°C



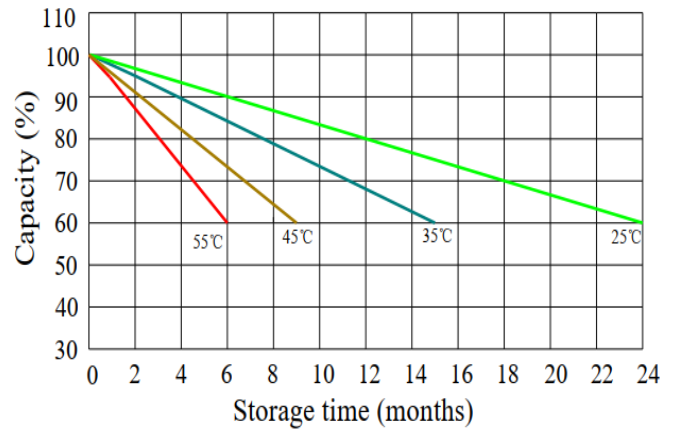
Temperature effects on capacity



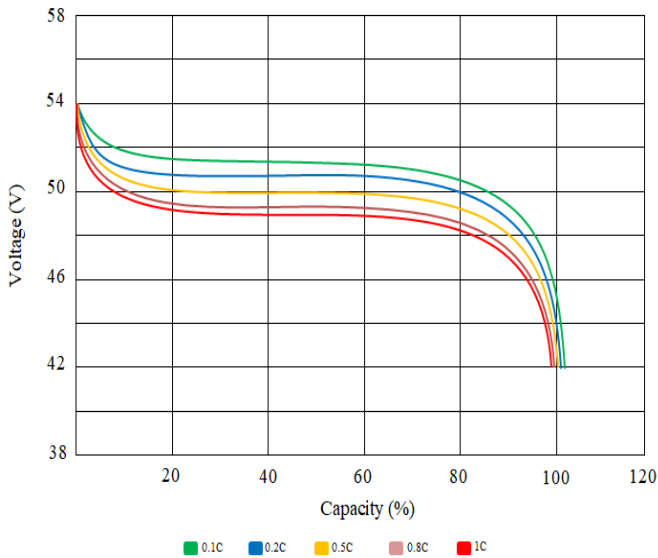
Cycle life versus depth of discharge and temperature



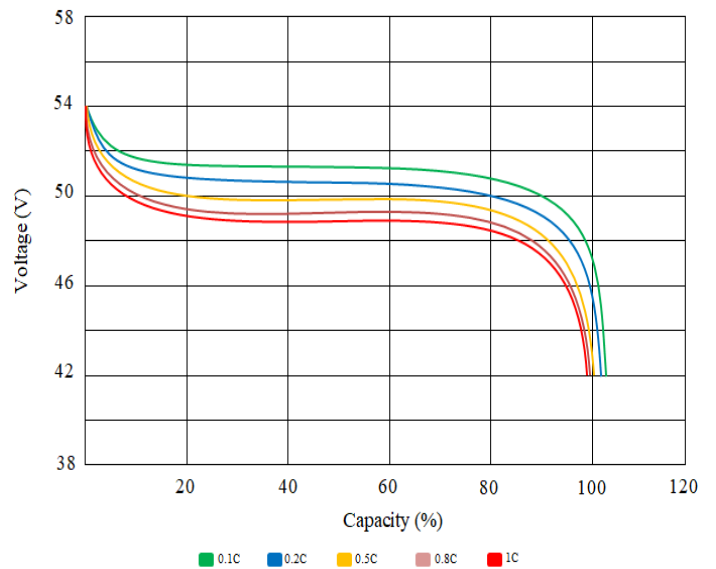
Self-discharge at different temperature



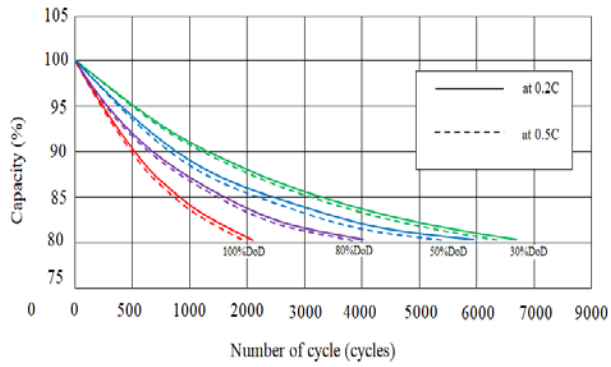
Discharge Performance at 25°C



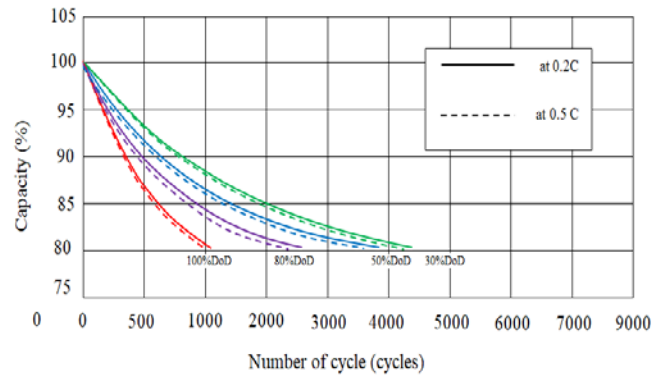
Discharge Performance at 45°C



Cycle life with DOD at 25°C



Cycle life with DOD at 45°C



Performance may vary depending on, but not limited to cell usage and application. If cell is used outside specifications, performance will diminish. All specifications are subject to change without notice. All information provided herein is believed, but not guaranteed, to be current and accurate.

- The parameter could be changed by manufacturer in needed case which is not inform in advance.